

# How to use this catalog

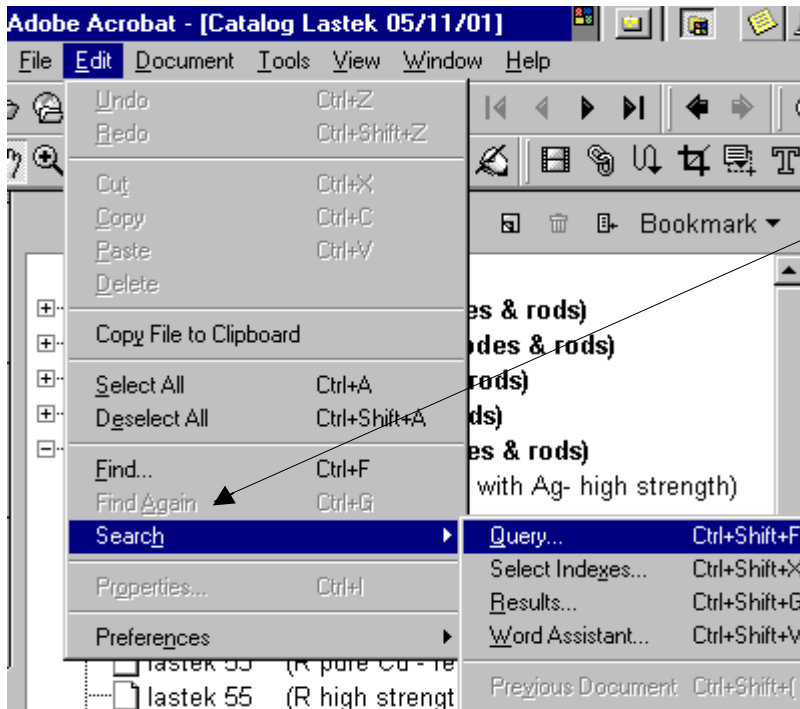
\* **Have a soundcard? - click on me**



- + A1 Low alloyed steel (electrodes & rods)
- + A2 Hardfacing (electrodes & rods)
- A4 Cast iron (electrodes & rods)
  - lastek 11 (R cast iron deposit)
  - lastek 40E (E for dirty cast iron)

R means Rod - E means Electrode

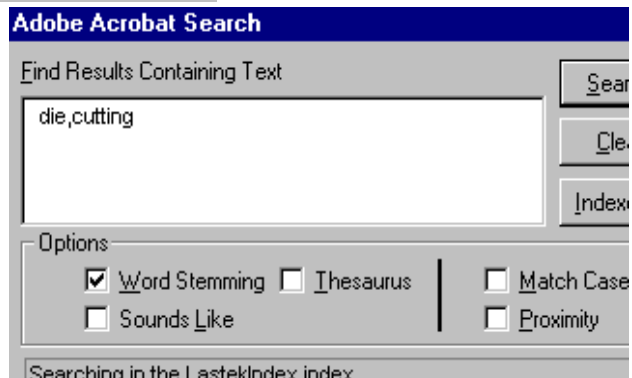
\* **Looking for applications or specific words in the whole Lastek catalog?.....Use the search function (only available in Acrobat reader 5.0 !!!)**



**Don't use the 'find' function, but use the 'search- query' function !!!** (Rem: in Acrobat Reader 3.0 or 4.0: use the 'find' function) Repeat your search using **Ctrl+** (Acrobat 5.0)

Example: To find all Lastek alloys for hardfacing **dies or cutting tools**, search on the words 'die', followed by a comma, followed by the word '**cutting**'; use Ctrl+) keys to find all occurrences. The boolean 'AND' cannot be used.

You must see at the underside of this screen that the 'Lastekindex' is being used. If not, use acrobat help to make it visible.





# lastek 001



## All positional

Rutile coated electrode for structural welds.  
All positional without changing the amperage setting.  
Easy striking and low slag formation permit high speed and sound performance in assembly welding.  
Excellent properties for tack welding.

## Applications

Ship-building, construction of containers, boilers.  
Tack welding of complex structures. On-site welding of structures where welding must be carried out in any position with a minimum or no interruption.

## Technical data

Tensile strength Rm: 500-580 N/mm<sup>2</sup> (72-84ksi)  
Yield strength Rp: > 420 N/mm<sup>2</sup> (61ksi)  
Elongation A5: ≥22%  
Impact strength (ISO-V) Av: + 20°C (68°F) > 90J (66ft lb)  
0°C (32°F) > 47J (35ft lb)

## Approval

ABS - BV - LRS - GL

## Current

A.C. or D.C., straight polarity.

## Sizes and amperage

mm(inch)	1.5(1/16")	2.0(5/64")	2.5(3/32")	3.2(1/8")	4.0(5/32")
Amp	25-50	40-70	70-90	100-140	150-180

# lastek 002



## Long weld length

High speed rutile electrode, depositing very long beads.  
High deposition rate.  
Good striking properties; smooth and finely rippled beads and weld profiles without undercut.  
Almost self releasing slag.  
Not suitable for welding vertical down or for root passes.

## Applications

Welding fuel tanks, building machines and vehicles, boiler- and shipconstructions.

## Technical data

Tensile strength Rm: > 510 N/mm<sup>2</sup> (74ksi)  
Yield strength Rp: > 470 N/mm<sup>2</sup> (68ksi)  
Elongation A5: > 22%  
Impact strength Av (ChV): 0°C > 47J (32°F > 34ft.lb)  
+ 20°C > 70J (+ 68°F > 52ft.lb)

## Approval

ABS - BV - LRS

## Current

A.C. and D.C., straight polarity.

## Sizes and amperage

mm(inch)	2.0 (5/64")	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	40-80	90-110	110-140	120-190	180-240

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# lastek 003

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## Upward welding in the vertical position

Due to the easily controlled slag, the electrode is very suitable for welding badly prepared pieces, especially where a beautiful weld appearance is expected.

Also because of its stable arc you can obtain perfect root penetrations.

## Applications

Welding pipelines, making root passes, upward welding in vertical position.

Structural steel St33-St52.3, boiler steel HI-HIII, pipe steel St35-St52, St35.8-St45.8, StE210.7-StE360.7, hull steel A,B,D, cast steel GS38-GS45.

## Technical data

Tensile strength Rm: 510-600 N/mm<sup>2</sup> (73-87ksi)

Yield strength Rp:  $\geq$ 450 N/mm<sup>2</sup> (65ksi)

Elongation A5: >22%

Impact strength Av (ChV): 0°C  $\geq$  65J (32°F  $\geq$  48ft lb)

## Approval

ABS - BV - LRS

## Current

A.C. or D.C., straight polarity.

## Sizes and amperage

mm(inch)	2.0(5/64")	2.5(3/32")	3.2(1/8")	4.0(5/32")
Amp	40-60	60-90	80-140	110-180

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# lastek 004

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## Hightravel speed

Electrode that is especially suited to perform fillet welds in 45° down welding with high speed.

Lastek 004 can deposit long beads in a very short period of time and with very little deformations.

Efficiency: 120%

## Applications

Repair and construction of car framework.

Shipbuilding.

General maintenance work.

## Technical data

Tensile strength Rm: 500-560 N/mm<sup>2</sup> (72-81ksi)

Yield strength Rp: > 410 N/mm<sup>2</sup> (59ksi)

Elongation A5: > 22%

Impact strength (ISO-V) Av: + 20°C > 90J (68°F > 66ft lb)

## Current

A.C. and D.C., straight polarity.

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	90-110	120-160	165-210	210-300

# lastek 005



## Universal construction electrode

Electrode with a special coating that is almost insensible to moisture pick-up. Because of the intensive arc and the easily controlled slag, it is very suitable for welding badly prepared, rusted, painted or dirty pieces. Weldable in all positions, also vertical down.

## Applications

Construction of boilers, tanks, vehicles and machinery.  
Repair welding and modifications of old or dirty constructions.  
Welding jobs in open-air, exposed to humidity.  
Building steel St34 - St52, boiler steel HI - HIII, pipe steel St35 - St52, ST35.8- St45.8, StE210.7 - StE360.7, hull steel A,B,D, cast steel GS38 - GS45.

## Technical data

Tensile strenght Rm: 470-570 N/mm<sup>2</sup> (68-82ksi)  
Yield strenght Rp: ≥400 N/mm<sup>2</sup> (58ksi)  
Elongation A5: > 24%  
Impact strength (ISO-V) Av: 0°C (32°F) > 47J (35 ft lb)  
20°C (68°F) > 80J (59 ft lb)

## Approval

LRS - BV - ABS

## Current

A.C. and D.C., straight polarity.

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	60-90	80-130	130-160	160-200

# lastek 006



## High impact -value

Basic coated low hydrogen electrode with excellent weldability on both AC and DC; For highly strained welds with good impact value at subzero temperatures. Finely rippled and smooth beads without undercutting.

All positional, except vertical down.

## Applications

Welding of highly stressed constructions. Also for cast steel. Pressure vessels, ship hull, bridges, all vehicles and frames.

## Technical data

Tensile strength Rm: 530-660 N/mm<sup>2</sup> (77-96ksi)

Yield strength Rp: > 440 N/mm<sup>2</sup> (64ksi)

Elongation A5: > 22%

Impact strength (ISO-V) Av: -20°C > 100J (-4°F > 74ft lb)

-40°C > 50J (-40°F > 37ft lb)

## Approval

Lloyds Register of Shipping grade 3 - 3Y

## Current

A.C. or D.C., reverse polarity.

## Sizes and amperage

mm(inch)	2.5(3/32")	3.2(1/8")	4.0(5/32")	5.0(3/16")
Amp.	60-90	90-130	120-180	160-240

## Directions for use

Weld with a short arc, the electrode almost vertical to the piece.

Always use dry electrodes (when necessary, the can be dried at 250°C (482°F) for 1 to 2 hours (use Lastidry)).



# lastek 007



## Root passes

Electrode for welding steels with tensile strength up to 520 N/mm<sup>2</sup> (75ksi).  
Universal use. Weldable in all positions, also vertical down. Easy to strike. Smooth beads. Slag can easily be removed. Can be used for root passes in pipewelding.

## Applications

All structural fabrication and repair works. Boilers and pressure vessels. Pipelines.

## Technical data

Tensile strength: 520-600 N/mm<sup>2</sup> (75-87ksi)  
Yield strength: ≥460 N/mm<sup>2</sup> (67ksi)  
Elongation: ≥22%  
Impact strength (ISO-V) Av: 0°C ≥ 55J (32°F ≥ 40ft lb)

## Approval

LRS

## Current

A.C. or D.C., straight polarity.

## Sizes and amperage

mm(inch)	2.0 (5/64")	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	40-70	60-90	85-130	120-170

# lastek 008



## High strength

Welding electrode for fillet welds in horizontal, overhead and vertical-up positions. The weld bead is smooth and finely rippled. The electrode has the ability to make welds of longer run-length at high welding speed. Weld deposit with high strength and toughness. The smaller diameters are suitable for thin plate welding.

## Applications

Assembling and repair welding for boiler- and bridge construction and shipbuilding etc...

## Technical data

Tensile strength Rm: 520-600 N/mm<sup>2</sup> (75-87ksi)  
Yield strength Rp: 450-540 N/mm<sup>2</sup> (65-78ksi)  
Elongation A5: ≥ 23%  
Impact strength (ISO-V) Av: 0°C (32°F) > 50J (37ft lb)

## Approval

LRS

## Current

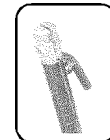
A.C. and D.C., straight polarity.

## Sizes and amperage

mm(inch)	2.0(5/64")	2.5(3/32")	3.2(1/8")	4.0(5/32")	5.0(3/16")
Amp	40-70	90-110	110-140	120-190	180-240



# lastek 1120



## Root runs with radiographic quality

Highly crack resistant due to a very low hydrogen deposit. Recommended for applications where excellent mechanical properties and X-ray controlled joints are required.

Extremely good welding properties in all positions except vertical down.

Special moisture resistant coating.

## Applications

Medium and heavy mild steel fabrication work under conditions of high restraint and structural steels. Critical applications requiring toughness at subzero temperatures.

Pipewelding, boiler plates, shipbuilding, and so on.

## Technical data

Tensile strength Rm: >550 N/mm<sup>2</sup> (>80ksi)

Yield point Rp: >500N/mm<sup>2</sup> (>75.5ksi)

Elongation A5: >24%

Notch Charpy V: >140J at +20°C (>103ftlb at 69°F)

>120J at 0°C (>88ftlb at 32°F)

>100J at -20°C (>74ftlb at -4°F)

>60J at -40°C (>44ftlb at -40°F)

## Current

AC and DC (straight polarity and reverse polarity, see directions for use)

## Sizes and amperage

mm (inch)	2.5 (3/32")	3.2 (1/8)	4.0 (5/32)
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Amp	60-90	90-130	120-180
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## Directions for use

Weld with short arc.

Welding of root passes: straight polarity.

Welding of filling passes: reverse polarity.

If the coating has taken up moisture despite of its special coating, it can be rebaked at 250°C (480°F) for 2 hours.

# lastek 1130



## Basic electrode for high mechanical characteristics

All positional low-hydrogen electrode for high-quality joining of highly strained constructions.

A fluid slag permits a good visibility on the molten pool for vertical up welding. Lastek 1130 has a very stable arc and can be used for root passes.

## Applications

Structural steel fabrication of "I" and "H" beams, pipe lines and for tube to plate welds. Machine and frame fabrication, machine supports, shafts of trailers, reservoirs.

## Mechanical characteristics

Tensile strength Rm: > 510-580 N/mm<sup>2</sup> (74-84ksi)

Yield point Rp: > 390 N/mm<sup>2</sup> (56ksi)

Elongation A5: > 22%

Notch Charpy V: +20°C (68°F) > 130J (96ft lb)

0°C (32°F) > 70J (52ft lb)

-20°C (-4°F) > 47J (35ft lb)

Hardness: 160-180 HB

## Current

AC or DC (rev. pol.) (For the root pass: use straight pol.)

## Sizes and amperages

mm(inch)	2.5(3/32")	3.2(1/8")	4.0(5/32")
Amp	60-85	90-130	120-180

## Directions for use

Maintain a short arc length, keep the electrode almost vertical to the workpiece.

Use always very dry electrodes to obtain the highest possible mechanical characteristics.

Preheat and dry electrodes in the Lastidry for 2 hours at 300°C (572°F).

# lastek 121



## High efficiency electrode

Electrode for fillet welding and butt welding of construction steel at high travel speed. Because the deposit is twice as fast as with multilayer techniques with conventional rutile electrodes, the shrinking force that could lead to twisting or distortion is minimized. Long beautiful welding beads; slag easy to remove.  
Efficiency: 160%

## Applications

Filling V grooves and fillet welds.  
Steel and cast steel with tensile strength up to 520 N/mm<sup>2</sup>.(75ksi)

## Technical data

Tensile strength Rm: > 510 N/mm<sup>2</sup> (74ksi)  
Yield strength Rp: > 420 N/mm<sup>2</sup> (61ksi)  
Elongation A5: > 24%  
Impact strength Av (ChV): + 20°C (+ 68°F) > 47J (35ft lb)

## Approval

GL

## Current

A.C. or D.C., straight polarity.

## Sizes and amperage

mm(inch)	3.2(1/8")	4.0(5/32")	5.0(3/16")
Amp	120-180	180-220	260-320

## Directions for use

Weld with short or medium arc length.  
Can be welded with dragging or weaving technique.  
The electrode is kept slightly inclined in the direction of the weld.

# lastek 126



## Basic coated - high recovery

Basic coated, hydrogen controlled electrode for AC/DC welding of heavy mild steel fabrications and structural steels, subject to restraint.

The coating is moisture resistant.

Permits very fast deposition of H-V fillet welds and flat butt welds thanks to the metal recovery of 160%.

For alternating current an open circuit voltage of min 60V is necessary.

Slag control and slag removal is easy.

Transverse shrinkage stresses are lower when using high recovery electrodes than with normal electrodes.

Excellent X-ray quality.

## Applications

Construction and repair of ships plate, structural steel, cast steel.

## Technical data

Tensile strength Rm: 510-600 N/mm<sup>2</sup> (74-87ksi)

Yield strength Rp: ≥440 N/mm<sup>2</sup> (64ksi)

Elongation A5: ≥26%

Impact strength (ISO-V) Av: +20°C: 180J (68°F: 133J)

-30°C: 47J (22°F: 35J)

## Current

A.C. or D.C., reverse polarity.

## Sizes and amperage

mm(inch)	3.2 (1/8)	4.0 (5/32)	5.0 (3/16)	6.0 (7/32)
Amp	120-150	170-200	250-280	260-350

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# lastek 17

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## Welding galvanising baths in armco-iron

Weld deposit with extra low carbon and silicon content.  
Welding of mild steel that has to be Zinc coated. Smooth welding beads.  
All positions except vertical down.

### Applications

Lastek 17 can be used to weld Armco iron, that is resistant to molten zinc at 475°C (887F°) due to its low carbon and silicon content.  
Lastek 17 is also useful for welding mild steel that has to be galvanised; the zinc coating will be more uniform than with other filler metals.

### Technical data

Tensile strength Rm: 480 N/mm<sup>2</sup> (69ksi)  
Elongation A5: 15%

### Current

A.C. (70 V min) or D.C., straight polarity.

### Sizes and amperage

mm(inch)	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")	6.0 (1/4")
Amp	80-130	110-160	170-220	230-290

### Directions for use

Lastek 17 can be welded in contact with the workpiece. Use a high welding speed, the electrode inclined at an angle of 60-70°.  
Open circuit voltage 70V minimum on AC.



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# lastek 170

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## Oxy-acetylene welding rod for mild steel

Welding rod with a free flowing molten pool that is very pure and easy to control.  
Produces flat weld beads with no spattering.  
Suitable for welding in all positions.  
X-ray quality.

### Applications

Construction and repair of pipes, central heating piping, joining sheet metal and tubular mild steel.

### Technical data

Tensile strength Rm:  $\geq 430 \text{ N/mm}^2$   
Yield strength Rp:  $\geq 310 \text{ N/mm}^2$   
Elongation A5:  $\geq 35\%$   
Impact strength (ISO-V) Av:  $+ 20^\circ\text{C} \geq 48\text{J}$  ( $68^\circ\text{F} \geq 35\text{ft lb}$ )

### Sizes

mm	2.0	3.0	4.0
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### Directions for use

Use a neutral flame. Heat the basemetal in the welding zone to a dull red color before melting the rod.  
Do not remove the flame too quickly from the molten pool.

# lastek 171



## Root pass in steel pipes

Copper coated welding rod for TIG-welding of mild steel.  
Lastek 171 is recommended for root pass welding in pipes and plates.

## Applications

Recommended for welding following base materials: construction steel St 34 - St 52, pipe steel St 35.8 - St 45.8, boiler plate HI - HIV, 17Mn4, 19Mn5, cast steel GS 38 - GS 45, ship plate A - B - C - D - E, fine grained steel St E255 - StE355 - StE380.

## Technical data

Tensile strength Rm:  $\geq 500$  N/mm<sup>2</sup> (72ksi)  
 $\geq 360$  N/mm<sup>2</sup> at 450°C (52ksi at 840°F)  
Yield strength Rp:  $\geq 380$  N/mm<sup>2</sup> (55ksi)  
 $\geq 210$  N/mm<sup>2</sup> at 450°C (30ksi at 840°F)  
Elongation A5:  $\geq 20\%$   
Impact strength (ISO-V) Av: +20°C: 140J (as welded) up to 259J (stress relieved)  
(+66°F: 103 ft.lb (as welded) up to 191 ft.lb (stress relieved))  
-50°C: 75J (as welded) up to 204J (stress relieved)  
(-58°F: 55 ft.lb (as welded) up to 150 ft.lb (stress relieved))

## Approvals

TÜV

## Sizes

mm	1.6	2.0	2.4	3.0
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## Directions for use

Shielding gas: Argon 99.99 (min 8 liter/min).



# lastek 82



## Universal use

Special steel electrode, suitable for badly prepared parts and for wide open joints.

Very easy to use.

Smooth weld appearance in all positions.

Low open circuit voltage, making arc ignition very easy.

Can be used with all welding machines.

Can be used for tack welding.

The slag is self-releasing.

## Applications

Construction of reservoirs and machines.

For universal use in badly prepared constructions.

Welding of low alloyed cast steel.

## Technical data

Tensile strength Rm: > 520 N/mm<sup>2</sup> (75ksi)

Yield strength Rp: > 460 N/mm<sup>2</sup> (67ksi)

Elongation A5: > 24%

Impact strength (ISO-V) Av: + 20°C (68°F) > 50J (37ft lb)

## Current

A.C. or D.C., straight polarity.

## Sizes und amperage

mm (inch)	2.0 (5/64")	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
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Amp	40-65	60-90	100-120	140-160	180-220
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## Directions for use

For well-prepared joints: weld with short arc or in contact.

For badly prepared joints: limit the size of the weldpool by interrupting the arc.

# lastek 88



## Welding thin steel sheets

Special contact electrode for welding thin steel sheets starting from 0.8mm.  
Gives very smooth and flat weld beads, without undercut.  
Welded parts can be painted or galvanized without prior machining.  
Lastek 88 is also suitable for spot welding of thin plates and plates of different thickness.  
Can be used for pore-free welding of galvanized plates.  
(Because of the very low amperages the zinc layer at the bottom side will be not or hardly damaged)  
All positions except vertical down.  
Self-releasing slag.

## Applications

Carriage work, steel furniture, steel doors, tubular constructions for ventilation and air-ducts, all kind of apparatus and thin sheets, like: gassradiators, household apparatus, aso.

## Technical data

Technical data Rm: > 500 N/mm<sup>2</sup> (72ksi)  
Yield point Rp: ≥ 440 N/mm<sup>2</sup> (64ksi)  
Elongation A5: ≥ 22%  
Notch Charpy V (Av): ≥ 50J at 0°C (37ft lb at 32°F)

## Current

AC or DC, straight polarity.

## Sizes and amperage

mm(inch)	1.5 (1/16")	2.0 (5/64")	2.5 (3/32")
Amp	30-50	50-70	70-95

## Directions for use

Electrode to be held at 30 to 40° to the workpiece and drawn quickly forwards.  
Use the lowest possible amperage for fillet welds, to avoid slag burn-in.



# lastek 10015



## Welding low alloy high strength steels

Lastek 10015 is a low hydrogen electrode for welding quenched and tempered or micro alloyed steels.

The Charpy V impact strength is high, also at sub zero temperatures.

Lastek 10015 is all positional and has an excellent welder appeal thanks to its double coating. This coating is moisture resistant.

## Applications

Welding of T1 steel, HY80, NAXTRA65,70, Superelso, Superelso 700.

For boilers, tanks, dredging equipment, construction,- excavating-, mining equipment.

Welding of high strength rails.

Repair on forklifts.

Heavy machinery.

## Technical data

Tensile strength Rm: > 720 N/mm<sup>2</sup> (104ksi)

Yield point Rp: > 670 N/mm<sup>2</sup> (97ksi)

Elongation A5: > 18%

Impact strength Av:	20°C (68°F)	> 100J (74ft.lb)
	0°C (32°F)	> 90J (66ft.lb)
	-20°C (-4°F)	> 80J (59ft.lb)
	-40°C (-40°F)	> 60J (44ft.lb)
	-60°C (-76°F)	> 40J (29ft.lb)

## Current

DC, rev. pol. (for root pass, use straight polarity)

## Sizes and amperage

mm (inch)	2.5 (3/32)	3.2 (1/8)	4.0 (5/32)	5.0 (3/16)
Amp	60-90	90-130	140-180	180-240

## Directions for use

Clean weld area. Weld with a short arc. Use stringer beads and avoid weaving for the highest mechanical characteristics.

If required, dry the electrodes at 250°-300°C (480-570°F) for 2 hours (use Lastidry).

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# lastek 10015C

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## High tensile strength

TIG rod for joining low-alloyed steel with a high tensile strength.  
Seen the very high yield point, this rod is suitable for joining machine parts where a high resistance against distortion is needed.

## Applications

Suitable for repairing dies and case hardening steel.  
Welding steel with a high tensile strength.

## Technical data

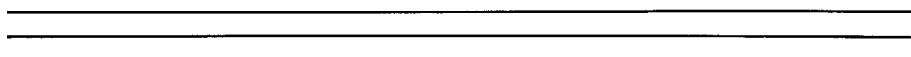
Tensile strength Rm: 780-880 N/mm<sup>2</sup> (113-127ksi)  
Yield point Rp: 690-790 N/mm<sup>2</sup> (100-115ksi)  
Elongation A5: 16-24%  
Impact strength (ISO-V) Av: 90-110 J at 20°C (66-81 ft. lb at 68°F)

## Dimensions

mm	1.2	1.6
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## Directions for use

Protection gas: pure Argon.  
Case hardening steel or die steel: preheating to 200 - 300°C (390-570°F) and post weld-heat treatment depending on the analysis of the parent metal.





# lastek 11016



## High impact strength

Basic electrode for fine grained or Ni-alloyed steels with a high yield strength and impact value.

All positions and excellent weldability.

Easily removable slag.

## Applications

Pressure vessels, bridges, machine constructions, shipbuilding, machine supports, tanks, pipes.

## Technical data

Tensile strength Rm: > 610 N/mm<sup>2</sup> (88ksi)

Yield point Rp: > 550 N/mm<sup>2</sup> (80ksi)

Elongation A5: > 21%

Notch Charpy V:

+ 20°C: > 135J	(68°F > 100ft.lb)
0°C: > 120J	(32°F > 88ft.lb)
-20°C: > 100J	(-4°F > 74 ft.lb)
-40°C: > 60J	(-40°F > 44ft.lb)
-60°C: > 28J	(-76°F > 21ft.lb)

## Current

DC (rev. polarity)

## Sizes and amperage

mm("inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	60-90	90-135	140-180	190-240

## Directions for use

Maintain a short arc, the electrode almost in vertical position to the workpiece.

Avoid porosities by striking the arc on a spare piece of metal. Renew this procedure for each weld. At the end of the bead come back with the arc on the deposit to avoid crater-formation.

Always use very dry electrodes to obtain the highest possible mechanical characteristics. When necessary preheat and dry the electrodes in the Lastidry for 2 hours at 300°C (570°F).

# lastek 1216



## For creep resistant steel 1Cr-0.5Mo

Chromium-molybdenum alloyed electrode for welding creep resistant steels.  
High temperature strength and oxidation resistance (to be used up to 550°C (1020°F)).  
All positions.

### Applications

Creep resistant steels in steamheaters, pipes, nozzles, drums, castings in power stations, coal gasification plants and so on.  
Welding of 13CrMo44, GS-17CrMo55, 15CD4.05, BS1398grB, BS 1504-621, ASTM A 387gr 11 and 12, A182gr12 and so on.

### Technical Data

Tensile strength Rm: 580-670 N/mm<sup>2</sup> (tempered) (84-97ksi)  
Yield strength Rp: 500-570 N/mm<sup>2</sup> (72-83ksi)  
Elongation A5: >22%  
Notch Charpy V: 80-110J (59-81 ft lb)

### Current

D.C. (reverse pol.)

### Sizes and amperage

mm(inch)	2.5 (3/32")	3.2(1/8")	4.0(5/32")
Amp	75-95	100-130	140-180

### Directions for use

Use only dry electrodes. When necessary dry and preheat 2 hours at 300°C (570°F) before welding. Use Lasti-dry.  
Weld with short arc, electrode vertical to the workpiece.  
Heat treatment:  
Preheat 150-250°C (300-480°F)  
Postweld heat treatment: 720°C (1328°F)

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# lastek 1222

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## Creepresistant steels 2Cr - 1Mo

Lastek 1222 is a Cr-Mo alloyed electrode for joining heat resistant steels with a chromium content of approx. 2.5% and a molybdenum content of approx. 1.2%. The deposit is heat resistant up to 600°C (1110°F).

Good welding properties, also in position.

### Applications

Steamproduction: boilers, overheating tubes, flanges, collectors.

Petrochemical industry.

Welding 10CrMo910, 10CrSiMoV7, GS12CrMo910 aso.

### Technical data

Tensile strength Rm: 580-640 N/mm<sup>2</sup> (84-93ksi)

Yield point Rp: > 450 N/mm<sup>2</sup> (65ksi)

Elongation A5: > 20%

Notch Charpy V: 100-130J (73-96 ft.lb)

### Current

DC, reverse polarity.

### Sizes and amperage

mm(inch)	3.2 (1/8")	4.0 (5/32")
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Amp	100-140	140-190
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### Directions for use

Maintain a short arc length, electrode almost vertical to the workpiece.

Use dry electrodes, dry them at least 2 hours at 300°C(570°F) (Lastisec).

Preheating and heattreatment: follow the instructions of the base metal producer, or ask Lastek for advice.

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# lastek 1236

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## For repair of castings in SAE 4130 steel

Lastek 1236 has been developed to repair and build up of forgings and castings made from medium carbon low alloy steels. Joining of SAE 4130 steel when heat treatment or flame hardening is required. The deposit contains 0.25-0.30 C, 1.2-1.5 Cr and 0.3-0.5 Mo.

### Applications

Repair casting defects in foundries. Can also be used for hardfacings that need to be flame hardened and nitrided.

### Current

DC (reverse polarity)

### Sizes

2.5 (3/32) 3.2 (1/8) 4.0 (5/32) 5.0 (3/16)

### Directions for use

Use dry electrodes. When necessary dry and preheat 2 hours at 300°C (570°F) before welding. Use Lasti-dry. Weld with short arc, electrode vertical to the workpiece.

As a general rule, preheat SAE 4130 and similar to 260°C (500°F).

On other base metals preheat accordingly. Peening is advisable. After welding cool to 70°C (150°F). Temper accordingly to base metal or use 260°C (500°F), at one hour per 25mm (1 inch) thickness. Cool in still air.

Complete heat treatment: use SAE 4130 procedure after welding in the annealed condition. (annealing 790-845°C (1450-1550°F) + furnace cooling.)

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# lastek 1255C

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## Rebuilding die casting moulds

TIG rod for welding Cr/Mo and Cr/Mo/V steel with 5% Cr.

The deposit has a high fatigue resistance, is resistant against thermal shocks and creep resistant.

Working temperatures up to 600°C (1112°F).

## Applications

Repairing die casting moulds and injection moulds.

Welding pipelines and boilers in the petrochemical industry (12CrMo 19 5 , wno° 1.7362, 1.7363, ASTM A 335 gr P5)

## Technical data

Tensile strength Rm: 550-720 N/mm<sup>2</sup> (79-104ksi)

Yield point Rp: ≥400 N/mm<sup>2</sup> (58ksi)

Elongation A5: ≥18%

Notch Charpy V: > 60J (20°C) (> 44ft lb (68°F))

Hardness: 32 Rc

## Dimensions

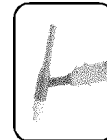
mm 2.0

## Directions for use

Preheating depends on the type of base metal (as a guideline, use 300-350°C (572-662°F), for steel with 5% Cr)

Heat treatment after welding (steel with 5% Cr): 750°C (1382°F) - 1h + cooling in furnace.

# lastek 151



## Mild and creep resistant steel

Welding rod for gas tungsten arc welding (TIG) of mild steels, low-alloy steel and creep resistant steels.

Heat resistant up to 550°C.

Porous-free and excellent X-ray quality.

Can be used for joining case hardening and hardenable steels as AISI 4130-  
DIN 25CrMo4 - 42CrMo4 with an appropriate preheat.

Can be nitrided.

## Applications

Piping, tanks and apparatus construction.

X-ray welding.

Suitable for welding the next materials:

Boiler plate HIV, 13CrMo44, 15CrMo3, 13CrMoV42, cast steel GS17CrMo55,  
GS22CrMo54 - ASTM A335grP12 - ASTM A182grF12 - ASTM A387-gr11. .

For joining of 13CrMo44 with 15Mo3.

Rebuilding worn out dies used in plastic industry.

## Technical data

Tensile strength Rm: 590 N/mm<sup>2</sup>

Yield point Rp: 450 N/mm<sup>2</sup>

Elongation A5: >21%

Notch Charpy V: +20°C >90J

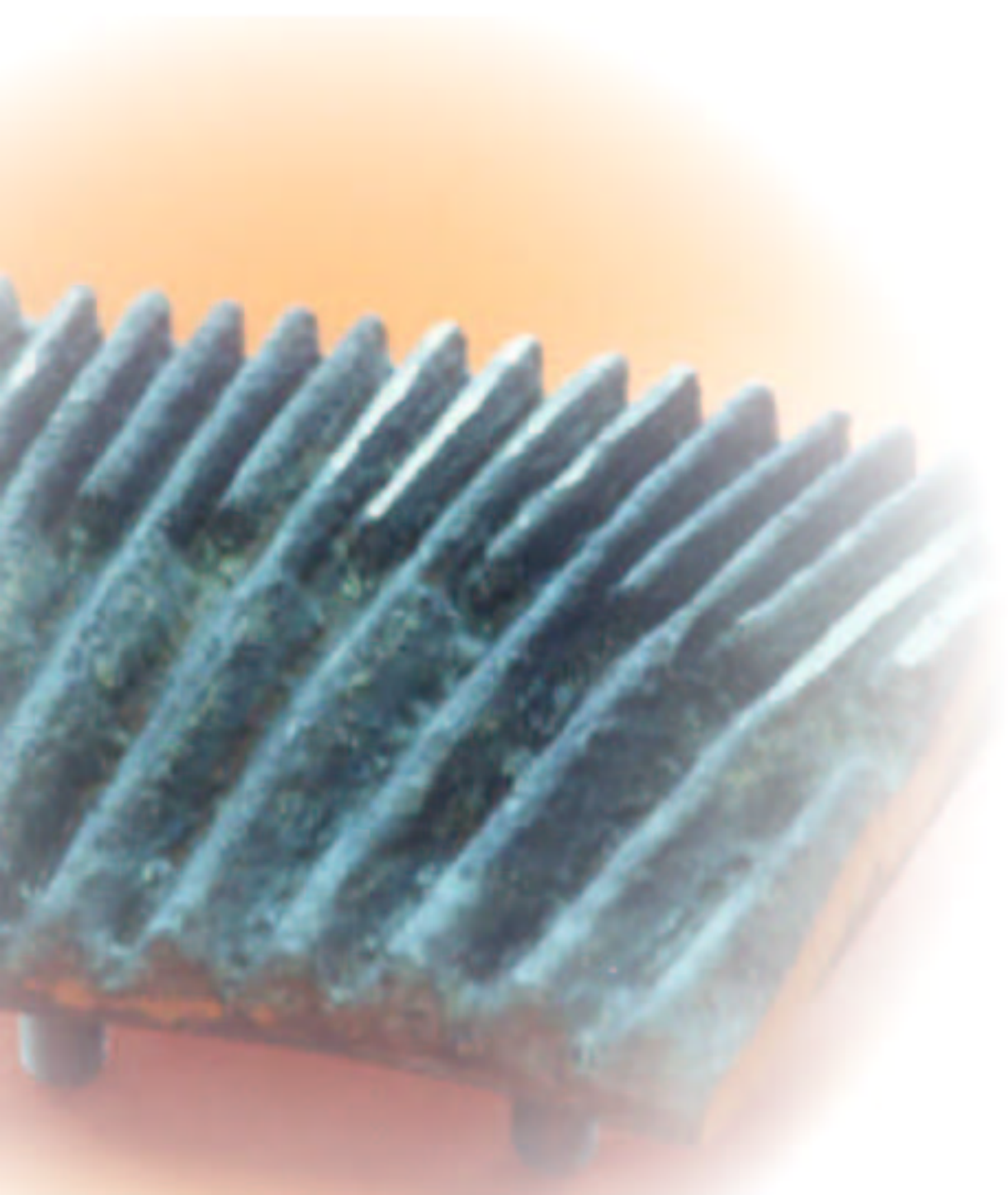
## Sizes

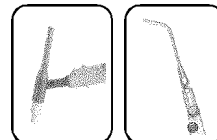
mm(inch")	1.0 (3/64")	1.6 (1/16")	2.0 (5/64")	3.0 (1/8")
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## Directions for use

Shielding gas: Argon.

Preheat base metal at 200°C to 300°C dependent on base metal composition and thickness. Postheat treatment can be required for some parent metals (650°C).





## Very hard wearfacing layers with oxy/ac torch

Coated composite rod for applying wear resistant layers with extreme resistance against abrasion.

Because of the particular composition of the coating, the deposit is also corrosion resistant.

Fast deposition thanks to the self-fluxing character of the coating.

Lastek 2009 can be applied in several layers and has a smooth surface.

It is not machinable.

Appropriate for hardfacing steel, cast steel, stainless steel and cast iron.

## Applications

Mixing blades and scrapers, transport- and mixing augers, for the brick and ceramic industry, and for the processing of moulding sand in foundries.

Scrapers, mixers and transportaugers in installations for water purification.

Mixing-, transport- and decanting screws of scraperblades in the food industry and cement industry.

Blowers, pump rotors transporting abrasive liquids or mud, dredging teeth, drilling tools, aso...

## Technical data

Hardness of the matrix (Lastek 2009 gr6):  $\pm 45$  HRc

Hardness of the hard components (Lastek 2009 gr6):  $> 3000$  HV

## Sizes

mm(inch)                      5.0 (3/16")

## Directions for use

Lastek 2009 is intended to be used with the oxy-acetylene torch.

It can also be applied with a TIG-torch.

Use a soft, slightly reducing oxy-acetylene flame. Burnertip one size bigger than usual for steel with the same thickness.

Cleaning the surface: remove rust, dirt, grease and other impurities.

Avoid overheating and stirring the molten pool.

For hardfacing large areas and also for surfacing cast iron, it is recommended to protect the surface (that is preheated to blue) with a thin layer of P907 (Lasti-spray) before starting the hardfacing process with Lastek 2009.



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# lastek 2027

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## High efficiency hardfacing electrode

Electrode with an high efficiency of 170% for hard facings resistant to impact load and abrasive wear.

Several layers without cracking.

Because off the efficiency and the high travel speed, Lastek 2027 works almost two times as fast as the ordinary electrodes (3 to 4 kg/hour for diameter 5.0mm).

Can be used on AC and on DC.

## Applications

Excavators, mine building machines, crushers.

Dredging buckets, cutter teeth, dragline buckets, ore processing installations.

## Technical data

Hardness: 57-62 Rc

## Current

AC and DC, reverse polarity.

## Sizes and amperage

mm(inch)	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	120-180	170-220	230-290

## Directions for use

Clean the welding surface, use eventually Lastek 1900 to gouge away cracked or fatigued metal.

Weld with a short arc, electrode almost perpendicular to the workpiece. To increase travel speed, incline the electrode slightly. To cover large areas, use a weaving motion.

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# lastek 210A

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## Tube rod with tungsten carbides

Hardfacing alloy with very high content of selected carbide particles that guarantees extreme wear resistant layers.

Can be used at temperatures up to approx. 500°C (930°F).

Do not use Lastek 210A for metal to metal friction or in applications where a low friction coefficient is required.

The deposit is not machinable.

## Applications

Brick works, concrete and cement works, stone quarries, gravel pits and so on.

Mixing blades, augers.

Agro-industry: plough shares, tillage tools.

## Technical data

Hardness of carbides: >2400 Vickers (9.4Mohs)

## Sizes

mm(inch)    3.2 (1/8")                      4.0 (5/32")

Grain sizes: 20/30mesh (coarse) for diameter 3.2 mm, or 80/200 mesh (fine) for diameter 4.0 mm.

## Directions for use

Use a nozzle at least one size larger than the size normally used for fusion welding.

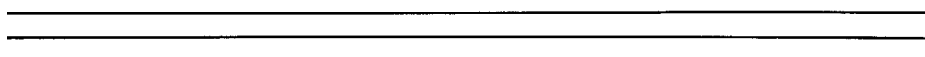
Use a flame with an excess of acetylene.

Do not melt the base metal, it should only 'sweat'.

Do not stir the molten pool, otherwise the hard particles will sink and the surface will become less wear resistant.

The thickness of the layer should not exceed 2mm to 3mm (0.08"-0.12").

Cool down slowly.



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# lastek 210E

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## Extremely wear- and abrasion- resistant deposit.

The deposit of Lastek 210E is a slag free, hard alloy matrix with tungsten carbide particles throughout.

High resistance to abrasion by minerals, ore, cement, etc.

The deposit is not machinable or easily ground.

## Applications

Brick kilns, concrete and cement works, stone quarries, gravel pits.

Typical parts include mixing blades, augers, scraper blades, walls of dredging buckets, hammer-mills, pulverizers, plough shares etc...

## Technical data

Hardness: 9 mohs (approaching diamond hardness)

## Current

A.C. or D.C. reverse polarity.

## Sizes and amperages

mm(inch)	3.2 (1/8")	4.0 (5/32")
Amp	85	105

## Directions for use

Clean the workpieces. Keep a short arc. Use an amperage as low as possible. For thick layers to be built up : apply a buffer layer with Lastek 27, and a final layer with Lastek 210E.

For steel types subject to cracking: apply a buffer layer of Lastek 8000 or Lastek 807.

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# lastek 211

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## Very thin tungsten carbide deposits

Electrode with a sintered carbide core and an extruded coating that guarantees a very thin and very large deposit with a superior abrasion resistance.

Machining is impossible.

One electrode (4mm-5/32") covers an area of 10.000mm<sup>2</sup>(16 square inches) and welds without interruption for about 6 minutes.

## Applications

Repairing tools in mining and cement industry, augers, mixer blades; hardfacing rotary hoes and tillage tools.

## Technical data

Hardness: 64-70 Rc

## Current

DC reverse polarity or AC

## Sizes and amperage

mm(inch)	3.0 (1/8)	4.0 (5/32)
Amp	100	120

## Directions for use

Keep an arc length of about 3 to 5mm (0.12-0.2 inch), with the electrode almost perpendicular to the workpiece. For maximum wear resistance apply a base layer of Lastek 27.

If grinding is necessary, use a diamond wheel.

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# lastek 22

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## Heavy impact

Special electrode for surfacing work pieces in manganese steel.  
Resistant against heavy shocks.  
Hardness as welded:  $\pm 250$  Brinell.  
Will be hardened by impact to about 400 to 500 Brinell (42 to 50 Rc).

## Applications

Dredger teeth, parts of caterpillar - tracks.  
Crusher hammers, jaws.  
Rail points and crossings.  
All parts of manganese steel.

## Technical data

Hardness: 200-250 HB as welded.  
400-500 HB after work hardening

## Current

AC or DC (rev. polarity).

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	65-85	95-140	140-185

## Directions for use

During the surfacing of manganese steel, the temperature should never exceed 400°C (750°F). If possible, put the work piece in running water with the welded surface above the water, to keep the temperature as low as possible.  
Manganese steel is characterised by its austenitic structure, it is non-magnetic (you can check it at the side wall of the work piece, where no work hardening effect occurred).

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# lastek 2271

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## Heavy impact

Special electrode for surfacing workpieces in manganese steel.  
Resistant against heavy shocks.  
Hardness as welded:  $\pm 250$  Brinell.  
Will be hardened by impact to about 400 to 500 Brinell (42 to 50 Rc).  
Yield: 140%

## Applications

Dredger teeth, parts of caterpillar - tracks.  
Hammers and mantles of hammer - mills and crushers.  
Rail points and crossings.  
Tools for exploiting and treating stone and rock.  
All kind of parts of Mn-steel.

## Technical data

Hardness: 200-250 HB as welded.  
400-500 HB after work hardening

## Current

AC or DC (+ pole).

## Sizes and amperage

mm(inch)	3.2 (1/8")	4.0 (5/32")
Amp	95-140	140-185

## Directions for use

During the surfacing of manganese steel, the temperature should never exceed 400°C (750°F). If possible, put the workpiece in water with the welded surface above the water, to keep the temperature as low as possible.  
Manganese steel is characterised by its austenitic structure, it is non-magnetic (you can check it at the side wall of the workpiece, there where you had no cold deformation).

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# lastek 230

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## Hot working dies

Coated electrode developed for the repair and construction of hot working tools and dies.

Withstands alternate heating and cooling without checking.

The tungsten containing deposit makes this hardfacing electrode suitable for rebuilding hot forging dies.

The deposit is air-hardening; it is very tough, porous free and wear resisting.

Excellent welding qualities, soft and stable arc.

Machinable when annealed.

## Applications

Hot working punches, trimmers, forging and press dies; blades of metal shears.

Dies for the fabrication of bolts and screw nuts.

Extrusion tools and casting dies.

Construction of new tools of low-alloyed steel, surfaced with Lastek 230.

## Technical data

Hardness: 48-53 Rc

## Current

AC or DC (reverse polarity)

## Sizes and amperage

mm(inch) 3.2 (1/8")

Amp 75-125

## Directions for use

Clean the surfaces, remove the old metal, round off sharp edges.

For workpieces susceptible to cracking or for important facings, it is recommended to preheat the workpiece up to its tempering temperature (or at least above its Ms temperature).

Thermal treatment: Anneal: 810-870°C (1490-1600°F) ; Air-hardening: 980-1040°C (1795-1900°F) ; Tempering: 550-650°C (1020-1200°F)

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# lastek 2300C

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## Hot working dies and tools

Lastek 2300C is specially designed for hardfacing hot working dies. The deposited weld metal has very good toughness and excellent hardness at higher temperatures (up to 600°C). The weld deposit is air hardening.

## Applications

Repair and fabrication of hot working tools like die casting moulds and extrusion dies used in the aluminium, magnesium and zinc industries, tools used in lead and tin industry.

Hot or cold working shears and punches, plastic injection molds, etc...

## Technical data

Hardness: 50 - 56 Rc

## Sizes

mm (inch)    1.2 (3/64")    1.6 (1/16")    2.4(3/32")    3.2 (1/8")

## Directions for use

Clean the weld area thoroughly. Remove cracks and sharp radii by grinding.

Preheat and post-heat will be dictated by the base metal tempering temperature and dimensions.



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# lastek 2301CM

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## Rebuilding hot working tools - cored rod

Lastek 2301CM is a 5% chromium + molybdenum and tungsten, for repairing hot working tools metal powder cored rod, forging dies and extrusion tools for light metals.

Machining of the deposit is possible with carbide tipped tools.

Excellent hot hardness and resistant to tempering.

Crack free deposits.

The weldor has complete control over the deposit.

## Applications

Hot working dies, mandrels, punches, when heat-cracking is not permitted. Can be used for extrusion tools, pipe forming rolls, hot punches for use at high temperatures.

Repairing cutting edges on stamping dies.

## Technical data

Hardness as deposited: 41-45 Rc

Hardness after annealing (800°C - 1470°F) (3h) cool in furnace: 20 - 25 Rc

## Sizes

mm(inch) 1.2mm (0.045") - 1.6mm (1/16")

## Directions for use

Use pure argon gas for TIG welding.

Prepare surfaces by removing all heatchecks and scale.

Preheat hot work tool steels at 150 - 400°C (300-750°F) (or up to tempering temperature). Small defects can be repaired with this rod by slowly heating the weld area with a soft oxy acetylene flame.

On non or low alloyed steels, apply minimum 3 layers.

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# lastek 2302C

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## For hot working tools - medium hardness

Lastek 2302 is a 5% chromium - 3,6% Molybdenum alloyed rod for repairing hot working tools made of low alloyed steel.

Machining of the deposit is possible with carbide tools.

Excellent hot hardness and resistant to tempering.

## Applications

Hot working dies, mandrels, punches, when heat-cracking is not permitted. Can be used for extrusion tools, pipe forming rolls, hot punches for use at high temperatures.

Base layer prior to overlaying with harder rods.

## Technical data

Hardness as deposited on: 41-45 Rc

Hardness as tempered (550°C-1020°F) (2h) air cool: 45-50 Rc

Hardness after annealing (800°C - 1470°F) (3h) cool in furnace: 20 - 25 Rc

## Sizes

mm(inch) 2.4 (3/32")

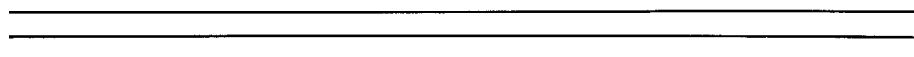
## Directions for use

Prepare surfaces by removing all heatchecks and scale.

Preheat hot work tool steels at 150 - 400°C (300-750°F) (or up to tempering temperature).

Temper immediately after welding. Slow cooling.

On non or low alloyed steels, apply minimum 3 layers.



# lastek 231



## Cutting of steel

Special electrode for repair and construction of cutting tools.

The deposited metal has exceptional cutting characteristics. It need not to be hardened and is ready for use. Substantial savings are obtained by repair of expensive dies and cutting tools. New cutting tools can be made by surfacing 700 N/mm<sup>2</sup> steel with Lastek 231.

Very good welding qualities, stable and consistant arc. Excellently suited for surfacing narrow pieces.

## Applications

Twist drills, reamers, milling cutters, dies, moulds , knives for metal, leather, wood, synthetic material, paper, etc...

Pneumatic tools.

Construction of new dies and chisels.

Repair of machining defects of new tools.

Modification of existing dies.

Surfacing of machine parts such as cam shafts and toothed wheels.

## Technical data

Hardness: 61-66 Rc

## Current

AC or DC (+ pole)

## Size sand amperage

mm("inch)	2.5(3/32")	3.2(1/8")	4.0(5/32")	5.0(3/16)
Amp	75	105	140	180

## Directions for use

Clean the parts by grinding or filing. Weld with short arc at the lowest possible amperage, electrode to be held at 90° to workpiece. Do not weld on red-hot welds. Weld 2 to 3 layers on mild steel.

Preheating may be necessary for workpieces with a complicated form sensitive to cracking. Preheat until a temperature at least equal to the tempering temperature of the workpiece which can vary from 200-650°C (390-1200°F).

For thick layers the application of a base layer with Lastek 8000, 85, 90, 809 or 27 is recommended.

Heat treatment:

annealing: 780-820°C (1430-1500°F)

hardening: 1270-1290°C (2320-2350°F),

followed by air cooling or cooling in an oil bath

tempering: 550-570°C (1020-1060°F)

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# lastek 231C

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## Sharp cutting edges

Lastek 231C is specifically formulated to give tough weld deposits with very good cutting properties. Therefore Lastek 231C lends itself very well to fabrication or repair of cutting tools and hot and cold working dies.

The air hardening weld deposit has a hardness between 60 and 65 Rc even at temperatures up to 550°C. (1020°F)

## Applications

Repair of defects in cold working cutting tools, dies, shears, wood treatment tools, metal saws, etc....

## Technical data

Hardness: Rc 60 - 65

## Dimensions

mm      1.6      2.4

## Directions for use

Clean the weld area thoroughly. Remove cracks and sharp radii by grinding.

Preheat and post-heat will be dictated by the base metal tempering temperature and dimensions.

Cool slowly after welding.

Heat treatment:

Annealing: between 770 and 860°C (1400-1600°F) followed by slow cooling.

Hardening: ± 1200°C (2200°F) followed by air cooling or oil quenching.

Tempering: 530 - 560°C (980-1040°F) this treatment will give the highest hardness.

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# lastek 233C

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## TIG rod for hard facing of tools and dies

Lastek 233C is especially developed for repair of cold working tools and dies. Air hardening weld deposit with very high wear resistance, toughness and compressive strength.

### Applications

Tools for cutting and forming. Bending and trimmer dies, cold working shears. Tools and dies for plastics. Flanging rollers for the can industry. Measuring devices.

### Technical data

Hardness: 57-62 Rc

### Sizes

mm 1.6

### Directions for use

Clean the weld area thoroughly.

Remove cracks and sharp radii by grinding.

Preheat and post-heat will be dictated by the base metal tempering temperature and dimensions.

Cool slowly after welding.

# lastek 234



## Cold working dies

Surfacing and repair of cold working tools, machine parts and dies.  
Due to the special carbon-vanadium composition, this alloy can be flame hardened.  
Hardness as deposited: 58-60 Rc; The hardness can be raised or lowered by heat treatment.  
High shock and wear resistance.  
Good machinability after annealing.

## Applications

Construction, repair or modification of dies, percussion tools, plungers, cutting knives.  
Tools for deep drawing and bending.  
Surfacing of machine parts subjected to wear.

## Technical data

Hardness as deposited: 58-60 Rc  
Hardness after hardening: up to 65 Rc (water cooling)

## Current

A.C. or D.C. (rev. polarity)

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	60-90	85-130	140-220

## Directions for use

Clean the workpieces.  
Complicated or hardened workpieces should be preheated up to the tempering temperature.  
Weld short beads, avoid heat-accumulation.  
On difficult to preheat dies apply a first layer with a ductile electrode (Lastek 43 on cast iron, Lastek 9066 on die steel).  
Thermal treatment:  
- anneal: 770-790°C (1420-1460°F)  
- hardening: 780-820°C (water cooling) (1430-1500°F)  
- tempering: 180-230°C (350-450°F)

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# lastek 235C

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## TIG welding rod for hardfacing of blanking or punching dies

Lastek 235C has a high toughness and compressive strength and lends itself for repair and fabrication of fine edged configurations.

### Applications

Primarily used for repairing blanking and stamping dies, for cutting dies for sheet metals, thread-cutting tools, drills, broaches, plastic moulds, shear blades and other tools.

### Technical data

Hardness: 50 Rc as welded (without preheat - cooled in air)

### Sizes

mm ("inch)    1.2 (.045)    1.6 (1/16)

### Directions for use

Clean weld area thoroughly and grind or file rough edges smooth.

Preheat until the tempering temperature of the base metal is reached.

Preheat and post-heat will be dictated by the base metal tempering temperature and dimensions.

Hardening: 850°C (oil/air)

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# lastek 236C

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## Plastic moulds

Lastek 236C is a hardfacing rod with a very good wear and shock resistance. This alloy lends itself perfectly to repair small defects. Multiple welding beads are possible without fissuring. The deposited weld metal can be mirror finished.

## Applications

Repair and fabrication of plastic moulds, cold working cutting tools and dies, etc....

## Technical data

Hardness: 50 - 60 Rc

## Sizes

mm(inch)     1.6 (1/16")     2.0 (5/64")

## Directions for use

Clean the weld area thoroughly. Remove cracks and sharp radii by grinding.  
Preheat and post-heat will be dictated by the base metal tempering temperature and dimensions.

Cool slowly after welding.



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# lastek 237

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## Airhardening hardfacings on tool steel

Very good shock and wear resistance.

Hardfacing of cutting tools.

Weldable in all positions (except vertical down).

Easily removable slag. Appropriate for welding in copper moulds.

## Applications

Cutting tools and dies for working temperatures up to 500°C (932°F).

Hotshear blades for cutting, extrusion tools and punches.

## Technical data

Hardness: 57-60 Rc

## Current

A.C. or D.C., reverse polarity.

## Sizes and amperage

mm(inch)	3.2 (1/8")
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Amp	100-120
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## Directions for use

Use a short arc, keeping the electrode almost at an angle of 90° to the work-piece.

Use a low amperage to limit dilution with the base metal.

The hardness of the deposit depends on the preheating temperature. The maximum hardness is reached on cold workpieces.

When surfacing steel with a hardness lower than 40Rc, it is necessary to weld 3 layers in order to obtain the maximum hardness.

Apply a base weld for badly worn out parts. (The first layer is chosen in function of the base material and the possibility of applying a preheat: e.g. use Lastek 85, Lastek 90, Lastek 10015 or Lastek 25.)

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# lastek 24

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## Earthmoving equipment

Highly chromium - iron alloyed electrode for applications subject to severe abrasion as by sand, cement, mud and others..

Good bond on steel, cast steel, manganese steel.

Smooth deposit with very low friction coefficient.

Long beads.

## Applications

Dredger teeth, grab jaws, stirring tools, mixers, wearplates, dredge pump parts, centrifugal pumps, augers, tillage tools.

## Technical data

Hardness: 57-62 Rc

## Current

AC or DC (rev. pol.)

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	60-90	120-140	140-170	150-200

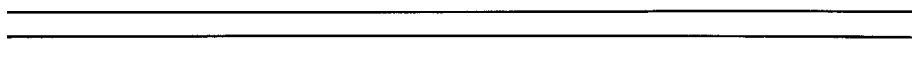
## Directions for use

Electrode position: almost 90° to workpiece.

Weld with a short arc and at lowest possible amperage to avoid dilution with the base material.

To obtain a crack-free coating: pre-heat to 500°C (930°F).

For thick layers: Use L27 as base layer.



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# lastek 2400

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## Abrasion and impact

Hardfacing electrode with first layer hardness up to 68 Rc on mild steel, depending on the parent metal. The wearfacing shows little or no transverse cracking. Good shock-resistance. Smooth arc. Easy to strike. High Hardness at elevated temperatures (up to 600°C(1100°F)) - (38-40Rc)

## Applications

Recommended for severe wear accompanied by moderate to high impact, bone crushers, dredging teeth, feed screws in cement factories (fueller pumps) cement mixers, pulping knives etc.

## Technical data

Hardness: 60-68Rc

Efficiency: 195%

## Current

Ac or Dc reverse polarity

## Sizes and amperage

mm(inch)	2.5(3/32")	3.2(1/8")	4.0(5/32)
Amp	60-80	80-130	130-170

## Directions for use

Remove fatigued or fissured metal with Lastek 1900 or Lastek 1000.

For surfacing more than two layers use Lastek 27 or Lastek 2027 as base layer and Lastek 2400 to finish.

The electrode must be kept vertical to the workpiece in order to obtain the maximum hardness.

Keep amperage as low as possible to avoid dilution with the base metal.

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# lastek 25

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## Machinable surfacing

Good resistance to impact and wear.  
Recommended for hardfacing of wear parts that have to be machined afterwards.  
All positional.  
Useful as a base layer for extra hard wearfacing layers.  
Can be welded on A.C. despite the lime type coating.

## Applications

Toothed wheels - rollers and sprocket wheels of bulldozers - roller bridges - winch drums  
- rails - cams - clutches.  
Base layer for hardfacings.

## Technical data

Hardness: 270-340 HB

## Current

A.C. or D.C., reverse polarity

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	65-85	100-130	120-180	170-240

## Directions for use

Weld with a short arc and low current to limit the dilution with the base material.  
To obtain the maximum hardness, at least three layers are necessary.

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# lastek 250C

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## TIG welding rod for machinable and compression resistant hardfacings.

TIG welding rod for wearfacing steel, especially small and medium-sized parts, that are subject to wear by compressing and rolling from metal to metal. The deposit is machinable and resistant against impact loading. It hardens by work hardening.

### Applications

Dies, plungers, cutting and bending tools.  
Toothed wheels, sprocked wheels, gear wheels, steering wheels and cams.

### Technical data

Hardness: 250 HB as deposited  
(without preheating and with normal aircooling)  
  
up to 350 HB after work hardening

### Sizes

mm	1.6	2.4
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### Directions for use

Clean carefully the weld area. Grind away cracks and fatigued material.  
Preheat alloyed steel in function of the composition, thickness and dimensions of the base metal.

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# lastek 2550

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## Heat resistant hardfacing

Lastek 2550 is an iron base electrode alloyed with cobalt, chromium and molybdenum for crack free hardfacings that resist to high temperatures (up to 650°C (1200°F)).

Hardness in first layer is 42 to 48 Rc.

It can be used for metal to metal friction and oxidation at higher temperatures.

Creep resistant.

## Application

Rebuilding dies and hotworking tools.

Extrusion and forming dies, high temperature pump parts, valves and valve seats, wear resistant layers for metal to metal friction at elevated temperatures.

## Technical data

Hardness: 42 - 48 Rc

Current: DC, reverse polarity

## Sizes and amperage

Sizes	2.5	3.2	4.0
Amp.	80-120	100-160	160-220

## Directions for use

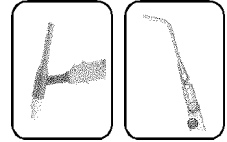
Clean the welding surface, use eventually Lastek 1900 to gouge away cracked or fatigued metal or old hardfacings.

Weld with a short arc, electrode almost perpendicular to the workpiece.

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# lastek 251A

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## Abrasion and corrosion

Hardfacing rod for abrasion and corrosion resisting surfacings. (TIG- and oxy acetylene welding)

Good resistance to high temperatures and to metal to metal friction.

Elevated temperature strength and hardness (up to 1000°C) are outstanding.

Lastek 251A is corrosion resistant against food, nitric acid (up to 70%), acetic acid, sulphuric acid (up to 60°C (140°F) - 10% conc.)

## Applications

Knives, valve-seats, rollers, extrusion screws for the rubber and plastic industries, bearings, all components subject to metal to metal friction.

## Technical data

Hardness: 52-62 Rc

Hot hardness: 30-40 Rc at 650°C (1200°F)

## Sizes

mm(inch)    3.2 (1/8")    4.0 (5/32")    5.0 (3/16")

## Directions for use

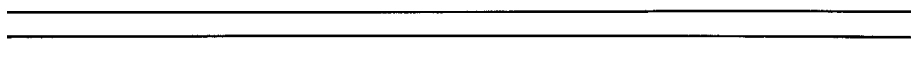
Remove all rust and dirt. Sharp edges must be rounded.

Heat the base metal until it 'sweats' (no melting).

Use a carburising flame, length of the feather  $\pm$  2.5 - 3 times the length of the inner cone.

The surfacing can be re-melted for optimum homogeneity.

For the TIG process, apply at least 2 layers in order to obtain the desired characteristics (to avoid too much dilution with the base metal). On difficult to weld metals a base layer with Lastek 982 is recommended.



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# lastek 251E

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## Wear at elevated temperatures

Hardfacing electrode for abrasion and corrosion resisting surfacings.

Good resistance to high temperatures and to metal to metal friction.

High hardness at elevated temperatures (up to 1000°C (1830°F)). Returns to its original hardness upon cooling.

Resistant to petroleum, plastic, rubber. Also resistant to food, nitric acid (up to 70% at room temp.), acetic acid, sulphuric acid (up to 60°C (140°F) - 10% conc.).

## Applications

Knives, valve seats, rollers, extrusion screws for the rubber and plastic industry, bearings, all components subject to metal to metal friction.

## Technical data

Hardness: 52-60 Rc

Hot hardness: 30-40 Rc at 650°C (1200°F)

## Current

A.C. or D.C., reverse polarity.

## Sizes and amperage

mm(inch)	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	80-95	100-130	130-170

## Directions for use

Remove all rust and dirt.

The arc should be short to avoid too much dilution with the base metal.

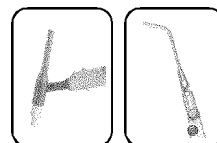
On crack sensitive steels, apply a buttering layer with Lastek 9066.



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# lastek 256A

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## Valves and valve seats

Welding rod for hardfacing where maximum resistance to wear and corrosion at red heat (up to 900-1000°C (1650-1830°F)) is required. (For TIG- and oxy acetylene welding.)

Excellent resistance to impact and thermal shocks.

Deposit machinable only with hard metal tools.

Good resistance to acetic and nitric acid, organical chemical products such as: petroleum, plastic, rubber and resins, even liquid metals such as aluminium and zinc.

Also suitable for the food and pharmaceutical industry.

## Applications

Warm cutting tools, metal shear blades, stone breakers, hammers, valves and valve seats of combustion motors, glass cutting tools, shafts and pump bearings.

## Technical data

Hardness: 38-46 Rc

Hot hardness: approx. 31 Rc at 600°C (1110°F)

## Sizes

mm (inch)	2.4 (3/32")	3.2 (1/8")	4.0 (5/32")
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## Directions for use

Remove all rust and dirt. Sharp edges should be rounded.

Heat the base metal until it 'sweats' (no melting).

Use a carburising flame, length of the feather  $\pm$  2.5 - 3 times the length of the inner cone.

The surfacing can be lightly re-melted for optimum homogeneity.

For the TIG process, apply at least 2 layers in order to obtain the desired characteristics. (To avoid too much dilution with the base metal.)

On difficult to weld metals a base layer with Lastek 982 is recommended.

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# lastek 256E

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## Corrosion and wear at elevated temperatures

Electrode for hardfacings where maximum resistance to corrosion and wear at red heat (up to 1000°C (1830°F)) is required.

Excellent resistance to shocks.

Deposit machinable with hard metal tools.

Good resistance to acetic and nitric acid, and organic chemical products such as: petroleum, plastic, rubber and resins, even molten metals as aluminium and zinc.

Also used in the food and pharmaceutical industry.

## Technical data

Hardness: 38-46 Rc

Hot hardness: approx. 31 Rc at 600°C (1110°F)

## Current

A.C. or D.C., reverse polarity.

## Sizes and amperages

mm(inch)	2.4 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	45-55	80-95	100-130

## Directions for use

Remove all rust and dirt. Sharp edges must be rounded for optimum adhesion.

The arc should be short to avoid too much dilution with the base metal.

On crack sensitive base metals, apply a base layer with Lastek 9066.

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# lastek 26

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## High hot- hardness

Weld deposit with very high hardness.

Exceptional resistance to abrasion by hard minerals. Very good shock resistance although very hard.

The hardness remains high up to 600°C (1112°F).

Crack and porosity-free deposit.

All positions.

Self-releasing slag.

## Applications

Universal use as wear resistant hardfacings.

Dredging buckets, grab jaws, pneumatic drills, mixing augers and blades.

Cold and hot working dies and tools, cutting shears, rolls, forging and die cast dies, plough shears.

## Technical Data

Hardness after welding: 57-62 Rc

Hot hardness at 600°C (1112°F): 42 Rc

Hardness after heat treatment (1 hour at 600°C (1112°F), air cooling): 61-65 Rc

## Current

A.C. or D.C. (straight pol.)

## Sizes and amperage

mm("inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	60	110	150	175

## Directions for use

Use a short arc and as low as possible amperage to avoid dilution with the base metal.

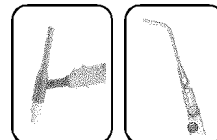
Electrode position: almost 90° to workpiece.

For the surfacing of steel with a hardness lower than 40 Rc, minimum three layers are necessary to obtain the maximum hardness.

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# lastek 261A

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## Thermal and mechanical shocks

Special welding alloy on Cobalt base for hardfacings with an excellent corrosion- and wear resistance, resistant against oxidising and reducing atmospheres up to 1150°C (2100°F).

The deposit isn't crack sensitive and resists shocks and temperature fluctuations.

Good corrosion resistance against sulphur containing organic products at high temperature. Good resistance against metal to metal friction and seizing.

Machinable with hard metal tools.

Especially recommended as underlayer for hard Cobalt alloys like Lastek 251 A/E and 262A/E.

## Applications

Valves and flanges of combustion engines, steam- or gas shutoff valves, gas turbine blades, tools for treating glass.

Metal shears, pump axles and bearings.

Drawing dies for copper and its alloys.

## Technical data

Hardness after welding: 26-35 HRc

Hardness after work hardening: up to 40 HRc

## Sizes

mm(inch) 3.2 (1/8") 4.0 (5/32")

## Directions for use

Remove all rust and dirt.

Sharp edges must be rounded.

Grind away fatigued and oxidised basemetal.

TIG-welding on D.C. with pure Argon, Helium or mixtures as protection gas and with a thoriated tungsten electrode.

Keep the amperage as low as possible, to avoid too much dilution with the base metal.

When oxy-acetylene welding, use a soft carburising flame, length of the feather 2.5 - 3 times the length of the inner cone.

By preference weld to the left (the rod precedes the flame), with the rod between the cone of the flame and the workpiece.

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# lastek 261E

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## Resistant to shocks and very high temperatures

Wearfacing electrode on cobalt base with excellent corrosion resistance. Withstands oxidising and reducing atmospheres up to temperatures of 1150°C (2100°F). Very good resistance to fluctuating temperatures and to impact loading. Resists corrosion by organic products containing sulphur, even at high temperatures. Machinable with hard metal tools. Gives crack-free deposits also on large areas. Indicated as base layer for harder cobalt alloys such as Lastek 251E, Lastek 262E. Smooth and pore-free welding beads.

## Applications

Valve and valve seats of combustion engines, gas turbine blades, hot working cutting tools, glass cutting tools, blades of metal shears, pump shafts and bearings.

## Technical data

Hardness of deposited metal: 30-35 Rc  
Hardness after work hardening: approx. 40 Rc

## Current

A.C. or D.C. (reverse polarity)

## Sizes and amperages

mm(inch")	3.2 (1/8")	4.0 (5/32")
Amp	80-95	100-130

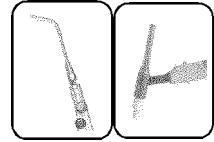
## Directions for use

Remove all rust and grease. Sharp edges must be rounded in order to obtain optimal bond.  
Hold short arc to avoid excessive dilution with the base metal.

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# lastek 262A

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## Wood cutting tools

Welding rod for friction and corrosion resisting hardfacings.  
Excellent resistance to high temperatures (up to 1000°C (1830°F)).  
Machinable with hard metal tools.  
Good shock resistance.  
Resistant to nitric and acetic acid, super-heated steam, flue gases, petroleum and plastics.

## Applications

Machine-parts for the manufacture of timber, paper and plastics.  
Axles and bearings of centrifugal pumps.  
Valves, flanges of diesel engines.  
Parts of steamturbines.  
Hardfacing of dies.

## Technical data

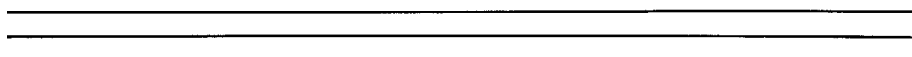
Hardness: 47-53 Rc

## Sizes

mm(inch) 2.4 (3/32") 3.2 (1/8") 4.0 (5/32") 5.0 (3/16") 6.4 (1/4")

## Directions for use

Remove all rust and dirt. Sharp edges must be rounded.  
Heat the base metal until it 'sweats' (no melting).  
Use a soft carburising flame, length of the feather  $\pm$  2.5 - 3 times the length of the inner cone.  
The surfacing can be lightly remelted for optimum homogeneity.  
Protection gas for TIG welding: pure Argon.



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# lastek 262E

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## Rubber, paper and plastic

Electrode for friction and corrosion resistant hardfacings.  
Excellent resistance to high temperatures (up to 1000°C) (1830°F).  
Machinable with hard metal tools.  
Good shock resistance.  
Resistance to nitric and acetic acid, superheated steam, flue gases, petroleum and plastics.

## Applications

Machine-parts for the manufacturing process of paper and plastics and wood.  
Axles and bearings of centrifugal pumps, dies.

## Technical data

Hardness: 47-53 Rc  
Hot hardness: approx. 34 Rc at 600°C (1110°F)

## Current

A.C. or D.C., reverse polarity.

## Sizes and amperage

mm(inch)	2.4(3/32")	3.2(1/8")	4.0(5/32")
Amp	45-55	80-95	100-130

## Directions for use

Remove all rust and oil; sharp edges must be rounded.  
Avoid too much dilution with the base metal by keeping the welding current as low as possible.  
On crack sensitive steels, apply a base layer with Lastek 9066.

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# lastek 265E

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## Impact loading at elevated temperatures

Extremely tough cobalt-based alloy for hardfacing stamping dies and valve/valve seats. Resists oxidation and carburization at very high temperatures (up to about 1040°C (1900°F))

Good creep strength.

The deposit is easily machinable and will work harden by impact loading.

Good corrosion resistance (even against nitric acid and hydrochloric acid, dependent on concentration and temperature).

Deposits smooth, regular and glossy weld beads.

All positional except vertical down.

## Applications

Hot working stamping dies, forging dies and parts of furnaces. Jigs, fixing parts and positioners used in furnaces. Base layer for harder cobalt based wearfacings.

## Technical data

Hardness as welded: 180-230 HB

Hardness after work hardening: 37-45 Rc

## Current

A.C. and D.C. (reverse polarity)

## Sizes and amperages

mm(inch)	3.2(1/8")	4.0(5/32")
Amp	80-95	100-130

## Directions for use

Remove all traces of dirt and grease from the workpiece.

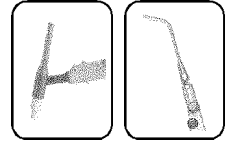
Avoid dilution with the base metal by applying a current as low as possible.



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# lastek 267C

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## Wear- and corrosion resistant at elevated temperatures

Hardfacing rod for TIG and oxyacetylene welding, that surpasses most hardened die steels in wear resistance.

Excellent resistance to thermal and mechanical shocks.

Withstands corrosive and erosive attack.

The deposited metal is machinable with hardmetal tools.

Low coefficient of friction.

## Applications

Hot working dies and punches, valve seats, pumps, tongbits for steel billets, first layer in build up welding with harder materials.

## Technical data

Hardness: 40-45 Rc

Melting temperature: 1250°C (2280°F)

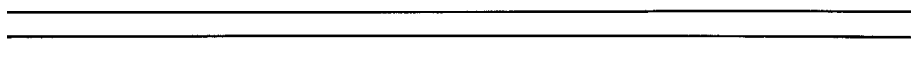
## Sizes

mm (inch)                    3.2 (1/8") 4.0 (5/32")

## Directions for use

Clean workpieces and degrease. Round sharp edges and remove fatigued metal.

Preheat base metal until it sweats (no fusion). Use a carburising oxyacetylene flame with feather of 2 to 3 times the length of the inner cone.



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# lastek 27

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## Multilayer hardfacing

The air hardening deposit of Lastek 27 is resistant to abrasion and impact.

Many layers can be built up without cracking.

Nevertheless, the wear resistance is much better than ordinary martensitic electrodes of the chromium - carbon type.

Also at elevated temperature applications (up to 550°C - 1020°F), Lastek 27 can be used.

Easily weldable in all positions.

## Applications

Soil abrasion (bucket edges, sand pump casings, bulldozer teeth) - metal shears, tamping dies, mixer blades, ripper teeth, crusher jaws.

## Technical data

Hardness: 58-62 Rc

## Current

AC-DC (rev. pol.)

## Sizes and amperage

mm(inch)	2.5 (3/32)	3.2 (1/8)	4.0 (5/32)	5.0 (3/16)
Amp	70	110	135	190

## Directions for use

Electrode position: almost vertical to the workpiece.

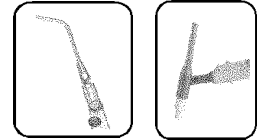
Use a very short arc and keep the amperage as low as possible, to avoid too much dilution with the base material.

To obtain the maximum hardness on mild steel, apply at least 3 layers.

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# lastek 909C

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## High degree of polishing in abrasive media

Hardfacing rod for TIG and oxy-acetylene welding. Used without flux. Can only be machined by grinding, yet mostly the alloy flows so good that almost no finishing is needed.

Lastek 909C has a very high corrosion resistance (to acids and to oxidation). Can be used at extremely high temperatures (where also the hardness remains very high).

Very good resistance to abrasion.

Especially recommended for friction of metal on metal.

Lastek 909C obtains a high degree of polishing by using it in clay and cement.

## Applications

Augers, plungers, shafts, packing rings of pumps, tooth of driving wheels, exhaust valves, tumblers.

The chemical industry, the cement industry, brick kilns, etc...

## Technical data

Hardness: 56-62 Rc

Hardness at elevated temperatures: +- 51 Rc at 400°C (750°F)

+- 41 Rc at 500°C (930°F)

Coefficient of expansion: 0 - 1000°C:  $14,4 \cdot 10^{-6}/^{\circ}\text{C}$  (30-1800°F:  $8 \cdot 10^{-6}/^{\circ}\text{F}$ )

Melting range: 980-1110°C (1800-2030°F)

## Sizes

mm("inch)	4.0 (5/32")	5.0 (3/16")	6.5(1/4")
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## Directions for use

TIG-process is recommended. By using an oxyacetylene torch no flux is required. Use a carburizing flame.

For hardened base metals preheating could be necessary or applying a base layer with Lastek 982. With difficult to wet metals a first layer with powder P902 (Lastispray) can be usefull.

# lastek 98



## Ni based hardfacing electrode for hot work stamping dies

Excellent resistance to wear, corrosion and heat.  
Maintains a good hardness even at very high temperatures.  
Resistant to corrosion caused by acids and gases. (Good resistance to hydrochloric acid, sulphuric acid, phosphoric acid depending on concentration and temperature)  
Exceptional resistance to thermal and mechanical shocks.  
Crack free deposits.  
Oxidation resistant up to 1200°C (2200°F).

### Applications

Forging dies, rollers and cutting tools exposed at high temperatures in rolling mills.  
Accessories for thermal treatment; grates, baskets.  
Surfacing of steam valve seats.  
Protecting parts in seawater.

### Technical data

Tensile strength Rm: 700 N/mm<sup>2</sup> (101ksi)  
Elongation A5: 20%  
Hardness as deposited: 190 HB  
Hardness after work hardening: 42 Rc  
Hardness at 760°C (1400°F): approx. 140 HB

### Current

A.C. or D.C. (rev. pol.)

### Sizes and amperage

mm (inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	60-100	90-120	120-150

### Directions for use

Remove fatigued metal and all cracks by grinding.  
The surface must be thoroughly cleaned from oil or grease.  
Keep a very short arc.

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# lasticut

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## Very rough surface

Hardfacing rod for oxy-acetylene welding with utmost abrasion resistance and cutting action.

Special composite rod deposits hard tungsten-carbides uniformly distributed within a bronze matrix.

The tungsten carbide grains that stick out of the surface of the deposit can be considered as very small cutting tools.

## Applications

Especially advantageous for improvising tungsten-carbide-tipped drills e.g. when Lasticut is applied by torch on a steel pipe or tube, it becomes an excellent stone- or concrete drill.

Also for protecting smooth surfaces with an antiskid layer.

## Technical data

Hardness                      matrix: 200 HB  
   grains: 9 Mohs

## Sizes

mm (grain size)	1-2	3-4	6-8
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## Directions for use

Clean and degrease the surfaces very thoroughly by filing or grinding.

Use evt. Lastek 12 as a base layer for better bonding results.

Adjust the oxy-ac. torch and use a larger tip size for a broad soft flame with acetylene excess. Flux Lastek 12A can be used if necessary. Heat the tinned surface to remelt temperature, then direct flame onto the Lasticut-rod and allow it to melt off. Avoid overheating.



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# lastek 11

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## Structure- and colour match on cast iron

Welding rod for repairing, surfacing and joining cast iron with a good bond on dirty and burnt cast iron.

The colour and structure of the deposited metal are equal to those of grey cast iron.

The joint and the transition zone are fully machinable.

Can be used for surfacings, with a good corrosion and wear resistance.

Porous free deposits.

## Applications

Exhaust manifolds, cracked motor blocks, pump housings, oil sumps.

Repair and surfacing of gears and chain-wheels, bench-vices and levers.

Repair of foundry defects.

## Technical data

Tensile strength Rm: 240-300 N/mm<sup>2</sup> (34-43ksi)

Hardness: 185 HB

## Sizes

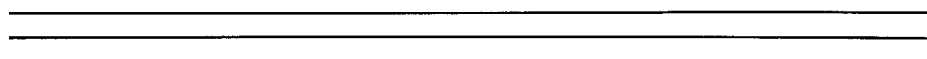
mm(inch) 4.0 (5/32") 6.0 (1/4")

## Directions for use

Clean the broken casting. To enlarge the contact surface, large grooves are recommended. If the groove is made by a grindstone, use a file to remove the graphite particles on the surface. Preheat to approx. 400°C (752°F), apply flux Lastek 11A, heat locally until red.

Melt the rod, rub well over the surface to obtain maximum bond. The flame should be slightly oxidising.

To avoid porosity, do not apply a too heavy deposit in one run.



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# lastek 40E

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## Pore free welding of dirty cast iron

Nickel cored electrode with a special coating for welding grey and malleable cast iron. Lastek 40E has a "pulsating" way of welding, meaning that there is alternately a phase where the arc only creates "heat" without deposit (oil and grease are burned out of the base metal during forward motion of the electrode) and a second phase (backwards motion of the electrode) where a droplet on the cast iron is projected.

In this last phase, the slag is pushed backwards and a very large area around the molten pool stays visible, permitting an easy control of porosity on contaminated or oil soaked cast iron.

Due to the pulsating properties of Lastek 40E (controlled heat input) and the possibility to use negative pole for the first pass (slower cooling rate and thus less hardening of the heat affected zone), a soft, machinable and dense deposit without undercutting is easily obtained.

The electrode is "all positional".

## Applications

Recommended for welding cast iron that has to be leak-tight and machinable, such as cracked motor blocks, pump housings, gear wheels, rebuilding the bed of a lathe, valve seats.

## Technical data

Tensile strength Rm: > 320 N/mm<sup>2</sup> (46ksi)

Elongation A5: > 18%

Hardness: 130-160 HB

## Current

A.C. or D.C. (straight polarity for first pass - reverse polarity can be used for filling passes).

## Sizes and amperage

mm(inch)	2.5 (3/32)	3.2 (1/8)	4.0 (5/32)
Amp	75	100	125

## Directions for use

For the first pass on cast iron, Lastek 40E is welded on the negative pole with a weaving technique (weaving forwards and backwards in the direction of travel)

Following passes can be welded on the positive pole to increase travel speed.

Peen the deposit after every pass to reduce stress-buildup.



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# lastek 415

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## TIG rod for welding cast iron

Lastek 415 is a flux cored TIG rod for refacing cast iron. The flux assures an excellent bond, also on 'difficult' kinds of cast iron. The ferro-nickel deposit gives rather hard but still machinable welds and makes the rod especially suitable for refacing fine borders of cast iron dies and tools and for filling in casting defects.

### Applications

Repair of cast iron dies and molds, filling in casting flaws, adjusting wear on gliding paths.

### Technical data

Hardness: 160-200 HB

### Sizes

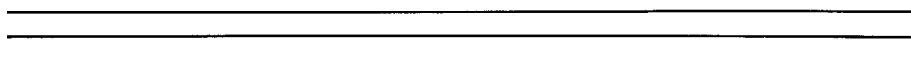
mm(inch)                      1.6 (1/16")

### Directions for use

Shielding gas: Argon.

Preheat the work piece at the starting point with the TIG flame and as soon as the melting point has been reached, deposit short welding beads, with the flame mainly directed on the filler metal.

Take into account all the prescriptions concerning welding cast iron: 'backstep' welding - peening the warm beads to counteract the shrinking stresses.



# lastek 41E



## Joining cast iron to steel

Ferronickel cored electrode for welding grey, nodular and alloyed cast iron.

Due to the higher tensile strength and ductility, satisfactory welds can be made on heavy or highly stressed section.

Lastek 41E can be used for joining cast iron to steel and to stainless steel.

The special formulation allows high currents without fear of the coating turning red. The possibility to use straight polarity without danger of cracking guarantees full penetration and very strong welds also on the steel side.

Thanks to the pulsating arc, Lastek 41E can be used in all positions (vertical down and up, overhead).

Fully machinable.

Sound and dense deposit.

## Applications

Repairing heavy sections of grey and alloyed cast irons, SG iron, meehanite. Machine bases, motor blocks, gear cases, cast iron dies, pumps.

Repairing casting defects with good color match.

## Technical data

Tensile strength Rm: > 400 N/mm<sup>2</sup>

Elongation A5: > 20%

Hardness: 150-180 HB

## Current

A.C. or D.C., straight polarity.

## Sizes and amperage

mm(inch")	2.5 (3/32)	3.2 (1/8)	4.0 (5/32)
Amp	75	90	115

## Directions for use

The pulsating arc of Lastek 41E provides for alternately a phase where only heat is created and a phase where a droplet is projected on the cast iron.

During a forward motion in the direction of travel, the heat of the arc in phase one burns out any oil or grease of the workpiece. During the following backward motion the droplet is deposited mainly on the previous deposit.

Peen the deposit after every pass to reduce stress-buildup.

# lastek 42E



## Crack free welding of thin walled cast iron

Nickel cored electrode for the repair of thin, delicate and complicated castings.

Very smooth deposits, which are fully machinable.

Suitable for vertical down and overhead welding.

Porosity free deposit.

Lastek 42E is welded with a weaving motion in the direction of travel. During the forward motion it burns out oil and grease, and during the backward motion a droplet is deposited on the previous deposit.

## Applications

All thin walled cast iron pieces.

Cracked pump-housing, water-cooling apparatus, pulleys, cast iron flanges and covers, impellers.

Surfacing of valves and valve seats.

## Technical data

Tensile strength Rm: > 370 N/mm<sup>2</sup> (54ksi)

Elongation A5: > 18%

Hardness: 130-170 HB

## Current

AC or DC (straight polarity)

## Sizes and amperage

mm(inch")	2.5 (3/32)	3.2 (1/8)	4.0 (5/32)
Amp	40-75	70-100	80-120

## Directions for use

For welding thin cast iron (e.g. 5mm - 1/5" thick):

Drill a hole at the end of the crack. Prepare a groove with a grinding disk. Provide for a good support at the back of the cast iron in order to avoid vibrations while peening.

Weld approx. 8mm (5/16") wide with Lastek 42E by weaving in the direction of travel (electrode 2.5mm (3/32") - 40-45 Amp). Peen immediately. Continue welding using the "backstep" technique. Never apply a sealing run at the back of the workpiece. Cool down as slowly as possible.

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# lastek 43

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## Buttering layer on "bad quality" cast iron

Lastek 43 has been developed to permit a repair of "unweldable" cast iron, where Ni base electrodes do not give a solid bond.

The special coating of Lastek 43 develops a powerful cleaning action. The aggressive arc penetrates through the oxidised or contaminated surface and provides a perfect bond.

Lastek 43 absorbs the carbon from the cast iron and the deposit becomes hard and non-machinable.

Lastek 43 should be used as a buttering run in the groove made with Lastek 1900. The beads of Lastek 43 should not touch. The joint is finished with electrodes such as Lastek 40E, 42E or 41E.

## Applications

Welding all poor quality cast iron, reclamation on ship motor blocks, oxidized furnace parts, repairing foundry defects for color match, first layer on cast iron prior to hardfacing (spreader cones in brick extrusion machinery, cast iron gears.)

## Technical data

Tensile strength Rm: 390 N/mm<sup>2</sup> (57ksi)

## Current

AC or DC (reverse polarity)

## Sizes and amperage

mm(inch")	3.2 (1/8)	4.0 (5/32)
Amp	100-120	120-140

## Directions for use

Weld with a weaving motion in the direction of travel. During the forward motion the arc bites into the cast iron. During the backward motion Lastek 43 deposits a droplet on the previous deposit.

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# lastek 47E

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## Cast iron to steel

Ferro-nickel electrode for joining and refacing cast iron.  
Because of the high mechanical characteristics and the good tear-resistance, Lastek 47E is very suitable for welding parts with large wall thicknesses and for joining cast iron to steel. The high deposit rate and the good thickening up, make this electrode especially designed to reface big cast iron workpieces when welding on DC, + pole. Good machinable deposit.

## Applications

Welding parts with a high stress concentration or high strength cast iron.  
Filling in blow holes in ordinary cast iron, nodulating cast iron or 'meehanite'.  
Refacing cast iron matrices in the car industry.

## Technical data

Tensile strength Rm:  $\geq 400$  N/mm<sup>2</sup>  
Elongation A5: > 20%

## Current

AC or DC, electrode to the + or - pole (see directions for use).

## Sizes and amperage

mm(inch)	3.2 (1/8")	4.0 (5/32")
Amp	85-115	100-145

## Directions for use

Lastek 47E can be welded on AC or DC.  
For refacing, use DC, + pole.  
Joining and small joints use DC, - pole.  
Welding in all positions.  
When joining cast iron to steel, welding 2/3 on cast iron and 1/3 on steel.  
A pulsed arc (welded on DC, - pole) creates alternatively a heating phase (oil and dirt are burned away) and a deposit phase.  
Permorm reciprocative motions in the direction of the weld: phase 1 (forwards) and phase 2 (backwards).  
To avoid stress construction, the weld can be hammered, certainly when squeezed pieces.



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# lastek 12

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## Brazing rod for steel, maximum strength

Flux coated brazing rod containing silver, for joining steel, cast iron, copper, nickel alloys and hard metals.

Very high tensile strength.

Superior wetting action produces thin and smooth fillets with little or no finishing required.

Allows minimum joint preparation.

Ideal for carbide tipping.

## Applications.

Steel tubing, machine parts, frames of bicycles. Metallic furniture, medical apparatus; construction and repair of tools and dies.

## Technical data

Tensile strength Rm: 800 N/mm<sup>2</sup> (116 ksi)

Elongation A5: > 20%

Hardness Brinell: 180-200

Bonding temperature: 775°C (1427°F)

## Sizes.

mm (inch)	2.0 (5/64")	3.0 (1/8")
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## Directions for use.

Clean the weld areas.

Preheat with neutral flame until dark-red.

Apply Lastek 12 so that it penetrates into the joint.

(A separate flux, Lastek 12A, applied on the working area, can still improve the penetration.)

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# lastek 503

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## Seawater resistant

Alloy for TIG welding of copper-nickel alloys with 10-30% nickel (Cunifer) or for joining these alloys to other nickel alloys.

High corrosion and erosion resistance in seawater.

Surfacing of steel and cast iron.

High purity weld deposit.

Porous free welds, with high toughness.

## Applications

Seawater condensor pipes, desalination plants, chemical industry, heat exchangers.

## Technical data

Tensile strength Rm: 350 N/mm<sup>2</sup> (51ksi)

0,2% Yield strength Rp: 180 N/mm<sup>2</sup> (26ksi)

Elongation A5: 30%

## Sizes

mm	1.6	2.4	3.2
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## Directions for use

Always remove thoroughly oil and grease.

During welding of copper-nickel alloys, take into consideration the relatively poor thermal conductivity of these alloys (contrary to pure copper). Therefore welding should be done fast and with a small melting pool without preheating.

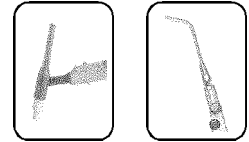
As protection gas use argon, helium or Ar/He gas mixtures.



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# lastek 508

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## TIG welding of brass and bronze

Filler rod for TIG and oxy-acetylene welding of copper alloys like brass and bronze and

for welding of steel. Lastek 508 can be used for joining and surfacing. Excellent fluidity.

Porous free welds, sound and smooth deposit.

No flux needed with oxy-acetylene welding of steel. After welding no further treatment is required before finish is applied (painting, plating ...)

Good colour match with brass (if small joints).

## Applications

For applying wear and corrosion resistant layers on copper alloys and steel.

For joining copper, bronze alloys and mild steel.

Resistant to atmospheric influences, sulphite liquor (in paper and sugar production), seawater, vinegar, condensing water, lactic acid etc. The deposit has a low coefficient of friction.

Used for flaw repair in castings, cosmetic repairs and machining errors in bronze workpieces (be careful with phosphor bronze containing lead - can cause porosity and cracks).

Recommended for applications in the food industry.

## Technical data

Tensile strength Rm: 370 N/mm<sup>2</sup> (54ksi)

Elongation A5: ≥20%

Hardness: 95-120 HB

Bonding temperature: 900°C (1650°F)

## Dimensions

mm(inch)	1.0 (0.035")	2.0 (5/64")	3.2 (1/8")
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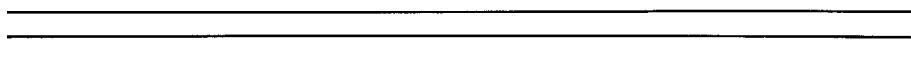
## Directions for use

Clean thoroughly the base material around the joint.

Use short stringer beads and fast welding.

Oxy-acetylene welding: good wetting without using a flux.

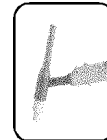
Can be cold peened after welding, in order to diminish tensions.



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# lastek 5285

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## Rebuilding dies in Copper Beryllium

Lastek 5285 is a copper alloy with a high electrical conductivity and high hardness and wear resistance.

It is used for rebuilding dies and resistance welding electrodes with the TIG process.

### Applications

Rebuilding dies for plastic injection (plastic bottles), resistance welding electrodes, plunger tips for die casting, aluminium, bearings and bushings.

### Technical data

Binding temperature: 970°C (1.780°F)

Specific electrical resistivity: 0,03-0,09 Ohm.mm<sup>2</sup> / m

Hardness of the deposited metal: 130HB

Impact loading increases the hardness of the deposit.

Also a heat treatment of 2 hours at 450° - 500°C (840°F-930°F) increases the hardness up to +- 270HB.

### Sizes

mm ("inch)                      3.0 (1/8")

### Directions for use

On pure copper, DC straight polarity is used. Pure copper has to be strongly preheated. On copper beryllium alloys alternating current is used. Those alloys are preheated up to 150°C (300°F) maximum (to avoid a very thick oxide layer), and are welded with high current.

Very thick hardfacing layers can require a heat treatment to avoid cracking and to obtain the maximum hardness (solution heat treatment at 927°C (1.700°F) and age hardening at 450°C (840°F)).

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# lastek 52V

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## Steel sheet metal and cast brass parts

Flux coated rod for oxy-acetylene welding of brass and bronze and for brazing of steel and cast iron and copper.

Low heat input minimizes distortion.

Brazing sheet metal with Lastek 52V is very easy and the beads are smooth and have a good appearance.

### Applications.

Car bodies, pipes and duct work, sheet metal.

Brass art work and metallic furniture.

Parts for refrigeration and heating equipment.

Repairs on cast iron.

### Technical data

Tensile strength Rm: > 350 N/mm<sup>2</sup> (50 ksi)

Elongation A5: > 20%

Hardness: 110 HB

Bonding temperature: 820°C (1508°F)

### Sizes

mm(inch) 2.0 (5/64")      3.0 (1/8")      4.0 (5/32")      5.0 (3/16")

### Directions for use

Remove paint, oil and other impurities.

Chamfer edges and angles. Preheat slightly.

Heat steel plate locally until dark-red.

Use a slightly oxidizing flame on brass and a neutral flame on steel. Hold inner-cone about 1cm(1/2inch) from workpiece, avoid overheating.

Melt the rod by rubbing along the joint.

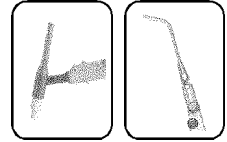
No finishing required.

It is not necessary to use a separate flux. But if you wish, Lastek 52A is available on request.

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# lastek 53

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## Welding pure copper

Copper-silver alloy for oxyacetylene or TIG welding of red copper. The weld metal is tough and can be deformed without danger for cracking. High electrical conductivity. The high silver content gives to the deposit a higher softening point, making this rod excellent for rebuilding electrical contacts. Also suitable for TIG welding.

## Applications

Copper kettles, boilers, tubes, joinings of electrical conductors, refacing electrical contacts. Food industry.

## Technical data

Tensile strength Rm: 220 N/mm<sup>2</sup> (32ksi)  
Elongation A5: >20%  
Hardness: 60 HB  
Bonding temperature: 900°C (1650°F)  
Electrical resistivity: 0.022 to 0.033 ohm.mm<sup>2</sup>/m

## Dimensions

mm(inch)	2.0 (5/64")	3.0 (1/8")
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## Directions for use

Clean the pieces thoroughly, eliminate oil and grease.  
Weld with a neutral flame and use the flux Lastek 53A.  
Preheat larger workpieces in red copper up to 350-600°C (660-1110°F).  
Use a torch tip one or two sizes larger than you would use on steel of equivalent thickness.

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# lastek 55

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## Steel furniture, high tensile strength

Brazing rod for welding steel, cast iron and nickel alloys with the oxy-acetylene flame. High tensile strength. Low bonding temperature, capillary action. Due to the high nickel content, the color match on steel is excellent.

Corrosion resistant to many acids and mild alkalies and salt water.

Low friction coefficient provide for good bearing qualities.

## Applications

Joining of tubes, sheets and profiles that are subject to high stresses. Bicycle- and motor frames. Steel furniture, instruments and machine parts. Carbide tipping on saw-tooths. Build up valve seats, cans, gears, shafts, pistons.

## Technical data

Tensile strength Rm: 650 N/mm<sup>2</sup> (94ksi)

Elongation A5: 18%

Hardness: 130-180 HB

Bonding temperature: 800°C (1470°F)

## Sizes

mm	2.0	3.0
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## Directions for use

Clean thoroughly joint and welding area, apply flux Lastek 55A, after being mixed with pure water. Preheat broadly, use a flame with a light excess of acetylene.

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# lastek 57

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## Oxy acetylene brazing of rusted steel sheets

Flux-coated welding rod for joining of steel, cast iron and copper alloys.  
The special coating guarantees good bonds, even on rusted metal.  
Almost no flux-residues, that can easily be removed with a brush.  
No zinc evaporation. Porosity-free deposit.  
Allows joining of galvanized steel without burning the zinc-layer.

### Applications.

Use in repair shops for welding of sheet metal and exhaust systems.  
Tubes and fittings of steel, cast iron, and copper-alloys. Repair of rusted containers, barrels, tubes.  
Sheet and tube constructions, machine parts.

### Technical data

Tensile strength Rm: 390-490 N/mm<sup>2</sup> (57 - 71 ksi)  
Elongation A5: 35%  
Hardness Brinell : 110 HB  
Bonding temperature: 790°C (1450°F)

### Sizes

mm(inch)	2.0(5/64")	3.0 (1/8")	4.0 (5/32")
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### Directions for use.

Remove paint, oil and other impurities.  
Chamfer slightly the edges to be joined. Preheat the workpiece.  
Heat locally until dark-red.  
Slightly oxidizing flame on brass, neutral flame on steel. Flame inner cone approx. 1 cm (1/2") from workpiece, avoid overheating.  
Melt the rod by rubbing along the joint.  
A separate flux, Lastek 57A, is available on request.  
For brazing cast iron, use flux Lastek 11A.

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# lastek 58

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## Surfacing cast iron with bronze

Flux coated bronze rod for surfacing machine-parts of steel, cast iron and bronze.  
Alloy with high nickel content.

The weld deposit has a good corrosion resistance, a low friction coefficient and is very tough.

High wear resistance by metal to metal friction, even when lubrication is insufficient.

Lastek 58 enables you to work fast; the heat-input and distortion are minimal.

Recommended for voluminous surfacings and thin, smooth layers.

## Applications

Surfacing of gear racks, toothed wheels, bearings, pump-shafts, augers.

Repair of pump-housings and cast iron motorblocks.

## Technical data

Hardness Brinell : 160-210 HB

Bonding temperature: 775°C (1427°F)

## Sizes

mm(inch) 2.0 (5/64") 3.0 (1/8") 4.0 (5/32") 5.0 (3/16")

## Directions for use

Clean the workpieces.

For large areas: apply flux Lastek 58A.

Preheat to dark red.

Rub the rod over the surface to obtain good adhesion.

Use a neutral flame.

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# lastek 61G

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## Smooth bronze layers on low current

Surfacing of bronze on steel, cast steel and cast iron.  
Joining of copper and its alloys.  
Easy to weld with a stable arc.  
Good wear resistance to metal to metal friction.

## Applications

Repairs of bronze bells.  
Machine repair: surfacing of bearing areas and shafts.  
Joining of copper, bronze and brass plates, flanges, tubes.

## Technical data

Tensile strength Rm: 340 N/mm<sup>2</sup> (49ksi)  
Elongation A5: 25%  
Hardness: 100-120HB

## Current

D.C. (reverse polarity)

## Sizes and amperage

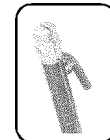
mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	50-70	70-110	100-130

## Directions for use

Surfacing: Clean the parts well.  
For the first layer start with a low amperage to minimize dilution.  
Operate with a circular movement in order for the weld metal to cool down slowly.  
Joining: Use the maximum amperage.  
For butt welds: root gap sufficiently wide to avoid convex beads.  
Preheat temperature: Tinbronze: 150-200°C (300-400°F) Brass: 200-300°C (400-570°F).



# lastek 63



## Pure copper

Electrode for joining copper to copper, for overlaying copper on steel, for joining copper to steel, and for joining brass.

Same characteristics as electrolytic copper.

## Applications

Construction of copper boilers and appliances.

Joining of copper tubes.

Surfacing of parts from electrolysis-installations.

Can be used in flat, horizontal, vertical up and overhead positions.

## Technical data

Tensile strength Rm: 200-250 N/mm<sup>2</sup> (29 - 36 ksi)

Yield strength: 185 N/mm<sup>2</sup> (27ksi)

Elongation A5: 35%

Hardness: 50-60 HB

Electrical resistivity: 0.05 ohm.mm<sup>2</sup>/m

## Current

DC, reverse polarity.

## Sizes and amperage

mm	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	70-90	90-130	130-180	175-220

## Directions for use

Degrease and clean thoroughly the weld area.

Sections of 3-7mm (0.12" - 0.28") thickness: Bevel in V-shape, thicker sections to be bevelled in X-shape.

For joining, a gap of 2-3mm (0.08"-0.12") is required.

Preheating of copper: 300-600°C (572 - 1112°F).

The electrode diameter should be as large as possible. The electrode should be at an angle of 60 to 80° to the workpiece.

Maintain a short arc and use a slight weaving technique (like welding with an oxyacetylene torch).

Depositing the first pass at high speed and highest possible current, followed by a second pass at normal speed and current can be an advantage.



## Aluminium bronze electrode

Special alloy for joining or surfacing of aluminium bronze.  
Very high corrosion, erosion and cavitation resistance in seawater.  
Suitable for surfacing carbon steel, alloy steel, cast iron and bronze (metal to metal friction).  
Surfacing of ship-propellers in aluminium-bronze (with Ni- and/or Mn).  
Porous free deposit.

## Applications

Blades of centrifugal pumps, pump shafts, pump casings, elbows in pipe lines exposed to cavitation, valves, parts of mixing equipment, ship propellers.  
Joining of plates and pipes in ship-construction, chemical, petrochemical and food-industry.  
Repair of casting flaws in aluminium bronze pieces and art castings.

## Technical data

Tensile strength Rm: 590-640 N/mm<sup>2</sup> (85-93ksi)  
Elongation A5: > 20%  
Hardness :170 HB (Increasing by work hardening up to 250HB)

## Current

D.C., reverse polarity.

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	40-80	90-110	110-150

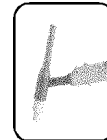
## Directions for use

Clean all parts from oil and grease.  
Joining copperalloys to steel: first butter the steelside at lowest amperage; then bridge the gap.  
Weld with short arc; use a weaving motion for large surfaces.  
Keep electrodes dry.  
Copper alloys to be preheated from 100°C or 300 °C. (210-570°F) (Aluminium bronze with less than 12% Al: limit the preheat temperature to max. 160°C (320°F)).  
Surfacing on steel: amperage as low as possible; use stringer beads.

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# lastek 64C

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## TIG welding aluminium-bronze

TIG rod for joining and refacing workpieces in Ni containing aluminium-bronze.

Joining copper alloys to steel and cast iron.

Good wear resistance.

Good resistance against corrosion by seawater and many acids.

## Applications

Alu-bronze and steel.

Propellers, machine parts, shafts, hydraulic turbines, pump housing, refacing steel bearings.

Joining Wn° 2.0916, 2.0920, 2.0928, 2.0932, 2.0936, 2.0940, 2.0960, 2.0962, 2.0966, 2.0970, 2.0978, 2.0980.

## Technical data

Tensile strength Rm: 530-600 N/mm<sup>2</sup> (77-87ksi)

Elongation A5: 30%

Hardness: 150-180 HB

Bonding temperature: 1000°C (1830°F)

## Sizes

mm(inch)	1.2 (0.045")	2.4 (3/32")	3.0 (1/8")
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## Directions for use

Protection gas argon or argon-helium.

Use A.C. on Alu-bronze and eventually the flux Lastek 64CA to break through the aluminium oxide layer and to weld on a lower amperage.

Maximum preheating temperature for aluminium-bronze (≤12%Al): 160°C (320°F).





## Welding of titanium

TIG rod for welding pure titanium.

Very corrosion resistant (against chlorous solutions like seawater, hypochlorites,...)

## Applications

Aviation and space industry.

Chemical and petrochemical industry.

Welding of Titanium T35 and T40, CP Titanium grade 1 and 2, DIN 3.7025 and 3.7035, ASTM B348 grade 1 and 2.

Lastek 15 is also used for joining alfa-beta titanium alloys where a high ductility is necessary.

## Technical data

Tensile strength Rm: 350 N/mm<sup>2</sup> (51ksi)

Yield strength Rp(0.2): 275 N/mm<sup>2</sup> (40ksi)

Elongation A5: 30%

## Sizes

mm 2.0

## Directions for use

Welding titanium has to be done under argonprotection (99.99% pure with dew point lower than -50°C(-58°F)) (as well in the torch as at the backside of the weld)

You will also need gas protection when cooling down until the welding zone has passed the temperature of 300°C(570°F).

The workpieces have to be degreased very carefully (acetone or alcohol) before welding.

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# lastek 62

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## Welding of aluminium castings

Coated electrode for repairing cast aluminium and joining aluminium sheets.  
Good bond on the base metal.  
Porosity free deposit.

## Applications

Repair of motor blocks, pump housing, pulleys, gear boxes.  
Construction of silos, tanks and other constructions.  
Repair of casting defects.

## Technical data

Tensile strength Rm: 180-230 N/mm<sup>2</sup> (26-33 ksi)  
Elongation A5: 6-8%  
Hardness: 50-60 HB

## Current

D.C. (reverse pol.)

## Sizes and amperage

mm (inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	50-70	60-80	90-110

## Directions for use

Keep the electrode perpendicular to the workpiece. Weld with a short arc to avoid overheating (and possible burn through), and keep the amperage as low as possible. If necessary lower the amperage during welding.

Thick pieces: preheat to 150 - 200°C (300-400°F).

The diameter of the electrodes is more or less equal to the wall thickness of the piece. The flux-residues should be thoroughly removed with warm water and soap, to avoid corrosion.

The electrodes should be kept dry, they can be dried before welding in the "Lasti-dry", at a temperature of 150°C (300°F).

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# lastek 7002

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## Electrode for welding aluminium profiles and plates

Joining of pure aluminium and several aluminium alloys.  
Good bond on the base metal.  
Slag can easily be removed.  
Few spatters. Porous free.  
(For welding of aluminium-silicon castings, it is recommended to use Lastek 62.)

### Applications

Can be used for welding pure Aluminium, AlMgSi (6000series), AlMn(3000series), AlMg1 (5051) and AlMg3 (5754).  
Chemical- and food industry, fish industry, transport (trucks, containers).

### Technical data

Tensile strength Rm: 80-200 N/mm<sup>2</sup> (12-29ksi)  
(highest strength on parent metal AlMg3)  
Elongation A5: 20%

### Current

D.C., reverse polarity.

### Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	40-70	60-100	80-120

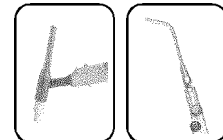
### Directions for use

Keep electrode perpendicularly on the workpiece. Short arc.  
High welding speed. Preheat thick sections up to 150-200°C (300-390°F)  
Use always dry electrodes (Drying can be done in Lastidry at a temperature of maximum 150°C (300°F)  
Remove carefully all slag residues in order to avoid corrosion.

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# lastek 71

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## Brazing aluminium and its alloys

The excellent fluidity and the working temperature below the melting point of most Al alloys make this rod very suitable for brazing with the oxy-acetylene flame on thin sheets and profiles of aluminium.

Penetrates very well in the tightest lap-joints.

Suitable for joining aluminium to copper after tinning the copper with Lastek 3000P.

## Applications

Aluminium and its alloys (less than 2% Mg).

Pure Al, AlMn, AlMgMn, AlMg1, AlMgSi1, AlMgSi0.5 (AA1100, 1060, 3003, 3004, 5005, 5050, 6063, 6951 aso...)

Profile constructions, tube joinings (lap-joints), window frames, carriage work.

Remark: Anodic oxidation can darken the deposit. When this is not acceptable, use welding rod lastek 74 (or another one in function of the base metal).

## Technical data

Tensile strength Rm: 170 N/mm<sup>2</sup> (25ksi)

Yield strength Rp0.2: ≥60 N/mm<sup>2</sup> (20°C) (9ksi at 68°F)

Elongation A5: ≥5%

Bonding temperature: 500°C (930°F)

## Sizes

mm(inch)	2.0(5/64")	3.2(1/8")	4.0(5/32")
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## Directions for use

Clean and degrease the workpieces.

Slightly bevel the edges.

Apply the flux Lastek 71A (eventually, make a paste with distilled water) and heat the workpieces with a slightly carburizing flame until the flux becomes transparent.

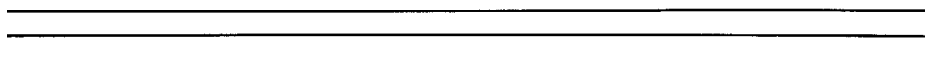
Melt the rod along the joint.

Remove flux residues in order to prevent corrosion afterwards (brush it away with hot water or if necessary plunge it in nitric acid or other appropriate acids followed by rinsing in water).

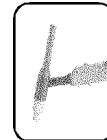
(For normal lap-joints: recommended brazing gap 0.15 - 0.25mm(0.006-0.01inch). For larger lap-joints (> 10mm(> 0.4inch)): gap 0.5mm(0.02inch).)

Furnace brazing: temperature at 600-650°C (1120-1200°F).

Lastek 71 is also suitable for TIG welding of AlSi alloys.







## Welding of AlSi7Mg castings

Sand- and chilled cast pieces in AlSi7Mg are increasingly being used because of the higher strength and hardness, the better resistance against fatigue and the acceptable elongation.

(Mg additions to AlSi alloys can raise the hardness with 50% after precipitation hardening, and the elongation is better than the one of 11% Silicon castings.)

Lastek 712 contains 0.5-0.8% Mg and 6.5-7.5% Si with max 0.05% Cu and max 0.20% Fe, in order not to influence the good corrosion resistance.

## Applications

Castings in AlSi7Mg, like LM25 (BS1490), G-AlSi7Mg0.3, G-AlSi7Mg0.6, A356.0, 357.0, A-S7G03 and A-S7G06, 3.2371, 3.2384, ASTMB26 and B108 - SG70A, UNI3599 aso.

Pumpcomponents, pressure tight castings, rims for the car-industry, moulds for plastic swimming baths and so on.

## Technical data

Tensile strength Rm: > 140 N/mm<sup>2</sup> (20ksi)

Yield strength Rp(0.2): ≥ 80 N/mm<sup>2</sup> (12ksi)

Allongation: ≥ 2%

Hardness: 55 HB

## Sizes

mm(inch) 2.5 (3/32") 3.2 (1/8") 4.0 (5/32")

## Directions for use

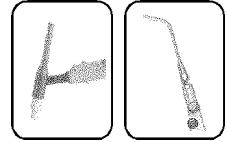
Use Argon or Helium as protection gas (For oxy-acetylenic welding use flux Lastek 71A).

After welding you can submit the deposit to a precipitation hardening process. (8-12h at 530-550°C (986-1020°F): quenching in water; 3 to 6h. at 150-160°C (300-320°F); this treatment will increase the hardness up to 110HB and a tensile strength up to about 300 N/mm<sup>2</sup> (44ksi))

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# lastek 73

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## Pure aluminium

Welding rod for joining pure aluminium, Al 99.5, Al 99, Al 99.8 and Al 99.7.  
Recommended for TIG-welding.  
Extremely fluid weld metal.  
Can be anodized without danger of darkening.  
Corrosion resistant and good electrical conductivity.

## Applications

Chemical industry and food industry.  
Joining of tubes.  
Manufacturing of boilers and rinsing trays.  
Fabrication of electrical household appliances.

## Technical data

Tensile strength Rm:  $\geq 65$  N/mm<sup>2</sup> (9ksi)  
Elongation A5:  $\geq 35\%$   
Hardness: 30 HB  
Bonding temperature: 650°C (1200°F)

## Approval

TÜV

## Sizes

mm(inch)	1.5 (1/16")	2.0 (5/64")	3.2 (1/8")	4.0 (5/32")
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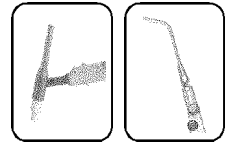
## Directions for use

Use Argon (or Helium) as shielding gas.  
Alternating current is used for normal TIG welding.  
When welded with the oxyacetylene flame use flux Lastek 73A.

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# lastek 74

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## Welding Aluminium with 3%Mg

Welding rod for AlMg3 workpieces.

Repair of AlMgSi0.5, AlMgSi1 and AlMgMn (AA6060 - AA6082).

Seawater resistant.

Can be used for TIG and oxy acetylene welding.

## Applications

Containers, architectural applications, chemical industry, food industry, repair of plates and profiles on trucks.

Workpieces that must be anodised (no discoloration on Si free base metals)

## Technical data

Tensile strength Rm:  $\geq 190\text{N/mm}^2$  (27ksi)

Elongation A5:  $\geq 20\%$

Hardness: 40-50 HB

Temperature: 610-642°C (1130-1190°F)

## Approval

TÜV

## Sizes

mm(inch)	1.5 (1/16")	2.0 (5/64")	3.2 (1/8")	4.0 (5/32")
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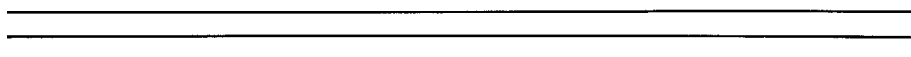
## Directions for use

For TIG welding use AC and Argon protection gas.

For oxyacetylene welding use a slightly carburising flame + flux Lastek 74A.

Flux residues must be removed with hot water + brushing.

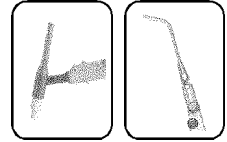
For welding thick pieces: preheat to 150°C (300°F).



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# lastek 75

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## Welding magnesium

Special welding rod for magnesium and magnesium alloys.  
Joining magnesium AZ31B, HK31A, HM21A and so on.  
Pore free welding.  
Colour match with magnesium castings.  
Resist to corrosion.

## Applications

Motor blocks, Mg diecasting parts, oil pump housings, fans, covers.  
Joining of sheets and profiles.

## Technical data

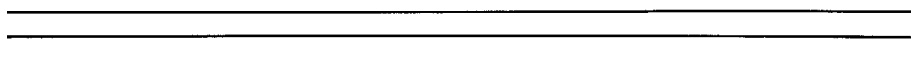
Tensile strength Rm: 250 N/mm<sup>2</sup> (36ksi)  
Elongation A5: 8%  
Hardness: approx 55 Brinell  
Bonding temperature: 525 °C (980 °F)

## Sizes

mm(inch) 3.2 (1/8")

## Directions for use

Clean workpieces carefully before welding (degrease and clean parts and rod by rubbing with stainless steel wool).  
Slightly bevel the edges.  
Preheat pieces at 260 °C - 400 °C (500 °F-750 °F) dependent on alloy type and piece thickness.  
Use Argon or Helium as protective gas. Weld on AC with high frequency ignition.  
For oxy acetylene welding, use flux 75A. (Remove flux residues carefully)  
Slow cooling (and eventually stress relief at 260 °C (500 °F) for 1 hour).



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# lastek 77

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## Welding AlMg5 - highest strength

TIG welding rod for welding AlMg-alloys with up to 5% Mg, AlMgMn and AlZnMg alloys.

High tensile strength and excellent corrosion resistance.

Applicable for temperatures from -196°C(-320°F) up to +150°C(300°F).

Can be anodized without risk of discoloration (on base metals without Si).

## Applications

Maintenance and repair welding of truck bodies, window frames, metallic furniture, advertising signs and boards etc...

All kinds of highly-stressed Al constructions e.g. container-repair.

Applications in marine environment.

Surfacing of Al-dies and moulds (plastic bottle dies).

Also in the chemical- and food industry.

## Technical data

Tensile strength Rm:  $\geq 235$  N/mm<sup>2</sup> (455ksi)

Elongation A5:  $\geq 17\%$

Hardness: 70 HB

## Approval

TÜV

## Current

A.C.

## Sizes

mm(inch) 1.0 (0.035") 2.0(5/64") 2.5 (3/32") 3.2 (1/8") 5.0 (3/16")

## Directions for use

Use argon (or Helium) as protective gas.

Highest speed and minimum base metal dilution is recommended for heat-treated alloys.

Complex or large aluminium components should be supported by tack welds and jigs.

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# lastek 78

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## Braze welding Aluminium

Filler rod with an active flux core that permits an excellent bond on aluminium alloys of different compositions.

Low working temperature and high tensile strength.

L78 has a broad solidus-liquidus interval that gives the welder a complete control on the process. At higher temperatures the pool is very fluid; at lower temperatures L78 can be used to bridge large or badly prepared gaps and is excellent for welding out of position and for pieces of unequal thickness.

The controlled amount of flux in the core assures leak-tight joints and permits faster work also for positional welding.

## Applications

Repair of various work pieces and castings in aluminium.

For welding unknown aluminium alloys (including AlMgSi, AlCuMg, AlSi, pure Aluminium).

Furniture, air conditioning, appliances, thin gauge aluminium.

Remark: By anodising the deposit, it can darken. Use L74 or another rod depending on the type of the parent metal.

## Technical data

Tensile strength Rm: > 120 N/mm<sup>2</sup> (17ksi)

Elongation A5: 20%

Bonding temperature: 565-600°C (1050-1110°F)

## Sizes

mm(inch) 2.0 (5/64") 3.0 (1/8")

## Directions for use

If the work pieces are oil-soaked, preheat them in order to boil out the oil.

Use a slightly carburising flame.

The diameter of the rod shall be somewhat thicker than the plates to be joined.

Remove flux residues by brushing with hot water after brazing.

Avoid depositing several layers on top of each other.



# lastek 800



## Resistant to intergranular corrosion

Stabilized stainless steel electrode for applications at higher temperatures (up to 400°C (750°F)).

Joining of austenitic stainless steel 18Cr - 8Ni and similar compositions:

a) Ti or Nb stabilized as AISI 321 and 347, CF-8C

Wn° 1.4541, 1.4550

b) low carbon types as AISI 304, 304L, CF8, CF3

Wn° 1.4306, 1.4311, 1.4301, 1.4303

Quiet arc, good control of the molten pool.

No spatter. If the weld metal has to be polished to an high degree, use Lastek 803.

## Applications

Silos, cisterns, tanks for milk and other food products.

Trucks for meat transport.

Chemical and food industry.

Steam pipes.

## Technical data

Tensile strength Rm: > 590 N/mm<sup>2</sup> (85ksi)

Yield strength Rp 0.2: > 390 N/mm<sup>2</sup> (56ksi)

Elongation A5: > 30%

Impact strength (Ch V): > 60J (44ft lb)

## Current

A.C. or D.C. (reverse polarity)

## Sizes and amperages

mm(inch)	2.0 (5/64")	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
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Amp	25-40	50-70	60-90	100-140
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## Directions for use

Very low amperage, short arc; use dry electrodes (Lastidry).



# lastek 8000



## Joining carbon steel to stainless steel

Electrode with 14% ferrite, recommended for joining steel to stainless steel.  
Joining and surfacing carbon steel, spring steel, tool steel, manganese steel, stainless steel (AISI 304, 316, 1.4401, 1.4435).  
Base layer for hardfacings.  
Heat resistant up to 900°C (1650°F).  
Corrosion and wear resistant.  
High recovery (165%).  
The electrode does not become red-hot and can be entirely used even at high current.  
Optimum welder appeal and selfreleasing slag.  
For carbon steel to stainless steel joints, the deposit is free of martensite up to dilution levels of 13%.

## Applications

Welding of flanges to stainless steel tubes.  
Surfacing track links.  
Welding wear resistant plates of unknown analysis.  
Applying stainless protective layers on mild steel.

## Technical data

Tensile strength Rm: > 650 N/mm<sup>2</sup> (94ksi)  
Yield strength Rp0.2: > 500 N/mm<sup>2</sup> (72ksi)  
Elongation A5: > 28%  
Impact strength (ISO-V) Av: > 65J (48ft.lb)

## Current

A.C. or D.C., reverse polarity.

## Sizes and amperage

mm(inch)	1.5(1/16")	2.0(5/64")	2.5(3/32")	3.2(1/8")	4.0(5/32")	5.0(3/16")
Amp	30-60	60-80	70-100	90-150	150-210	175-280

## Directions for use

Keep a short arc and use a low current.  
For welding stainless steel, the coating must not be damaged and it is recommended to return over the starting point of the bead.  
When the electrodes have taken up humidity, dry them at 250°C (480°F) for 2 hours (use Lastidry).  
For optimum corrosion resistance on AISI 316L, use Lastek 804 or 804B.

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# lastek 8003

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## Tack welding of thin steel sheets

Lastek 8003 is a coated electrode designed for quickly and securely joining very thin steel sheets by means of welding "points". Striking and restriking characteristics of this electrode are excellent.

A balanced chemical composition permits crackfree joints on die-steels and high carbon steels (for instance curved knives for press cutting leather in the shoe industry).

Lastek 8003 also permits easy tack welding of most stainless steel types (as AISI 304L - 316L etc.) where it minimizes the risks of deformation.

The electrode is only produced in diameter 1.5mm.

## Applications

Tack welding of cutting knives, tack welding of stainless sheets.

## Technical data

Tensile strength Rm: > 640 N/mm<sup>2</sup>

Yield strength Rp: > 500 N/mm<sup>2</sup>

Allongation A5: > 30%

Impact strength (ISO-V) Av: + 20°C > 50J

## Current

A.C. or D.C., reverse or straight polarity.

## Sizes and amperage

mm(inch)	1.5 (0.055")
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Amp	35-50
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## Directions for use

Use skin protection creams (Lastek ASABUV) and adequate welding masks (autodarkening) to protect skin and eyes when tack welding during longer periods of time.

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# lastek 8003C

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## Welding dissimilar metals

TIG-rod for crackfree joining of stainless steel to carbonsteel, to low alloyed steel and cast steel.

Suitable for tough, crack arresting underlayers for hardfacings.

## Applications

Joining austenitic and ferritic stainless steel to low- and unalloyed steel (17Mn4, StE355 aso).

## Technical data

Tensile strength Rm: 600 N/mm<sup>2</sup> (87ksi)

Yield strength Rp0.2: 410 N/mm<sup>2</sup> (59ksi)

Elongation A5: 30%

Impact strength Av (ISO V): 100J (135ft.lb) (20°C(68°F))

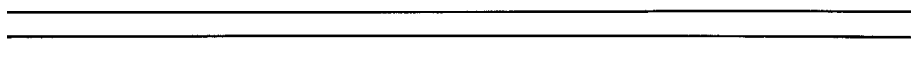
## Sizes

mm(inch)	1.6 (1/16")	2.0 (5/64")
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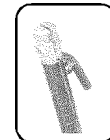
## Directions for use

Shielding gas: Argon (or Helium).

Avoid heattreatment at temperatures above 300°C (570°F).



# lastek 8009



## Exceptional corrosion resistance in seawater

Special electrode for joining and surfacing of stainless steel type '904L'. Exceptional resistance against seawater corrosion. (Far higher than normal 316 or 316L stainless steel.) Also very good corrosion resistance against sulphuric acid of all concentrations up to a temperature of 50°C (122°F).

Caustic soda, most organic acids and even hydrochloric acid will cause no corrosion problems at room temperature.

Because of the low carbon content of the weld deposit there is no danger for intergranular corrosion.

Excellent weldability because of a very stable arc and easily removable slag. Spatter free and porous free welding.

Efficiency: 160%.

## Applications

Seawater resistant overlays and joints (e.g. shipbuilding). Chemical, food, pulp and paper industries. Pickling tanks, cooling towers, constructions for steel surface treatment, pumps, mixers, vessels, pipes, seawater heat exchangers, etc...

Applicable for steel types Uranus B6, Uddeholm 904L, Sandvik 2RK65, DIN Nr 1.4500, 1.4505, 1.4506, 1.4531, 1.4536, 1.4539, 1.4585, 1.4586.

## Technical data

Tensile strength Rm: 550-650N/mm<sup>2</sup> (80-94ksi)

0,2% Yield strength Rp0.2: >400 N/mm<sup>2</sup> (58ksi)

Elongation A5: >35%

Notch Charpy V: 20°C: >80 J (>60 ft.lb)

## Current

AC or DC (+ pole)

## Sizes and amperages

mm("inch)	2.0 (5/64)	2.5 (3/32)	3.2 (1/8)	4.0 (5/32)	5.0 (3/16)
Amp	40-60	70-90	90-130	120-150	160-200

## Directions for use

Clean weld area. Weld with a short arc and low amperage. Welding Uddeholm 904L, Uranus B6 a.o. should be done only after thoroughly cleaning and with lowest possible heat input. Deposit narrow stringer beads, remove slag between passes, avoid weaving. Use an intermittent welding sequence to prevent overheating. Keep the interpass temperature below 100°C (212°F).

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# lastek 8009C

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## Welding stainless steel '904L'

TIG rod for welding stainless steel 20Cr - 25Ni - 4.5Mo - 1.5Cu.

Excellent resistance against corrosion by seawater thanks to the high Cu and Mo content.

Resistance against many chemicals (sulphuric acid in all concentration up to 50°C, caustic soda, organic acids) and against seawater.

## Applications

Welding stainless steel 904L, Uranus B6, 2RK65, Wn° 1.4539, 1.4536, 1.4505, 1.4506.

Chemical- and process industry.

Cooling installations with seawater, fertilizer works (phosphates and phosphoric acids), flue gas channels. Can also be used for welding AISI 317L, 1.4429 and 1.4439.

## Technical data

Tensile strength Rm: 560 N/mm<sup>2</sup> (81ksi)

Yield strength Rp0.2: 320 N/mm<sup>2</sup> (46ksi)

Elongation A5: 35%

Impact value Av(ChV): 120J (88 ft.lb) at 20°C (68°F)

100J (74 ft.lb) at -196°C (-320°F)

## Sizes

mm(inch)	1.6 (1/16")	2.0 (5/64")	2.4 (3/32")
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## Directions for use

Clean carefully the welding zone from oil and grease.

Welding under pure Argon protection (Or Helium).

Limit the interpass temperature until 150°C (300°F).

# lastek 801



## Resistant to intergranular - and pitting corrosion.

Stabilized stainless electrode for applications at higher temperatures (up to 400°C (750°F)).

Joining of austenitic stainless steel containing Molybdenum:

a) stabilized with Ti or Nb, as AISI 318, 316Nb, 316Ti

Wn° 1.4580, 1.4571, 1.4583, BS 320 S17, 320 S31, 320 S33, 318 S96, 318 C17

b) low carbon, as AISI 316, 316LN

Wn° 1.4401, 1.4436, 1.4449, 1.4404, 1.4435, 1.4438, 1.4406, 1.4429

Quiet arc, good control of the molten pool. No spatter.

If the weld metal has to be polished to a high degree, use Lastek 804.

## Applications

Paint-industry, weaving-mills, photo-laboratories, food industry (dairy factories, breweries), constructions exposed to sea-water.

## Technical data

Tensile strength Rm: > 590 N/mm<sup>2</sup> (85ksi)

Yield strength Rp 0.2: > 490 N/mm<sup>2</sup>

Elongation A5: > 26%

Hardness: 170 HB

Impact strength (ChV) Av: > 60J

## Approval

LRS - GL

## Current

A.C. or D.C. (reverse polarity)

## Sizes and amperage

mm(inch)	1.5 (1/16")	2.0 (5/64")	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	20-30	25-40	50-70	60-90	100-140

## Directions for use

Very low amperage, short arc; use dry electrodes (Lastidry).

# lastek 802



## Heat and corrosion resistant

Joining of austenitic, refractory Cr-Ni steels like AISI 310, 314, 309,...  
Werkstoffnummer 1.4841, 1.4843, 1.4845, 1.4828,..., cast steel ACI HK. Repair  
welding of austenitic cast iron like Ni-Resist® or abrasion resistant cast iron like Ni-  
Hard®.

Heat resistant weld overlays for temperatures up to 1200°C (2200°F). For  
applications in an atmosphere of sulphuric gases (sulphur dioxide and especially  
hydrosulphide vapours) apply a protective layer with Lastek 806 after welding the  
joint with Lastek 802.

Welding clad steel. Recommended for welding armour steels and steels with high  
carbon content.

## Applications

Heat treating: furnace tubes, burner nozzles, fixtures...

Cement: kiln chains, kiln feed chutes...

Petroleum and petrochemical: pumps, tubes, tube sheets...

Smelting and refining equipment.

Pulp and paper: digesters, filter press plates and frames, mixing kettles

## Technical data

Tensile strength Rm: > 540 N/mm<sup>2</sup>

Yield strength Rp0.2: > 440N/mm<sup>2</sup>

Elongation A5: > 35%

Notch Charpy V: + 20°C: > 95J

## Current

AC or DC (+ pole)

## Sizes and amperages

mm(inch)	2.0 (5/64")	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	25-40	50-70	60-90	100-140	140-160

## Directions for use

Weld with minimum heat input: short arc, low amperage, electrode vertical to  
workpiece. Use very dry electrodes (Lastidry).

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# lastek 802C

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## Heat and corrosion resistant

TIG welding rod for joining heat resistant Cr-Ni steel (25Cr/20Ni and similar alloys). Can be used up to temperatures of 1200°C (2190°F). (Do not use it in applications where sulphuric gasses are present.)

Despite the pure austenitic deposit, you obtain crack free joints from the first pass. Lastek 802C is also suitable for joining difficult to weld metals or as underlayer for hardfacings. (Allows a high degree of dilution without embrittlement.)

## Applications

Welding of stainless steel AISI 310, 314, Wn° 1.4841, 1.4845, 1.4837, 1.4840.

Welding of furnace plates, heat resistant tubes, pyrometers.

## Technical data

Tensile strength Rm: 600 N/mm<sup>2</sup> (87ksi)

Yield strength Rp(0.2): 400 N/mm<sup>2</sup> (58ksi)

Elongation A5: 30%

Impact strength (ISO-V) Av: + 20°C (68°F): 100J (74ft lb)

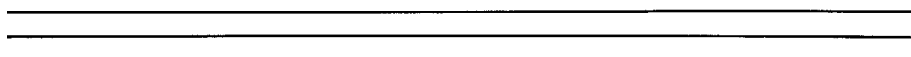
## Sizes

mm(inch)                      2.0 (5/64")

## Directions for use

TIG welding with the electrode at the negative pole and pure argon (or Ar-H<sub>2</sub> or He) as shielding gas.

(Also oxy-acetylene welding is possible: in this case use the flux Lastek 802CA and use a neutral to slightly carburising flame)





# lastek 803



## Welding 18/8 austenitic stainless steel with low carbon content

Electrode with quiet arc and excellent weldpool control. Deposited beads are finely rippled and have a very aesthetic profile. Heat input is very low. Slag release is easy. Provides porosity free deposits, with a glossy finish.

The deposited welds resist intergranular corrosion up to 350°C (662°F). Use Lastek 800 to weld stabilized stainless steels that are used at higher working temperatures.

### Applications

For use on 304L, 304 (308L).

Household appliance manufacturing, industrial kitchen applications, medical equipment, pharmaceutical, chemical and petrochemical industry, condensers, piping and so on.

### Technical data

Tensile strength Rm: > 540 N/mm<sup>2</sup> (78ksi)

Yield strength Rp(0.2): > 350 N/mm<sup>2</sup> (50ksi)

Elongation A5: ≥30%

Impact strength (ISO-V) Av: > 60J (44ft lb)

### Current

A.C. or D.C., reverse polarity.

### Approval

LRS

### Sizes and amperage

mm(inch)	2.0(5/64")	2.5(3/32")	3.2(1/8")	4.0(5/32")
Amp	25-40	50-70	60-90	100-140

### Directions for use

Weld with minimal heat input. Use lowest possible amperage. Use dry electrodes only. Use stainless steel brush and chipping hammer.

# lastek 803B



## Electrode with very low carbon content for welding austenitic stainless steel of the type 18/8

This electrode exhibits very high corrosion resistance, and deposits are easily polished. It is an extra low carbon alloy, designed for welding 18/8 austenitic stainless steels. Excellent weldpool control, also for the root pass. The deposited beads are finely rippled and have a smooth profile. Heat input is very low. Slag release is easy. Provides porosity free deposits, with a glossy finish. All positions except vertical down. The deposited welds resist intergranular corrosion up to 350°C (662°F). Use Lastek 800 to weld stabilized stainless steels that are used at higher working temperatures.

### Applications

Chemical, petrochemical and pharmaceutical industry. Excellent for pipe and tube welding, and filling of narrow grooves.

### Technical data

Tensile strength Rm: > 540 N/mm<sup>2</sup> (> 78ksi)  
Yield strength Rp(0.2): > 350 N/mm<sup>2</sup> (> 50ksi)  
Elongation A5: ≥30%  
Impact strength (ISO-V) Av: 0°C > 60J (> 44ft lb)

### Approval

LRS

### Current

A.C. or D.C., reverse polarity.

### Sizes and amperage

mm(inch)	2.0(5/64")	2.5(3/32")	3.2(1/8")	4.0(5/32")
Amp	30	55	75	110

### Directions for use

Weld with minimal heat input. Use lowest possible amperage. Use dry electrodes only. Use stainless steel brush and chipping hammer.

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# lastek 803C

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## Good intergranular corrosion resistance

Welding rod for TIG or oxy-acetylene welding of stabilized or low carbon austenitic stainless steel of the type 18/8. (AISI 304L)

Good corrosion resistance up to 350°C (660°F).

## Applications

Stainless steel that has to be polished for decorative applications. Tanks for milk and other food. Construction welding in the chemical and food industry. Household apparatus and industrial kitchen equipment. Medical apparatus. Applications in pharmaceutical industries. Heat exchangers, steam pipes, overheaters, etc....

## Technical data

Tensile strength Rm: 600 N/mm<sup>2</sup> (87ksi)

Yield strength Rp0.2: 400 N/mm<sup>2</sup> (58ksi)

Elongation A5: 35%

Impact strength Av (Ch V): 120J (88ft.lb)

## Approval

TÜV

## Sizes

mm(inch) 1.0(0.040") 1.6(1/16") 2.4(3/32") 3.2(1/8")

## Directions for use

TIG welding with the electrode on the negative pole.

Oxy-acetylene welding with neutral flame or with a light acetylene excess. Apply flux

Lastek 802CA on rod and workpiece.

# lastek 804



## High corrosion resistance, easy to polish

This electrode exhibits very high corrosion resistance, and deposits are easily polished. It is an extra low carbon alloy, designed for welding 18/8 Mo austenitic stainless steels.

Very high and rapid deposition rate, excellent weldpool control, deposited beads are finely rippled and have a very aesthetic profile. Heat input is very low. Slag release is easy. Provides porosity free deposits, with a glossy finish.

The deposited welds resist intergranular corrosion up to 350°C (662°F). Use Lastek 801 to weld stabilized stainless steels that are used at higher working temperatures.

## Applications

Chemical, petrochemical and pharmaceutical industries. For applications where chlorine ions can be encountered. Marine environment applications, dairy and food processing equipment.

## Technical data

Tensile strength Rm: > 570 N/mm<sup>2</sup> (82ksi)  
Yield strength Rp(0.2): > 420 N/mm<sup>2</sup> (61ksi)  
Elongation A5: > 35%  
Impact strength (ISO-V) Av: > 65J (48ft lb)

## Approval

LRS

## Current

A.C. or D.C., reverse polarity.

## Sizes and amperage

mm(inch)	2.0 (5/64")	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	35	65	85	120

## Directions for use

Weld with minimal heat input. Use lowest possible amperage. Use dry electrodes only. Use stainless steel brush and chipping hammer.

# lastek 804B



## Welding stainless steel 316L

Electrode with very low carbon content for welding austenitic stainless steel 18/8/Mo. The electrode is characterized by an extremely good arc- and slag control; it is appropriate for welding in single and double bevel grooves, has all position capability (except vertical down) and is suited for penetration welding.

## Applications

Chemical, petrochemical and pharmaceutical industry. Pipes and tubes, narrow grooves. Installations where chlorine ions can be expected. Constructions in sea-water and marine environments.

## Technical data

Tensile strength Rm: >570 N/mm<sup>2</sup> (83ksi)  
Yield strength Rp0.2: >440 N/mm<sup>2</sup> (64ksi)  
Elongation A5: >35 %  
Impact strength (ISO-V) Av: 0°C >60 J (44ft lb)

## Approval

LRS

## Current

AC or DC welding, reverse polarity.

## Sizes and amperage

mm(inch)	2.0 (5/64")	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	30	55	75	110

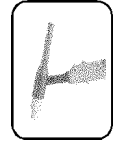
## Directions for use

Weld with minimal heat input. Use dry electrodes only (Lastisec).  
Use only stainless brush and chipping hammer.

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# lastek 804C

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## Excellent pitting corrosion resistance

Welding rod for TIG or oxy-acetylene welding of stabilized or low carbon austenitic stainless steel of the type 18/8Mo (AISI 316L).

Excellent pitting corrosion resistance.

Good corrosion resistance up to 350°C (660°F).

## Applications

Applications where chlorine ions can be expected in the chemical, petrochemical, pharmaceutical and food industry. Construction welding in saltwater and marine environments.

Household apparatus, industrial kitchen equipment and medical apparatus, etc....

## Technical data

Tensile strength Rm: 600 N/mm<sup>2</sup> (87ksi)

Yield strength Rp0.2: 450 N/mm<sup>2</sup> (65ksi)

Elongation A5: 35%

Impact strength Av (Ch V): 110J (81ftlb)

## Approval

TUV

## Sizes

mm(inch) 0.8(.030") 1.0(.040") 1.6(1/16") 2.0 (5/64") 2.4(3/32") 3.2(1/8") 4.0(5/32")

## Directions for use

TIG welding with the electrode on the negative pole.

Oxy-acetylene welding with neutral flame or with a light acetylene excess. Apply flux

Lastek 802CA on rod and workpiece.

# lastek 805



## Stainless steel electrode - vertical down

Vertical down welding of all common corrosion resistant CrNiMo and CrNi steels (as AISI 304, 304L, 316, 316L, Wn° 1.4301, 1.4306, 1.4550, 1.4401, 1.4404). Vertical down welding can be performed much more rapidly, which will shorten the production time remarkably.

Also the heat-input in the material is consequently much lower, which has a favourable influence on tensions and distortion in light gauge metal. It will also limit the postweld cleaning work to a minimum (surface discoloration is much smaller, so less pickling is required).

Lastek 805 has a stable arc, gives practically no spatters and the welding beads have a smooth appearance.

Lastek 805 permits easy root pass welding of open joints in stainless steel.

## Applications

Chemical and petrochemical industry, food industry, hospitals, pharmaceutical industry, industrial kitchen installations, seatransport.

If danger from corrosion by nitric acid is a problem it is desirable to use Lastek 800 or 803B.

## Technical data

Tensile strength Rm:  $\geq 550$  N/mm<sup>2</sup> (84ksi)

Yield strength Rp0.2:  $> 350$  N/mm<sup>2</sup> (50ksi)

Elongation A5:  $> 30\%$

Notch Charpy V:  $> 80$ J (59ft.lb)

## Current

AC or DC (rev. polarity)

For the root pass in an open joint and the first pass in a corner joint, it is preferable to put the electrode on the negative pole when using direct current.

## Sizes and amperage

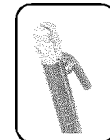
mm	2.0	2.5	3.2
Amp	10-40	30-70	60-110

## Directions for use

Weld with a short arc at high speed, use the lowest amperage possible.

Use only dry electrodes (Lastidry).

# lastek 806



## Resistant to sulphur containing vapour and heat

Welding deposit with high resistance to sulphur containing combustion gasses. Heatresistant up to 1100°C (2010°F). Suitable as fireproof hardfacing on unalloyed steel.

Joining CrNi steel with 24-27%Cr, 4-6%Ni (e.g. AISI 329, Werkstoffnummer 1.4821, 1.4822, 1.4340, 1.4823...).

Can also be used for welding 1.4724 (X10CrAl13) and similar heatresistant steels.

When a high impact strength is required, the joint has to be made with Lastek 802 or Lastek 9066 followed by a capping pass with Lastek 806.

Excellent weldability.

## Applications

Protecting layers on heat treatment baskets and furnace parts.

Applications in atmospheres containing sulphuric di- or trioxide.

Refacing hotworking dies.

## Technical data

Tensile strength Rm: > 650 N/mm<sup>2</sup> (94ksi)

Yield strength Rp: > 440 N/mm<sup>2</sup> (64ksi)

Elongation A5: > 18%

Impact value Av (ChV): > 30J (22ft.lb)

Coefficient of expansion (20-1000°C): 13.8x10<sup>-6</sup>m/m°C

## Current

AC and DC, reverse polarity.

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
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Amp	50-70	70-100	100-140
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## Directions for use

Weld with short arc, electrode vertical to the workpiece and with low amperage.

Welding of massive workpieces in 24-27% Cr, 4-6% Ni steel: preheating 100-300°C (210-570°F).



# lastek 807



## Buffer layers on problem steel

Lastek 807 is a high strength, ductile, crack resistant electrode designed for welding problem steels such as high carbon and crack sensitive tool steels or manganese steel.

Heat resistant up to 850°C (1560°F).

Rust proof.

Recommended for hardfacings; High resistance to wear and heavy shocks.

Excellent weldability in all positions, except vertical down.

High recovery (160%).

## Applications

Joining of highly alloyed and difficult to weld steel.

Surfacing and repair of excavator buckets.

Joining and surfacing of rails and steel with 14% manganese.

Cushion layer for hard facings.

Surfacing of rollers, crane-wheels ...

## Technical data

Tensile strength Rm: 610-690 N/mm<sup>2</sup> (88-100ksi)

Elongation A5: ≥40%

Hardness: ±200Brinell as welded  
±450Brinell work hardened

## Current

AC or DC (rev.pol.)

## Sizes and amperage

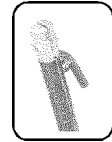
mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32)	5.0 (3/16)
Amp	70-90	90-140	130-180	160-230

## Directions for use

Keep the arc as short as possible. Electrode position almost 90° to the workpiece.

For welding 14% Mn-steel, keep the temperature of the workpiece below 350°C (660°F).

# lastek 809



## For welding dissimilar metals

This molybdenum bearing stainless steel alloy, is especially appropriate for joining all difficult to weld steels to themselves or to stainless steel, or for joining dissimilar stainless steels.

The addition of Molybdenum provides higher corrosion resistance and deposits exhibit first layer welds with high corrosion resistance. The deposited metal is resistant to hot cracking and is practically spatter and porosity free. Slag release is excellent, and weldpool control is easy to obtain. Heat resistance up to 1.050°C. (1922°F)  
Do not use at temperatures from 600°C to 900°C (1110-1650°F.)

## Applications

- Joining of dissimilar steels.
- Welding of plated steels.
- For salt water and pit type corrosive applications.
- Welding of CrNiMo stainless steels.
- Chemical, petrochemical and food industry applications.

## Technical data

- Technical strength Rm: > 650 N/mm<sup>2</sup> (94 ksi)
- Tensile strength Rp0.2: > 560 N/mm<sup>2</sup> (81 ksi)
- Elongation A5: > 30%
- Notch Charpy V: > 60J (44 ft.lb)

## Current

- AC + DC reverse polarity (electrode on the + pool)

## Sizes and amperage

mm(inch)	2.0(5/64")	2.5(3/32")	3.2(1/8")	4.0(5/32")
Amp	25-45	50-75	65-100	100-140

## Directions for use

- Weld with low heat input.
- Preheat crack sensitive steels.
- Use a stainless steel chipping hammer and brush.

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# lastek 811C

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## Hotwork stamping tools

Lastek 811C yields a tough, heat resistant deposit on tool steels and on alloyed steels. It can be used to rebuild hot working tools and dies. Service temperature up to 550°C (1020°F).

## Applications

Press mandrels, extrusion dies, press die discs, shear blades and other tools.

## Technical data

Hardness: 43-48 Rc as welded  
45-50 Rc tempered 550°C (1020°F) 2h, air cooling  
20-25 Rc annealed approx. 800°C (1470°F) 3h, furnace cooling  
Hardening: 1070°C (1960°F) oil or compressed air  
Hot hardness: 30Rc at 500°C (930°F)

## Sizes

mm(inch) 2.4mm (3/32")

## Directions for use

Machine worn contours down to clean metal and round out all cracks. Be sure that surfaces are free from rust, scale, grease and dirt before starting the hardfacing operation. Preheat hot working tools at 150-350°C (300-660°F) to prevent thermal cracking (or up to tempering temperature of the parent metal), rebuild and reheat to tempering temperature. Slow cooling. For rebuilding low or unalloyed steel apply at least 3-4 layers.

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# lastek 813C

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## Machinable hardfacing layer for hot working dies

Lastek 813C is very well suited for repair welding of tool and die steels where the welding deposit has to be machinable.

The final hardness of the deposit is obtained by a heat treatment at 480°C - 500°C (900°F-930°F) after welding. A deposit on hot working dies will harden spontaneously during use between 480°C and 600°C (900°F-1100°F).

The deposited metal has very good resistance to metal to metal wear. It has better corrosion resistance than most of the high chromium containing stainless steels.

### Applications

Repair of tool and die steels where a machinable deposit is needed. Hot working dies used at temperatures between 400 and 600°C (750-1100°F).

Welding of Paralloy MPH, AISI 630.

Water pump impellers and casings, rebuilding pump shafts, coupling houses.

### Technical data

Tensile strength Rm: 1000-1345 N/mm<sup>2</sup> (145-195ksi)

Hardness: 260-300 HB as welded

375 - 480 HB after heat treatment at 480 to 600°C (900 to 1100°F)

### Sizes

mm("inch)	1.6 (1/16)	2.0 (5/64)
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### Directions for use

Preheat and interpass temperature in function of the base metal.

If a higher hardness is desired a heat treatment at 480-500°C (900-930°F) is necessary.

# lastek 821



## High erosion- and cavitation resistance

Especially recommended for joining and overlaying cast martensitic Cr-Ni steel (13 Cr/4Ni), low alloyed steels and steel types with 13% chromium content. Excellent resistance against erosion and cavitation. Corrosion resistant in sea water environment.

## Applications

Overlaying hydraulic turbines and pumps in the chemical industry and in the paper industry.

Francis- and Pelton turbines and Kaplan-wheels.

Welding w.n°. 1.4315 (G-X5CrNi134) and AISI 410 NiMo and AISI 410 (X6Cr13).

## Technical data

Tensile strength Rm: 950-1050 N/mm<sup>2</sup> (137-152ksi)

Elongation A5: > 15%

Hardness: 38-41 Rc (as welded)

Notch Charpy V: > 30J (22 ft.lb)

## Current

DC, reverse polarity. (AC is possible).

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	85	110	150

## Directions for use

Preheat thick work pieces up to 150°C (300°F); keep this temperature as interpass temperature.

After welding, cool down the piece down to 150°C before heat treatment.

Heat treatment after joining: anneal at 580°C (1076°F) during 8 hours followed by cooling in furnace (25°C/hour) down to 250-300°C (480-570°F); followed by cooling in air.

Weld with short arc and low heat input.

Use dry electrodes.

# lastek 8312



## Welding of 3CR12 and Nirosta 4003

Lastek 8312 is an electrode designed for welding the ferritic - martensitic type steels as 3CR12 and Nirosta 4003.

The weld metal has a slightly higher hardness than conventional electrodes used for welding those steels, though retaining a good ductility and freedom from weld cracking. These improved mechanical characteristics give better wear resistance in applications where abrasion is a factor, and where corrosion resistance must be very good, (as in chutes, hoppers, conveyors etc).

The weld metal of Lastek 8312 resists oxidation and retains good mechanical characteristics up to temperatures of approx. 800°C (1470°F). The 160% recovery makes the electrode ideal for production welding. The self releasing slag, the ease of restriking and the long beads ensure faster and cheaper welding procedures.

### Applications

Welding of 3CR12, Nirosta 4003 to themselves or to mild steel, C-Mn and low alloy steels.

Sugar industry, mining industry, glass industry, pulp and paper, fertilizer, containers, railway, abattoirs, sewage purification; conveyors, chutes, ducts, hoppers, flooring etc...

### Technical data

Tensile strength Rm: > 550 N/mm<sup>2</sup> (80ksi)

Yield strength Rp(0.2): > 400 N/mm<sup>2</sup> (58ksi)

Elongation: 25%

Hardness: 230 - 270 HB (on 3CR12 parent metal)

### Current

A.C. or D.C., reverse polarity.

### Sizes and amperage

mm(inch)	2.0(5/64")	2.5(3/32")	3.2(1/8")	4.0(5/32")
Amp	50-75	70-90	100-150	130-180

### Directions for use

Remove grease, paint, rubber and any carbon sources from the weld area.

Do not preheat 3CR12 or Nirosta 4003. Limit the interpass temperature to about 100°C (212°F) maximum. Do not use weaving motion. No heat treatment after welding is necessary.

To pickle the weld area, use Lastek TS paste with limited application time (approx. 10 min - control on regular intervals) or use Lastek SP-V liquid spray.



# lastek 85



## Joining dissimilar metals and difficult to weld steels

Highly alloyed electrode for joining and surfacing tool steel, spring steel, manganese steel, carbon steel and all difficult to weld steels and dissimilar metals.

The deposit has exceptional tensile strength and resistance to cracking.

Oxidation resistance up to 900°C (1650°F).

Even on dirty metal porous-free welds can be obtained.

Stable arc, almost no spatters.

Smooth welds, without undercutting.

All positional.

## Applications

Joining of broken tools and dies, cast steel, abrasion resistant steel.

Copper and carbon steel to stainless. Repair of hydraulic rams, bulldozer buckets and teeth, gears.

The work hardening characteristics and the high chromium content make Lastek 85 suitable for surfacings on rails and bearing areas, on plastic extrusion tools and cutting edges.

## Technical data

Tensile strength Rm: > 820 N/mm<sup>2</sup> (119ksi)

Yield strength: 700 N/mm<sup>2</sup> (101ksi)

Elongation A5: > 21%

Hardness: 180-200 HB (up to 390 HB after workhardening)

Charpy V impact strength: 33J (25ft.lb)

## Current

AC or DC (reverse polarity)

## Sizes and amperage

mm(inch)	2.5 (3/32)	3.2 (1/8)	4.0 (5/32)	5.0 (3/16)
Amp	55	85	110	160

## Directions for use

Electrode to be held at 90° to workpiece with shortest possible arc. Allow each weld bead to cool slightly before making a further deposit.

On problem steels, cover the welded area with insulating material in order to avoid a rapid cooling.

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# lastek 852C

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## TIG rod for welding duplex stainless steel

Excellent resistance against stress corrosion and intergranular corrosion.  
Can be used up to temperatures of 280°C (540°F).  
High tensile strength and ductility.

### Application

Chemical industry, paper industry, sewage treatment plants, fertilizer industry, hydrometallurgy.  
Stainless steel with Wn° 1.4462, 1.4460, 1.4437, 1.4417, 1.4582, SAF 2205, SAF 2304 and assembling stainless to carbon steel.

### Technical data

Tensile strength Rm: 800 N/mm<sup>2</sup> (116ksi)  
Yield strength Rp0.2: 600 N/mm<sup>2</sup> (87ksi)  
Elongation A5: 26%  
Impact strength (20°C-68°F): 100J (74ftlb)

### Sizes

mm(inch) 2.0 (5/64")

### Directions for use

Protective gaz: pure argon or argon - helium mixture.  
Backinggas: argon or anti-slag gas (90 N<sub>2</sub>, 10H<sub>2</sub>).  
Pickling paste: Lastinox TS.  
Joint preparation: for a V joint on plate thickness 2.5 up to 8mm (1-3inch); the gap width has to be taken somewhat larger than for the austenitic steel types (e.g. 2 to 3mm - 0.08 to 0.12 inches) and the angle somewhat wider (60 to 70°).  
Avoid a sudden cooling of the bead.



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# lastek 85C

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## Crack-free welds on problem steels

TIG welding rod for joining difficult to weld steel or for precision repair on dies.

Very high tensile strength, shock resistant and ductile.

Because of the high chromium content, Lastek 85C is oxidation resistant up to 1150°C (2100°F).

The high ferrite content guarantees crack-free assemblies when welding stainless steel to carbon steel, even at a high dilution.

## Applications

Joining and refacing high carbon steel, tool steel, spring steel, manganese steel, cast steel.

Wear resistant layers on dies and edges.

## Technical data

Tensile strength Rm: 750 N/mm<sup>2</sup> (108ksi)

Yield strength Rp(0.2): 530 N/mm<sup>2</sup> (77ksi)

Elongation A5: 25%

Impact strength (ISO-V) Av: 20°C (68°F) : 110 J (81 ftlb)

Hardness: 260 HB (work hardens up to approx 450 HB)

## Sizes

mm(inch)	1.0 (0.035")	1.6 (1/16")	2.4 (3/32")	3.2 (1/8")
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## Directions for use

Protection gas: Argon or Helium.

(For refacings with the oxy acetylene flame use flux 802CA)

# lastek 90



## High strength - soft arc

Exceptional mechanical characteristics.

Recommended for all steels that are difficult to weld.

Highly alloyed with Ni, Cr and Mn.

The deposited material is very tough, crack-free, and has an exceptional resistance to shocks and fatigue.

Good resistance to wear, corrosion and heat.

Very soft arc, with minimum spatter.

## Applications

Wear plates for waste disposal, teeth of dredger buckets.

Repair of cracked buckets and scoops.

Repair of tractor-platforms, rear axle and fellies of trucks, leaf springs, broken crank shafts.

Base layer for surfacings on problem steels.

Repair of broken cutting tools.

Wear-resistant surfacing of machine parts e.g. plastic injection moulds.

## Technical data

Tensile strength Rm: >800 N/mm<sup>2</sup> (116ksi)

Yield strength Rp(0.2): ≥640 N/mm<sup>2</sup> (93ksi)

Elongation A5: >26%

Hardness: 220 HB

## Current

A.C. or D.C., reverse polarity.

## Sizes and amperage

mm (inch)	1.5 (1/16")	2.0 (5/64")	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
Amp	15-35	20-50	30-65	45-125	80-160

## Directions for use

Use a short arc. Electrode position: almost 90° to the workpiece. Allow each weld bead to cool slightly before making a further deposit.

For welding on crack sensitive steels, pre-heat the workpiece until it reaches the tempering temperature of the steel. Avoid rapid cooling.

# lastek 95



## Welding very massive workpieces

Austenitic electrode with a universal application field especially for assemblies requiring high tensile strength and elongation.

V groove joints can be filled by fillet welding without cracking danger, even in very thick materials.

## Applications

To weld die steels, alloy steels, stainless chromium steels, non magnetic steels and cast steels with unknown impurities.

Especially recommended for thick sections.

## Technical data

Tensile strength Rm: > 700N/mm<sup>2</sup> (101ksi)

Yield point Rp(0,2%): > 500N/mm<sup>2</sup> (72.5ksi)

Elongation A5: > 28%

## Current

A.C. or D.C. (reverse polarity)

## Sizes and amperage

mm("inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32)
Amp	70-90	90-140	130-180

## Directions for use

Remove all traces of oil or grease.

Depending on the used tempering temperature, die-steel can be preheated up to 250-550°C (480-1000°F).

Chromium steel (13-17%Cr) is preheated up to 200-300°C (400-540°F).

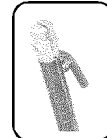
Manganese steel (14%) should be cold-welded without any preheat.



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# lastek 44

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## Welding Monel®400

Covered electrode for welding "Monel® 400" and for overlaying steel with a corrosion resistant Nickel-Copper layer.

Highly resistant to chemicals (as pickling baths) and to seawater. Also used for joining dissimilar metals (Ni-Cu and Cu-Ni to steel, to cast iron, to bronze, etc...).

### Applications

Food-, chemical-, petrochemical industries.

Ship-repairs. Seawater condensers, heat exchangers, pump parts, stirring devices, pickling baths, distilling columns. Building up pump shafts in marine environment.

### Technical data

Tensile strength Rm: 480 N/mm<sup>2</sup> (70ksi)

Yield strength Rp: 280 N/mm<sup>2</sup> (41ksi)

Elongation A5: > 35%

Impact strength (ISO-V) Av: > 120J (+20°C) (> 88ft lb (68°F))  
> 110J (-196°C) (> 81ft lb (-320°F))

### Current

D.C., reverse polarity.

### Sizes and amperage

mm(inch)	3.2 (1/8")	4.0 (5/32")
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Amp	90	115
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### Directions for use

Clean weld area very thoroughly of all contaminations.

Hold a short arc and use stringer beads or a slight weaving technique to avoid too much heat input. Electrode almost vertical to the workpiece.

# lastek 9065



## Welding electrode for welding of nickel alloys and for welding dissimilar metals

Special high nickel base electrode for crack-free, welding of Inconel<sup>®</sup>, Incoloy<sup>®</sup>, Nimonic<sup>®</sup>, Monel<sup>®</sup> and Hastelloy<sup>®</sup> alloys, as well as high alloyed stainless steel, heat resistant steel and ferritic steel. The alloy is also used for making dissimilar welds between nickel alloys and steel, stainless steel and copper alloys and between steel and copper alloys.

The excellent mechanical characteristics at low temperatures make the alloy suitable for welding nickel-steels (9%Ni) for use at subzero temperatures (down to -196°C (-321°F)).

Also recommended for corrosion and heat resistant surfacings.

Deposits have superior corrosion resistance and are resistant to very elevated temperatures (up to 1100°C (2012°F) - in sulphur free atmospheres).

Excellent welding properties: a stable arc even at low amperage, very easy slag removal, all positional except vertical down.

## Applications

Furnaces and heat resistant parts, where thermal shocks occur, installations for liquified gas.

Joining stainless to mild steel, welding crack sensitive steel types even with heavy sections.

Cushion layers for hardfacings on problem steels.

## Technical data

Tensile strength Rm: > 620 N/mm<sup>2</sup> (90 ksi)

Elongation A5: > 36%

Notch Charpy V: +20°C (68°F) > 110J (81 ft.lb)

-196°C (-321°F) > 100J (74 ft.lb)

## Current

AC and DC (+pole)

## Sizes and amperage

mm("inch)	2.5(3/32)	3.2(1/8)	4.0(5/32)
Amp	70-80	90-100	115-130

## Directions for use

Clean the pieces thoroughly, remove oil and grease.

Use stringer beads (don't weave).

The electrodes should be used dry; they can be dried before welding in the "Lasti-dry".

# lastek 9066



## Electrode for joining dissimilar metals with highest crack resistance

Special electrode with high nickel content for joining unalloyed and alloyed steel, stainless steel and heat resistant steel, nickel and nickel alloys, copper and copper alloys. Also suitable for dissimilar welding of these metals. The deposit has a very high ductility, is ferrite free, corrosion resistant and heat resistant up to high temperatures.

Excellent weldability on alternating current.

### Applications

Joining dissimilar metals, especially for high thicknesses and rigid joints. Welding of cryogenic steels: vessels and pipes for liquefied gases. Intermediate layer in copper-steel joints. Welding of crack sensitive steel types: roller guides of cement kilns, hydraulic cylinders.

### Technical data

Tensile strength Rm: > 600 N/mm<sup>2</sup> (87ksi)

Yield strength Rp0.2: > 420 N/mm<sup>2</sup> (61ksi)

Elongation A5: > 30%

Impact strength (ISO-V) Av: + 20°C (68°F): > 100J (74ft.lb)

-196°C (-321°F): > 90J (66ft.lb)

(Heat treated 15h/650°C (1200°F) : Rm > 600 N/mm<sup>2</sup> (87ksi)

Rp0.2 > 400 N/mm<sup>2</sup> (58ksi)

A5 > 40%

Av + 20°C (68°F) > 100J (74 ft.lb)

-196°C (-321°F) > 85J (62 ft.lb)

### Current

A.C. or D.C., reverse polarity.

### Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")
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Amp	70-80	90-100	115-130
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### Directions for use

Clean and degrease the workpiece. Weld with a short arc, the electrode almost vertical to the workpiece. Crack sensitive steels should be preheated depending on the composition and the dimensions. Normally 100 to 250°C (210-480°F) will be sufficient. Always use dry electrodes.

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# lastek 9067

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## Excellent corrosion and high temperature properties.

Lastek 9067 is a high nickel electrode used in the assembly of Ni-Cr-Mo alloys like Inconel 625.

The weld deposit is very corrosion resistant. In high temperature applications it is resistant against oxidation up to 1200°C (2200°F).

Lastek 9067 permits dissimilar joints between austenitic CrNiMo-steels and nickel base alloys.

## Applications

Chemical and petrochemical industry.

Surfacing and repairing of moulds and dies.

Corrosion resistant overlays in off-shore constructions and in marine equipment.

Joint welds and welding overlays in heat treatment equipment.

## Technical data

Tensile strength Rm: 760 N/mm<sup>2</sup> (110ksi)

## Current

A.C. or D.C. welding, reverse polarity.

## Sizes and amparage

mm(inch)	2.5 (3/32")	3.2 (1/8")
Amp	70-90	110-130

## Directions for use

Use a short arc.

Electrodes have to be dry before use; they can be dried before welding in the "Lasti-dry".

Welding zone should be thoroughly cleaned before welding.

All traces of sulphur and lead present in grease, oil, layers of paint and marking crayons have to be removed.

The cleaning agent has to be washed off with hot water.

Oxide layers have to be removed by grinding or with a stainless steel brush.

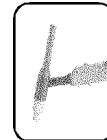
Use stringer beads (don't weave).



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# lastek 918

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## Hardens when temperature rises

TIG welding rod for hardfacing injection dies, blanking dies, hot-working dies (up to 550-600°C (1020-1110°F)).

The resistance to wear is remarkably higher than this of common "hot-work" steel.

The deposited metal is machinable and hardens when in use up to more than 50 Rc by influence of the temperature (without impact loading).

The surfacing can be easily polished. No decarbonisation is to be feared during heat treatment.

## Applications

Aluminium and zinc casting industries, cold-working dies under high pressures, tools for extrusion, plastic dies.

Welding maraging steel.

## Technical data

Hardness of the deposited material: 33 Rc

Hardness under influence of temperature (480-510°C) (900-950°F): 47-53 Rc  
(also after cooling down)

Remark: By holding the surfaced part at higher temperatures ( $\pm 820^{\circ}\text{C}$  -  $1500^{\circ}\text{F}$ ) and cooling in air, the surfacing becomes soft and machinable. It will harden again when kept a few hours at  $480\text{-}510^{\circ}\text{C}$  ( $900\text{-}950^{\circ}\text{F}$ ) (4-6hours).

Coefficient of expansion:  $12 \cdot 10^{-6}/^{\circ}\text{C}$

## Sizes

mm(inch)	1.6 (1/16")	2.4 (3/32")
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## Directions for use

Remove old refacings and fatigued material.

Preheat base metal  $150\text{-}300^{\circ}\text{C}$  ( $300\text{-}570^{\circ}\text{F}$ ) (dependent on the steel type).

Weld with pure argon.

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# lastek 925

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## Nickel based rod with excellent corrosion resistance

Appropriate for welding nickel steels (9% Ni) used at temperatures below zero, and for welding of nickel alloys as inconel 625.

Can be used for joining dissimilar metals.

Appropriate for working temperatures from -196°C to 1000°C (-320°F to 1800°F).

Very high corrosion resistance.

## Applications

For joining copper free nickel alloys to each other or to mild steel or alloy steel.

Chemical and petrochemical industry, measuring instruments used at high temperatures, repair welding and rebuilding of hotworking dies.

## Technical data

Tensile strength Rm: 760 N/mm<sup>2</sup> (104 ksi)

Yield strength Rp(0,2): > 420 N/mm<sup>2</sup> (60 ksi)

Elongation A5: 35%

Impact strength (ISO-V)Av: 130J at 20°C (96ft lb at 68°F)  
80J at 196°C (59 ft lb at 385°F)

## Dimensions

mm(inch) 1.6 (1/16")

## Directions for use

Clean the weld area very carefully.

To protect the welding zone efficiently, it is necessary to use a large gas cup.

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# lastek 947

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## Welding 'Hastelloy X'

Lastek 947 is a bare filler rod for TIG welding Hastelloy X and similar metals. It has a very high oxidation resistance (up to 1200°C (2190°F)) and excellent high temperature strength. It is used in phosphorus bearing combustion environments, nitriding and carburization environments, oxidizing as well as reducing and neutral atmospheres.

## Applications

Lastek 947 is one of the best alloys for use in high temperature furnaces (welding and rebuilding furnace rolls); it is also used on aircraft parts as combustion liners, afterburner components, jet engine tail pipes.

It can be used for joining dissimilar alloys (stainless steel and high temperature Ni alloys).

## Technical data

Tensile strength Rm:  $\geq 650$  N/mm<sup>2</sup> (94ksi)

Yield strength Rp(0.2):  $\geq 300$  N/mm<sup>2</sup> (43ksi)

Elongation A5:  $\geq 20\%$

Impact strength (ISO-V) Av:  $\geq 48$ J (65ft lb)

## Directions for use

Clean parts to be welded from all traces of oil. (Use sulphur free cleaning agents as acetone or alcohol.)

Grind the zone to be welded with grinding discs that are free of sulphur and iron -- i.e. use vitrified or resinoid bonds.)

Protecting gas for welding: pure argon.

Use a short arc and weld stringer beads.

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# lastek 967

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## Welding of monel<sup>®</sup>400

Gas tungsten arc filler rod for joining monel and monel clad steel.

Also applicable for overlaying mild steel.

Seawater resistant (especially with flowing seawater), corrosion resistant.

Can be used for TIG welding cast iron.

## Applications

Chemical industry, food industry, shipbuilding, petrochemistry, stirring devices, pickling baths, heat exchangers, pump-parts, distilling columns, furnace muffles.

Repair of flaws in cast iron, joining of broken cast iron parts.

## Technical data

Tensile strength Rm: 500 N/mm<sup>2</sup> (72 ksi)

Elongation A5: 35%

## Sizes

mm (inch)	2.4 (3/32")
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# lastek 970

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## Hastelloy®B-2

TIG welding rod for joining Nickel alloys (as Hastelloy®B-2).  
Can be used for dissimilar joints between Nickel alloys and steel or stainless steel.  
Lastek 970 has an excellent corrosion resistance against chloric acid, sulphuric acid, phosphoric acid and bases.

### Technical data

Tensile strength Rm:  $\geq 755$  N/mm<sup>2</sup> (109ksi)  
Elongation: > 35%

### Sizes

mm(inch)      1.6 (1/6")

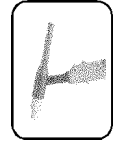
### Directions for use

Clean carefully the welding area and remove all traces of oil and grease. Don't use cleaning products containing sulphur.  
Weld with low heat input (interpass temperature < 90°C (194°F)).

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# lastek 979

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## Outstanding corrosion resistance

Lastek 979 has an excellent corrosion resistance to both oxidising and reducing media.

The weld deposit is resistant to most aggressive chemical process environments where nothing else resists. Especially resistant to pitting, crevice and stress corrosion.

## Applications

Welding of nickel base alloys like UNS N10276, DIN 2.4602.

Dissimilar welding between nickel base alloys and stainless or low-alloy steel.

Protection of steel surfaces against corrosion by "cladding" with Lastek 979.

Excellent resistance against chlorides and seawater.

Used in chemical processing, pollution control, industrial and municipal waste treatment, pulp and paper production and so on.

## Technical data

Tensile strength (Rm): 690 N/mm<sup>2</sup> (100 ksi)

## Dimensions

mm("inch) 1.6 (1/16")

## Directions for use

The base metal has to be thoroughly cleaned before welding.

Weld with the lowest possible heat input.

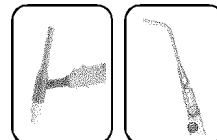
Let the weld metal cool down between different layers.

Use argon backing gas for the root pass in pipe welding.

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# lastek 980

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## Metal to metal wear at elevated temperatures

Wear, corrosion- and heat resistant hard facing rod on nickel base, with high hardness at elevated temperatures (up to 800°C (1472°F)).

Excellent metal-to-metal wear properties where high temperatures or impact load occur.

Good resistance against oxidising- and reducing environments up to 1200°C (2192°F).

Resistant against chloride containing media (e.g. seawater) and against acetic acid, oxidising and reducing flue gasses, sulphuric acid and hydrogen chloride.

TIG process recommended, oxy-acetylene welding is also possible.

## Applications

Refacing dies and punches exposed to high temperatures (forging and extrusion tools, hot cutting tools, guides and tong bits in the steel industry).

Refacings where extreme seawaterresistance is necessary.

Pumps and valves in the chemical industry.

Fertilizer industry.

## Technical data

Tensile strength Rm: 650 N/mm<sup>2</sup> (94ksi)

Elongation A5: 10%

Hardness as welded: 210 HB

Hardness after work hardening: 40 Rc

Hardness at 600°C (1112°F): 180 HB

Melting temperature: 1280°C (2336°F)

## Dimensions

mm 3.2

## Directions for use

Clean thoroughly the surface to be welded and ground away eventual cracks in the base metal.

Preheat, if necessary, in function of the composition and the structure of the base metal and cool down slowly.

When you work with an oxy-acetylene flame, a neutral flame gives the best corrosion resistance.

A carburating flame gives a higher hardness.

You obtain an optimal corrosion resistance by heat-treating the deposit at 1200-1220°C (2192-2228°F) - 1 to 2 hours - followed by fast air-cooling.

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# lastek 982

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## TIG rod for joining nickel alloys and dissimilar metals

Lastek 982 can be used to weld NiCrFe alloys of the Inconel type. The deposited weld metal has high strength and oxidation resistance at temperatures from up to 1200°C (2192°F). Lastek 982 can also be used at temperatures below zero. The thermal expansion coefficient is intermediate between the one of ferritic and austenitic steels. This is particularly important for dissimilar metal joints subjected to cyclic temperature conditions.

### Applications

Welding of Inconel 600, 601, Incoloy 800, 800HT. Also Inconel to Incoloy alloys, to Monel alloys, to stainless steels, to carbon steel.  
Joining and cushioning of hardenable, tempered steels or any problem steel.  
Chemical industry, petrochemical industry, shipping industry, food industry.

### Technical data

Tensile strength Rm: > 600 N/mm<sup>2</sup> (87ksi)  
Yield strength Rp(0.2): > 380 N/mm<sup>2</sup> (55ksi)  
Elongation A5: > 30%  
Impact strength (ISO-V) Av: + 20°C (68°F) > 120J (88ft lb)  
- 196°C (-321°F) > 100J (74ft lb)

### Sizes

mm("inch)	1.6 (1/16)	2.0 (5/64)	2.4 (3/32)	3.0 (1/8)
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### Directions for use

Clean nickel alloys thoroughly, removing all traces of oil and grease.  
Use a gas cup on the torch as large as feasible.  
For joining difficult to weld steels, keep dilution as low as possible.





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# lastek 1000

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## Cutting stainless steel and cast iron

Electrode with a special coating for electric cutting of all ferrous and non-ferrous metals without oxygen or compressed air.

High speed cutting. Does not overheat, and can be used totally.

Stainless steel cutting gives clean cutting edges without carbon-deposits.

Cutting plates in vertical as well as in horizontal position.

## Applications

Cutting all metals when conventional gas cutting equipment is not suitable: stainless steel, aluminium, cast iron, bronze, copper and so on.

Many applications in boiler works.

Dismantling of a defective ball bearing: Lastek 1000 is used to cut the outer ring, and Lastek 1001 to heat the inner ring.

Demolition works.

Piercing holes for bolts. Removal of rivets.

## Current

A.C. or D.C., straight polarity.

## Sizes and amperage

mm(inch)	2.5 (3/32")	3.2 (1/8")	4.0 (5/32")	5.0 (3/16")
Amp	120-160	160-250	200-350	260-390

## Directions for use

Electrode position: 90° to workpiece.

On thick pieces: make an up and down saw movement.

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# lastek 1000S

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## Cutting underwater without oxygen.

Electrode with a special coating for electrical cutting of all ferrous and non-ferrous metals without oxygen. Uses only a standard DC welding power source.

Cutting plates in vertical as well as in horizontal position.

No more need for heavy oxygen cylinders, high pressure gauges, special cutting torches; oxygen cost is eliminated.

## Applications

Cutting all metals when conventional exothermic cutting underwater is not suitable due to the absence of specific equipment or where danger on explosion due to oxygen build up is to be feared.

Demolition works.

Piercing holes for bolts. Removal of rivets.

## Current

D.C., straight polarity.

## Sizes and amperage

mm(inch)	5.0 (3/16")
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Amp	290-380
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## Directions for use

Electrode position: 90° to workpiece.

On thick pieces: make an up and down saw movement.

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# lastek 1001

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## Electrode for preheating metals

The special coating of this electrode generates a concentrated heat input in the workpiece without depositing any metal.

There is only a little bit of slag that can easily be removed with a brush.

Lastek 1001 can be used for bending and straightening profiles and plates.

## Applications

Locally heating of art and ornamental work.

Forging small pieces.

Dismantling of the steering pivot pin of trucks.

Removal of the inner ring of a roller bearing jammed on a shaft. (Use Lastek 1000 to cut the outer ring.)

Preheating of a weld that must be peened.

## Technical data

Heat input per electrode: approx. 680 kJ for diam. 4.0mm (5/32")

approx. 430 kJ for diam. 3.2mm (1/8")

## Current

A.C. or D.C., straight polarity.

## Sizes and amperage

mm(inch)	3.2 (1/8")	4.0 (5/32")
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Amp	130-160	200-230
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## Directions for use

Arc length: 15 to 20mm (0.6-0.8inch) from the workpiece.

Move the electrode over the workpiece if a larger area has to be preheated.

To avoid even slight damage to the workpiece, strike the arc on a piece of waste metal.

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# lastek 1008

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## Under water welding

Lastek 1008 has been specially developed for under water welding of high strength steels. The water repellent coating permits welding down to great depths without problems.

The coating provides an electrical insulation for a higher safety of the diver and is not prone to physical damage by higher temperatures or bad storage conditions.

The special composition of the coating causes a soft and stable welding arc with a good view on the weld puddle and easy slag removal.

The electrodes allow for an excellent controllable arc, and are designed to be used in all positions, also by inexperienced divers.

## Applications

Under water welding in off shore constructions, under water pipelines, drilling platforms.

Harbour and lock works, sheet pile walls and ship repair.

## Technical data

The mechanical characteristics of the deposited weld metal depend on the type of steel and the cooling rate.

Generally spoken, the tensile strength and hardness of under water welds are much higher than welds made in air.

Tensile strength: dry welded: 540N/mm; wet welded: 564/Nmm

Elongation: dry welded: 26%; wet welded: 10%

Charpy V impact strength(ISO-V): dry welded: 62J; under water welded: 34J

## Current

D.C., straight polarity (reverse polarity is possible).

## Sizes and amperage

mm(inch)	3.2 (1/8")	4.0 (5/32")	5.0
Amp	150-165	185-200	240-290

## Directions for use

The joint area has to be free from rust, paint and other coatings.

Each new electrode is rubbed softly with the tip over a file in order to remove the coating on the tip and to make it possible to strike an arc.

When adjusting the welding current the losses due to the length of the cables have to be taken into account. The maximum current mentioned above may not be exceeded.

Only DC-current is allowed.

The open circuit voltage has to be below 65 Volt.

All the parts that are under water have to be free of current when the arc is interrupted. Please ask for our special electrode holder for underwater welding.

# lastek 1010



## Spotwelding of metal

Welding electrode used for spotwelding of metals.

Replaces expensive spotwelding- or other resistance welding machines, as well as most bolt-screw-nutt joints and aluminium rivetting.

Joins without problems sheets with a total thickness of 10mm (e.g. 5mm to 5mm sheet or 1mm sheet to 9mm sheet) with a complete penetration.

Also appropriate for spotting (or rivetting) sheets of 10mm or less to heavier workpieces without complete penetration.

Appropriate for plating stainless steel on mild steel.

## Applications

Chemical industry (spotwelding stainless steel sheet to profiles without drilling through the stainless steel sheet), general workshops (e.g. gates where sheet on profiles has been fixed and that becomes frequently detached by contact with forklifts), garages (e.g. hooks for fixing the canvas to lorries).

## Technical data

Tensile strength Rm: +- 650 N/mm<sup>2</sup> (94ksi)

Shear strength: +- 520 N/mm<sup>2</sup> (75ksi)

Elongation A5: +- 35%

## Current

Ac or DC (straight polarity)

## Sizes and amperage



Electrode	mm1.5(1/16")	2.0(5/64")	2.5(3/32")	3.2(1/8")	4.0 (5/32")
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Amp	50-100	90-140	140-180	190-320	250-350
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A(mm)	1-3	4-6	6-10	11-14	*
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(A = plate thickness)

\*Remarks: For joining sheets of 8-10mm to heavier sections without penetration, an electrode of 4.0mm is used, with 250-350 Amp.

## Directions for use

1. Keep the electrode perpendicular to the workpiece.
2. Keep a very short arc and push the electrode into the molten pool.
3. As soon as the required penetration is obtained, retract the electrode a few mm to form the head of the "rivet".

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# lastek 1900

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## Gouging and grooving

Lastek 1900 melts and blows away any metal (from stainless steel to cast iron or copper alloys) with a standard AC or DC power source.

The highly concentrated blowing action removes any grease or oil or excess carbon on cast iron and leaves a clean groove free of adhering molten particles.

On stainless steel, there is less oxidation than with other air or oxygen based cutting processes, seen the protection of the weld zone with ionized elements from the coating.

Can be used on spots that can't be reached with a grinding wheel.

All positional (horizontal, inclined, vertical down and overhead).

## Applications

Preparing weld repairs on cast iron (just fit the broken parts together, gouge a groove and positioning always remains correct), removing flash and risers in foundries, veeing out cracks in any steel structure prior to welding, removing old hardfaced layers prior to rebuilding, beveling of all metals.

## Current

AC or DC (straight polarity)

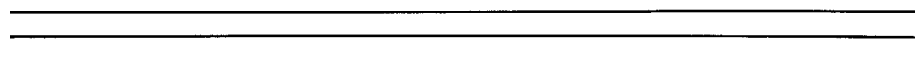
## Sizes and amperage

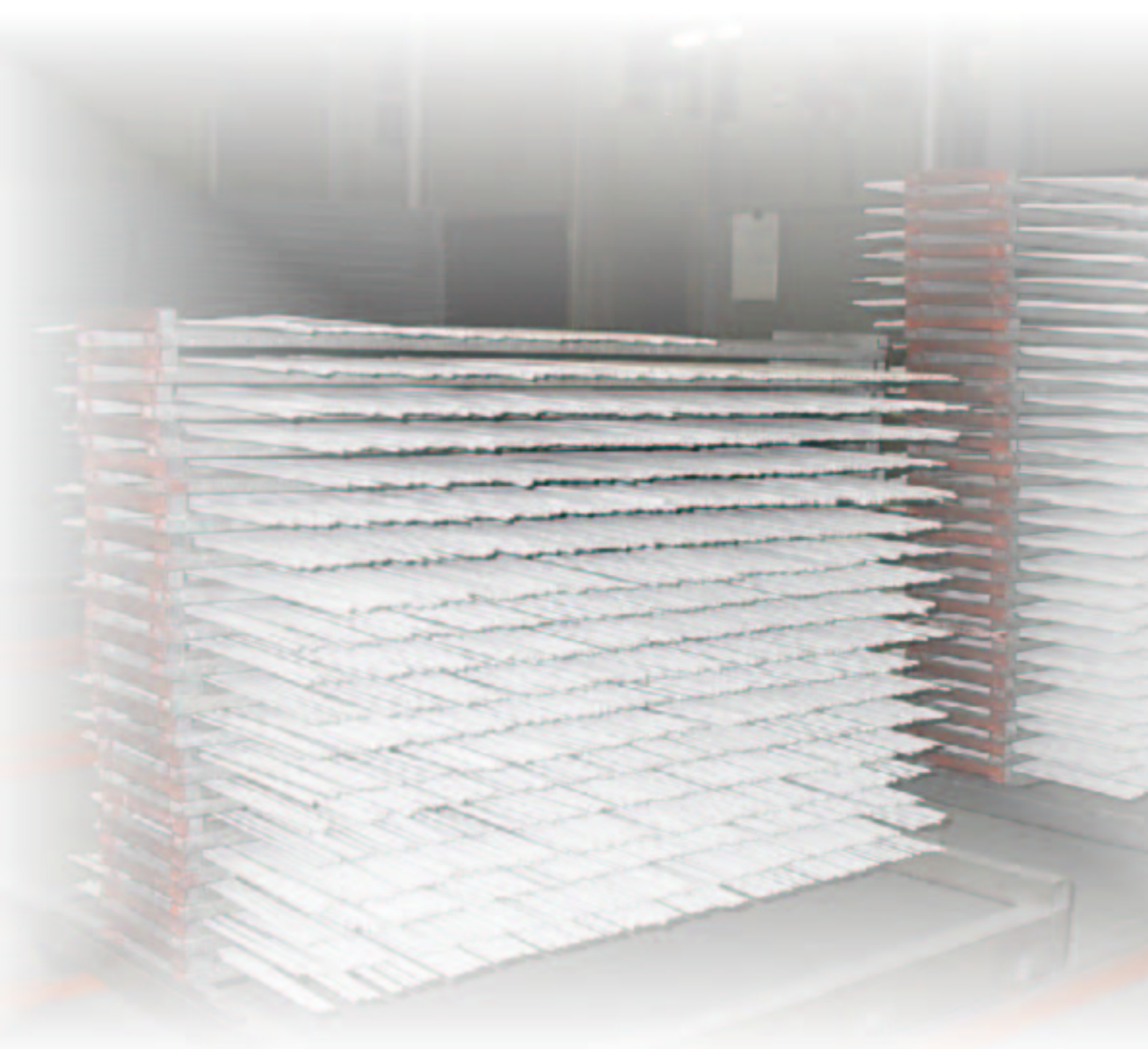
mm(inch)	2.5 (3/32)	3.2 (1/8)	4.0 (5/32)	5.0 (3/16)
Amp	90-150	130-240	180-300	220-350

## Directions for use

DC straight polarity produces the fastest grooves, but AC may be used. Keep the angle between electrode and workpiece between 6 and 20 degrees (the lower the angle, the more amps can be used and the faster and cleaner the groove).

Push the electrode forwards to produce a shallow groove. For a deeper cut, repeat the operation.







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# lastek 30PA

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## Silver brazing paste

Low bonding temperature.

Appropriate for furnace soldering in controlled atmosphere and for oxy-acetylene soldering.

High silver content.

Easy and economic to use. Penetrates deeply in tight joints.

## Applications

Jewellery, wire cloth, chemical apparatus, electrical contacts, medical instruments, bicycle frames, hydraulic components, music instruments, hardmetal.

## Technical data

Tensile strength Rm: 450 N/mm<sup>2</sup> (65ksi)

Bonding temperature: 620°C (1150°F)

Electrical resistivity: 0.074 ohm.mm<sup>2</sup>/m (2.91 · 10<sup>-6</sup> ohms/in/in<sup>2</sup>)

## Directions for use

Clean joint area and apply paste manually or with the Lastek Dispensgun in the desired quantity in the joint gap.

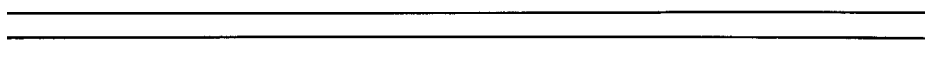
Heat the joint area and the paste gradually to remove the binder (do not point the flame directly in the paste; take care that the paste is heated by conduction).

Flux and alloy will flow in the direction of the hottest part.

Stop heating and allow the alloy to solidify before removing any fixtures.

Remove flux residues in warm water.

When soldering large surfaces, apply the solder in lines or in points, do not cover the whole surface with solder. Take care that the solder flows from the inside of the joint to the outside.



# lastek 31



## Capillary brazing at lowest temperature

Brazing alloy with high silver content provides high strength, ductile deposits. Outstanding wetting action on copper, brass, bronze, steel, stainless steel, cast iron and hard metals.

Low bonding temperature minimizes distortion and metallurgical changes in the base metal.

Exceptional flow properties allow minimum joint preparation and provides strong leak-proof joints.

Joint clearance : 0,03 to 0,20 mm (0.0012" - 0.0079").

Resists overheating.

## Applications

Kitchen and hospital equipment. Refrigeration systems, heat exchangers.

Lubrication and cooling pipes. Electrical motors, laboratory equipment, jewellery repair.

Tungsten carbide tipping, saw blade and tool repairs.

## Technical data

Tensile strength Rm: up to 490 N/mm<sup>2</sup> (71ksi)

Elongation A5: 25%

Hardness: 110 HB

Bonding temperature: 550°C (1022°F)

Electrical resistivity: 0,07 ohm.mm<sup>2</sup>/m (2.79 .10<sup>-6</sup> ohms/in/in<sup>2</sup>)

## Sizes

mm(inch) 1.0(0.039") 1.5(1/16") 2.0(5/64") 3.0(1/8")

## Directions for use

Clean the workpieces, preheat the brazing rod slightly and dip it in the flux (31C powder, 31CH powder for high temperature applications (e.g. brazing thickwalled copper), 31CN paste flux for general work, 31CNB paste flux for stainless steel and hardmetals).

Apply the flux on the workpiece and preheat the piece. As soon as the flux becomes transparent feed the rod into the joint.

Apply heat to that point where the brazing alloy should flow into by capillary action.

Cool down and remove flux residues by brushing with hot water.

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# lastek 31V

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## Capillary brazing at lowest temperature

Flux coated brazing rod with high silver content provides high strength, ductile deposits. Outstanding wetting action on copper, brass, bronze, steel, stainless steel, nickel and nickel alloys, cast iron and hard metals.

Low bonding temperature minimizes distortion and metallurgical changes in the base metal.

Exceptional flow properties allow minimum joint preparation and provides strong leak-proof joints.

Joint clearance : 0,03 to 0,20 mm (0.0012" - 0.0079")

Resists overheating.

## Applications

Kitchen and hospital equipment. Refrigeration systems, heat exchangers.

Lubrication and cooling pipes. Electrical motors, laboratory equipment, jewelry repair.

Tungsten carbide tipping, saw blade and tool repairs.

## Technical data

Tensile strength Rm: < 490 N/mm<sup>2</sup> (71ksi)

Elongation A5: 25%

Hardness: 110 HB

Bonding temperature: 550°C (1022°F)

Electrical resistivity: 0,07 ohm.mm<sup>2</sup>/m (2.79 .10<sup>-6</sup> ohms/in/in<sup>2</sup>)

## Sizes

mm (inch)	1.5 (1/16")	2.0 (5/64")	3.0 (1/8")
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## Directions for use

Rub the rod along the joint to apply the flux; as soon as the flux is flowing, melt the rod.

Continue heating until the alloy flows into the joint.

Cool with water and brush away the flux residues.

# lastek 32



## Silver solder for larger gaps

Silver brazing alloy with good bonding characteristics on copper, brass, steel, cast iron, hardmetal.

Excellent flow properties, but also recommended for joints of varying tolerances or joints where good fit-up is not possible.

Working temperature up to 200°C (390°F).

## Applications

Gas, lubrication and pressure lines.

Large variety of machine parts.

Electrical contacts.

Hardmetal tool tips.

## Technical data

Tensile strength Rm: 410 N/mm<sup>2</sup> (59ksi)

Elongation A5: 25%

Hardness: 105 HB

Bonding temperature: 680°C (1256°F)

Electrical resistivity: 0.08 ohm.mm<sup>2</sup>/m (3.15 · 10<sup>-6</sup> ohms/in/in<sup>2</sup>)

## Sizes

mm(inch)            1.0 (0.035")   1.5 (1/16")   2.0 (5/64")   3.0 (1/8")

## Directions for use

Joint preparation: optimum brazing gap 0.05 to 0.2mm (0.002 - 0.008").

Preheat the brazing rod slightly and dip it in the flux. The flux will adhere to the rod.

Rub the rod along the joint to apply the flux; as soon as the flux is flowing, melt the rod.

Continue heating until the alloy flows into the joint.

Remove the flux residues by brushing with warm water after the bead has cooled down.

Flux:

Lastek 31C - Lastek 31CH (powders)

(31C for general work - 31CH for higher temperatures, e.g. large workpieces in red copper)

Lastek 31CN - Lastek 31CNB (pastes)

(31CN for general work - 31CNB for stainless steel and hardmetal)

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# lastek 32V

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## Silver solder for larger gaps

Flux coated silver brazing rod with a good bond on copper, brass, bronze, steel, cast iron, hardmetal.

Excellent flow properties, but also recommended for joints of varying tolerances or joints where good fit-up is not possible.

Working temperature up to 200°C (390°F).

## Applications

Gas, lubrication and pressure lines.

Large variety of machine parts.

Electrical contacts.

Hardmetal tool tips.

## Technical data

Tensile strength Rm: 410 N/mm<sup>2</sup> (59ksi)

Elongation A5: 25%

Hardness: 105 HB

Bonding temperature: 680°C (1256°F)

Electrical resistivity: 0.08 ohm.mm<sup>2</sup>/m (3.15 · 10<sup>-6</sup> ohms/in/in<sup>2</sup>)

## Sizes

mm(inch)	1.5 (1/16")	2.0 (5/64")	3.0 (1/8")
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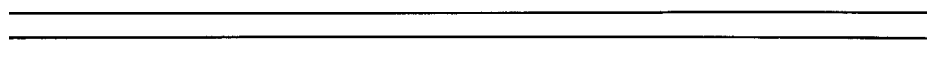
## Directions for use

Preheat the workpieces slightly with a neutral flame.

Rub the rod along the joint to apply the flux; as soon as the flux is flowing, melt the rod.

Continue heating until the alloy flows completely into the joint by capillarity.

Remove the flux residues by brushing with warm water after the bead has cooled down.



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# lastek 330

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## Brazing of stainless steel

Cadmium free silver alloy for brazing stainless steel, copper alloys, nickel alloys and steel.

Very good resistance against corrosion.

Good colour match with stainless steel.

Very good flowing and wetting properties. When not the corrosion properties, but rather the strength and toughness are the selection criteria when brazing stainless steel, you have to use Lastek 31.

## Applications

Soft drink industry, breweries, dairy products, pharmaceutical products, surgical instruments, industrial kitchens, hospitals, precision parts.

All applications where the use of Cadmium is not allowed.

## Technical data

Tensile strength Rm: 450 N/mm<sup>2</sup> (65ksi)

Elongation A5: 14%

Bonding temperature: 600°C (1110°F)

Electrical resistivity: 0.145 ohm.mm<sup>2</sup>/m (5.71 ohms/in/in<sup>2</sup>)

## Sizes

mm(inch)	1.0 (0.035")	1.5 (1/16")	2.0 (5/64")	3.0 (1/8")
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## Directions for use

Joint preparation: optimum brazing gap 0.05 to 0.2mm (0.002 - 0.008").

Preheat the brazing rod slightly and dip it in the flux. The flux will adhere to the rod.

Rub the rod along the joint to apply the flux; as soon as the flux is flowing, melt the rod.

Continue heating until the alloy flows into the joint.

Remove the flux residues by brushing with warm water after the bead has cooled down.

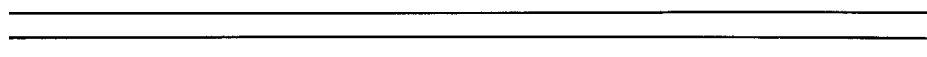
Flux:

Lastek 31C - Lastek 31CH (powders)

(31C for general work - 31CH for higher temperatures, e.g. large workpieces in red copper)

Lastek 31CN - Lastek 31CNB (pastes)

(31CN for general work - 31CNB for stainless steel and hardmetal)



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# lastek 330V

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## Brazing of stainless steel

Cadmium free, flux coated silver alloy for brazing stainless steel, copper alloys, nickel alloys and steel.

Very good resistance against corrosion.

Good colour match with stainless steel.

Very good flowing and wetting properties. When not the corrosion properties, but rather the strength and toughness are the selection criteria when brazing stainless steel, you have to use Lastek 31.

## Applications

Soft drink industry, breweries, dairy products, pharmaceutical products, surgical instruments, industrial kitchens, hospitals, precision parts.

All applications where the use of Cadmium is not allowed.

## Technical data

Tensile strength Rm: 450 N/mm<sup>2</sup> (65ksi)

Elongation A5: 14%

Bonding temperature: 600°C (1110°F)

Electrical resistivity: 0.145 ohm.mm<sup>2</sup>/m (5.71 μ ohm.inch<sup>2</sup>/inch)

## Sizes

mm(inch)	1.5 (1/16")	2.0 (5/64")	3.0 (1/8")
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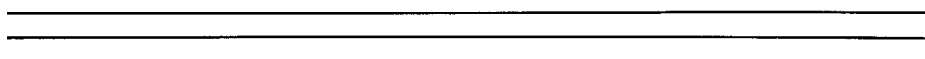
## Directions for use

Preheat the workpieces with a neutral flame.

Rub the rod along the joint to apply the flux; as soon as the flux is flowing, melt the rod.

Continue heating until the alloy flows into the joint.

Remove the fluxresidues by brushing with warm water after the bead has cooled down.



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# lastek 332V

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## Silver brazing alloy for general maintenance work

Flux coated cadmium free silver alloy for joining brass and other copper alloys, steel, cast iron and hardmetal.

Good colour match with brass.

Very good fluidity.

Keeps good mechanical characteristics up to 300 - 400°C (570-750°F).

### Applications

Parts where contact with cadmium containing alloys is not permitted such as in the food industry.

Chandeliers, sanitary and other brass parts where the brazing alloy must have the same colour as brass and where fine, invisible joints are necessary (no machining).

Valves and art work of bronze and brass, electrical contacts, heat exchangers, refrigeration.

### Technical data

Tensile strength Rm: 450 N/mm<sup>2</sup> (65ksi)

Elongation A5: 25%

Bonding temperature: 700°C (1290°F)

Electrical resistivity: 0.075 ohm.mm<sup>2</sup>/m (2.95 10<sup>-6</sup> ohms/in/in<sup>2</sup>)

### Sizes

mm(inch)	1.5 (1/16")	2.0 (5/64")	3.0 (1/8")
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### Directions for use

Rub the rod along the joint to apply the flux; as soon as the flux is flowing, melt the rod.

Continue heating until the alloy flows into the joint.



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# lastek 34

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## Silver solder with good fluidity

Silver solder with a high silver content.

Joining copper, brass, steel, cast iron, hardmetal.

Suitable for work where joint design gives a poor fit up and where a capillary penetration is still required.

Resists overheating.

Suitable for furnace brazing or by induction.

Low bonding temperature.

## Applications

Gas, lubrication and pressure lines.

Machine parts.

Electrical contacts.

Hardmetal tool tips.

## Technical data

Tensile strength Rm: 420 N/mm<sup>2</sup> (61ksi)

Elongation A5: 25%

Hardness: 110 HB

Bonding temperature: 650°C (1200°F)

Electrical resistivity: 0.075 ohm.mm<sup>2</sup>/m (2.95 10<sup>-6</sup> ohms/in/in<sup>2</sup>)

## Sizes

mm(inch)                      1.0 (0.035")      1.5 (1/16") 2.0 (5/64") 3.0 (1/8")

## Directions for use

Joint preparation: optimum brazing gap 0.03 to 0.2mm (0.0012 - 0.008").

Preheat the brazing rod slightly and dip it in the flux.

Rub the rod along the joint to apply the flux; as soon as the flux is flowing, melt the rod.

Continue heating until the alloy flows into the joint.

Remove the flux residues by brushing with warm water after the bead has cooled down.

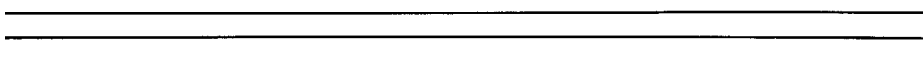
Flux:

Lastek 31C - Lastek 31CH (powders)

(31C for general work - 31CH for higher temperatures, e.g. large workpieces in red copper)

Lastek 31CN - Lastek 31CNB (pastes)

(31CN for general work - 31CNB for stainless steel and hardmetal)



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# lastek 34V

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## Silver solder with good fluidity

Flux coated silver solder with a high silver content.  
Joining of copper, brass, steel, cast iron, hardmetal.  
Suitable for work where joint design gives a poor fit up and where a capillary penetration is still required.  
Good resistance to overheating.  
Can be used for furnace brazing or by induction.  
Low bonding temperature.

## Applications

Gas, lubrication and pressure lines.  
Machine parts.  
Electrical contacts.  
Hardmetal tool tips.

## Technical data

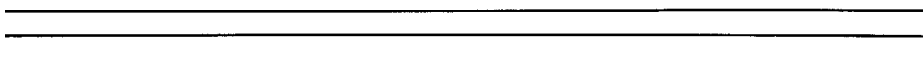
Tensile strength Rm: 420 N/mm<sup>2</sup> (61ksi)  
Elongation A5: 25%  
Hardness: 110 HB  
Bonding temperature: 650°C (1200°F)  
Electrical resistivity: 0.075 ohm.mm<sup>2</sup>/m (2.95 · 10<sup>-6</sup> ohms/in/in<sup>2</sup>)

## Sizes

mm(inch)	1.5 (1/16")	2.0 (5/64")	3.0 (1/8")
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## Directions for use

Preheat the workpieces slightly with a neutral flame.  
Rub the rod along the joint to apply the flux; as soon as the flux is flowing, melt the rod.  
Continue heating until the alloy flows into the joint by capillarity.  
Remove the flux residues by brushing with warm water after the bead has cooled down.



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# lastek 375SA

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## Silversolder for hardmetal

Cadmiumfree alloy, in strip form, for brazing hardmetal inserts on tools.  
Good wetting properties on all hardmetals and high shear strength.  
No danger for cracking due to shrinkage stresses.

## Applications

Because of the great difference in expansion coefficient between hardmetal tool tips and the steel holder on which they are brazed, stresses can occur which can lead to cracking and detaching from the steel backing.  
Mainly for larger hardmetal plates this can give problems.  
Lastek 375SA can take up very high stresses, due to the fact that it consists of a shim of copper placed between two silver solder layers..

## Technical data

Tensile strength Rm: 450 N/mm<sup>2</sup> (65ksi) (shear strength upto 300 N/mm<sup>2</sup>(43ksi))  
Elongation A5: 30%  
Bonding temperature: 660°C (1220°F)  
Electrical resistivity: 0.25 ohm.mm<sup>2</sup>/m

## Dimensions

Thickness 0.4mm (0,02") - width on demand

## Directions for use

Before brazing the surfaces have to be cleaned carefully (eventually by grinding) and if necessary to be degreased (after degreasing don't touch with your fingers).  
To remove oxides apply a flux or use a reducing atmosphere. (lastek 31C, lastek 31CH - powders / lastek 31CN, lastek 31CNB - paste)  
Heat the workpieces by flame, by induction or in a furnace (apply the flame on the steel back up and not directly on the hardmetal).  
Wipe the carbide tip on its seat a few millimetres backwards and forwards in order to avoid flux- or gas-inclusions.  
Cool down slowly.

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# lastek 38

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## Silver solder for copper alloys

Very good bond on copper, brass and bronze.

No flux needed on pure copper.

Very economic use due to the high capillary flow and excellent fluidity.

## Applications

Joining of copper in machine construction, electric motors, hydraulic lines.

Joints in refrigeration installations.

## Technical data

Tensile strength Rm: 250 N/mm<sup>2</sup> (36ksi)

Elongation A5: 10%

Hardness: 180 HB

Bonding temperature: 680°C (1256°F)

Electrical resistivity: 0.14 ohm.mm<sup>2</sup>/m (0.00001 ohms/in/in<sup>2</sup>)

## Sizes

mm (inch)                      2.0 (5/64")

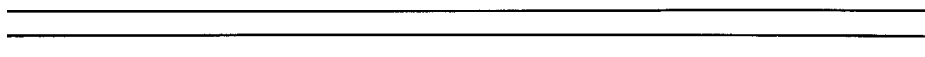
## Directions for use

Joint clearances: 0.2mm (0.008") or less.

On pure copper no flux is needed.

Apply flux Lastek 31C (powder) or Lastek 31CN (paste) on brass and bronze.

Lastek 38 is not suitable for Ni or Al alloys, or for steels.



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# lastek 38B

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## Very thin flowing silver alloy

Recommended for joining all non-ferrous metals, except nickel and aluminium.

Requires no flux on copper, eliminating cleaning problems after brazing.

On brass and bronze, to be used with flux.

Do not use on steel.

## Applications

Brazing of electrical contacts. Soldering of copper tubes, cold and hot water installations, heating elements.

(Do not use for brazing tubes with sulphur containing oils.)

## Technical data

Tensile strength Rm: 250 N/mm<sup>2</sup> (36ksi)

Elongation A5: 5%

Hardness: 180 HB

Bonding temperature: 690°C (1270°F)

Electrical resistivity: 0.25 ohm.mm<sup>2</sup>/m (0.00001 ohms/in/in<sup>2</sup>)

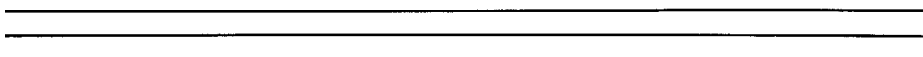
## Sizes

mm(inch)	2.0 (5/64")	3.0 (1/8")
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## Directions for use

Brazing gap: up to 0.5mm (0.02").

Clean joint area thoroughly. Heat the complete joint with a slightly carburizing flame, then apply directly the brazing rod when the parent metal is pure copper. On brass use flux Lastek 31C (powder), 31CH(powder for thicker pieces) or 31CN(paste).



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# lastek 39

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## No flux on pure copper

Silver solder for joining copper and silver without using a flux.  
Requires no finishing after brazing (no flux residues that have to be removed).  
Lastek 39 cannot be used on nickel or aluminium containing alloys or on steel.

## Applications

Joining copper in electrical motors, tubes.  
Refrigeration industry, heating installations, breweries, dairy farms, car radiators, water pipes in the building industry.  
Don't use Lastek 39 for joining copper tubes that contain sulphuric products.

## Technical data

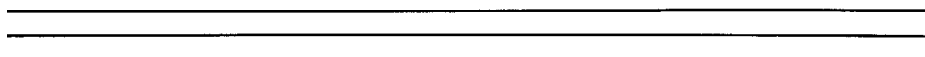
Tensile strength Rm: 250 N/mm<sup>2</sup> (36ksi)  
Elongation A5: 5%  
Hardness: ca. 180 HB  
Bonding temperature: 680°C (1256°F)  
Electrical resistivity: 0.20 ohm.mm<sup>2</sup>/m

## Sizes

mm(inch)                      2.0 (5/64")

## Directions for use

Joint clearance: ± 0.5mm (0.02")  
Flux (on brass and bronze): Lastek 31C and Lastek 31CH (powders) - Lastek 31CN (paste).  
Preheat with a slightly carburizing flame.  
Melt the rod without flux on pure copper.



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# lastek 391

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## Brazing copper tubes

Copper based brazing alloy for joining copper, brass and bronze. Lastek 391 can bridge larger gaps without impairing penetration into deep joints. The weldor has excellent control on the molten pool. On pure copper Lastek 391 can be used without flux. On brass and bronze flux Lastek 31C or other must be used.

## Applications

Refrigerators, copper tubing in bars, restaurants, sanitary installations. Don't use Lastek 391 for gaspipes or on steel. (Lastek 31 or 34 to be preferred.)

Where toughness is important (electrical motors, transformers...) use Lastek 38 or 39 instead of 391.

## Technical data

Tensile strength: 250 N/mm<sup>2</sup> (36ksi)

Bonding temperature: 690°C (1270°F)

Electrical resistivity: 0.25 ohm mm<sup>2</sup>/m (10<sup>-5</sup>ohm/in/in<sup>2</sup>)

## Sizes

mm (inch) 2.0 (5/64")

## Directions for use

Fluxes: Lastek 31CH (powder) - Lastek 31CN (paste).

For brazing tubes, a slightly reducing flame shall enclose the workpiece. If the molten metal doesn't penetrate in the joint, add Lastek 391 on more places.





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# lastek 3000P

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## Tinning

Tin paste suitable for soldering and tinning machine parts.

Very pure alloy (99.9% Sn), without lead or cadmium.

The paste contains a flux, assuring a good bond on all common used metals. It can be applied on vertical surfaces.

High electrical conductivity. Very low coefficient of friction.

## Applications

Soldering sheet metal in the food industry.

Protecting a workpiece with a thin Sn-layer to make it resistant against oxidation in air.

Refrigeration installations and canning industry.

Jewellery.

Joining dissimilar metals. (e.g. Copper with aluminium: tinning the copper with Lastek 3000P and then make the joint with Lastek 71 + flux 71A).

Tinning of bearings.

## Technical data

Temperature: 232°C (450°F)

## Directions for use

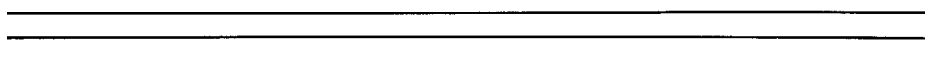
Stir well the paste.

Apply the paste (also on oxidised surfaces).

If necessary, the paste can be diluted by adding (distilled) water drop by drop.

Heat with a soft flame and remove the excess of solder with a towel by rubbing it off.

Remove flux residues with warm water.



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# lastek 3102

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## Soft solder for stainless steel

Does not contain lead or Cadmium and can be used for soldering stainless steel, steel, cadmium plated steel, copper and its alloys, tin- and silver-alloys.  
Shear strength is almost twice as high as the one of tin-lead solder.  
Service temperature up to 100°C (212°F) (Strength at this temperature almost 4 times the strength of SnPb solder).

## Applications

Especially indicated for joining thin pieces and tubes in stainless steel.  
Recipients for food.  
Toys, refrigerators, kitchen equipment, glasshouses, pressure gauges, fittings, jewellery.  
Attention: the flux 3102A is aggressive and cannot be used for soldering prints or electronic components.

## Technical data

Tensile strength Rm: 54 N/mm<sup>2</sup> (7.8ksi)  
Temperature: 221 °C (430 °F)  
Electrical resistivity: 0.12 ohm.mm<sup>2</sup>/m

## Sizes

mm(inch) 1.0 (0.039") 2.0 (5/64") 3.0 (1/8")

## Directions for use

Soldering gap 0.08mm to 0.1mm (3-4thou") for optimum strength.  
Degrease the parts to be joined. Apply flux 3102A. Preheat slightly with soft flame (by preference indirectly on the back side of the piece).  
Apply the rod that melts and run in the spaces between the joint surfaces by capillary action.  
Can be melted also by a soldering iron.  
Remove flux residues by brushing with warm water.  
Always work in ventilated areas.

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# lastek 3102IS

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## Flux cored soft solder for stainless steel

Soft solder without lead or cadmium, for joining stainless steel, steel, cadmium plated steel, copper and its alloys, tin and silver.

The shear strength is almost twice the strength of tin lead solders.

Application temperature up to 100°C (212°F) (At this temperature the mechanical strength is almost 4 times the strength of a Sn Pb solder).

Due to the corrosive flux in the core, Lastek 3102IS shall not be used on electronic circuits or prints.

## Applications

Joining thin sheets and tubes in stainless steel. Food industry, toys, refrigerating installation, soft drink equipment, organs.

## Technical data

Tensile strength Rm: 54 N/mm<sup>2</sup> (7.8ksi)

Temperature: 221 °C (430 °F)

Electrical resistivity 0.12 ohm.mm<sup>2</sup>/m (5.10<sup>-6</sup> ohms/in/in<sup>2</sup>)

## Sizes

mm(inch) 1.0 (0.04") 2.0 (0.08") 3.0 (0.12")

## Directions for use

Joint gap 0.08 to 0.1mm (0.003-0.004") for maximum strength.

Degrease the parts if strongly contaminated.

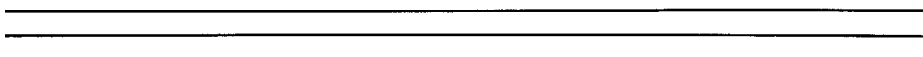
Preheat with soft flame.

Melt the rod on applying the rod along the joint.

Can be used with a soldering iron: do not apply the solder on the iron - this will deactivate the flux; care must be taken to apply the solder onto the preheated workpiece and simultaneously push the iron on the joint.

Remove flux residues with warm water.

Work in a ventilated area.



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# lastek 3102PA

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## Soldering paste for stainless steel

Silver containing paste for soldering stainless steel, copper alloys and other metals, delivered in a syringe with a dispenser.

The paste 3102PA is composed of metal powders and a flux; you don't have to use a separate flux.

Its high fluidity assures increased productivity.

Lastek 3102PA is corrosion resistant so that the joint remains shiny even after longtime exposure to atmospheric and corrosive conditions.

Free of cadmium, zinc and lead. Can be used for soldering metals that are in contact with food.

## Applications

Joining stainless steel sheets and tubes.

Joining of steel, cast iron, copper, bronze, nickel-silver and galvanized or cadmiumplated workpieces.

Filling holes, pits, depressions, tool marks and scratches.

Recipients for dairy products, refrigerators, soft drink machines, machinery for food industry, jewellery.

Applications where the temperature of the workpieces has to remain very low.

## Technical data

Tensile strength Rm: 140 N/mm<sup>2</sup> (20ksi)

Soldering temperature: 230°C (450°F)

Density: 7.5 g/cm<sup>3</sup> (0.26 lb/in<sup>3</sup>)

Electrical resistivity: 0.125 ohm.mm<sup>2</sup>/m (4.92 ohms/in/in<sup>2</sup>)

## Directions for use

Clean the joint area and apply the paste in the desired quantity at the opening of the joint. Apply dots or lines of paste on areas that overlap (permitting the flux and binder to escape).

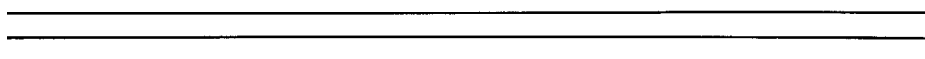
Heat the joint area and the paste gradually to remove the binder (do not point the flame directly to the paste, so that the paste is heated by conduction).

Flux and alloy will flow in the direction of the hottest part.

Stop heating and allow the alloy to solidify before removing any fixtures.

When you use a soldering iron: apply the paste on the parts to be joined and heat the parts with the soldering iron.

Remove flux residues in warm water.



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# lastek 3204IS

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## Flux cored soft solder for general use

Very easy, thin flowing soft solder with low melting point.

High tensile- and shear strength.

Suitable for delicate work, using a soldering iron or soft flame.

Applicable on stainless steel, steel, copper, zinc, lead, nickel, cast iron, galvanised steel.

## Applications

Joints in cooling installations, jewellery industry, musical instruments, bird cages, radiators.

The aggressive flux in the core makes Lastek 3204IS not suitable for electronic applications.

## Technical data

Tensile strength Rm: 48 N/mm<sup>2</sup> (7ksi)

Melting temperature: 183-188°C (360-370°F)

## Sizes

mm(inch)                      3.0 (1/8") (on small spools of 0.5kg)

## Directions for use

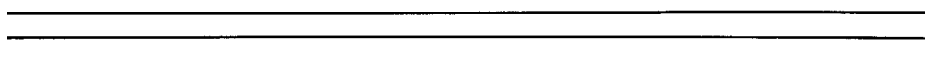
To obtain maximal strength, soldering gap has to be between 0.08 to 0.15 mm.

Degrease the pieces to be joined. Slightly preheat with a soft flame. Melt the solder by striking the solder along the gap.

Can also be used with a soldering iron: when the solder is pressed on the iron to melt it, the flux could become inactive; so apply the solder on the parent metal and press the soldering iron on the solder and the joint.

Remove flux residues with hot water.

Work in a well-ventilated area.



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# lastek 3250S

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## Soft solder for all metals

Lastek 3250S is a universal softsolder that can be used for joining aluminium - copper - bronze - stainless steel at very low working temperatures.

## Applications

Transformers and electrical industry (Cu to Al); general solder for maintenance weldors. Aluminium to aluminium (up to approx. 3% Mg), aluminium to copper, to brass, to stainless steel, Kovar, nickel aso.

## Technical data

Tensile strength Rm: 47 N/mm<sup>2</sup> (6.8ksi)

Temperature: 183-215 °C (360-420 °F)

## Sizes

mm(inch)	1.0 (0.035")	2.0 (5/64")	3.0 (1/8")
(spools 0.5kg)			

## Directions for use

Degrease the parts to be joined, grind slightly and apply the flux lastek 3250A.

Preheat with a soft flame (neutral to slightly carburizing).

Melt the alloy with the flame (or the soldering iron).

After cooling down, remove the fluxresidues with warm water or methylalcohol.

Avoid overheating the flux.

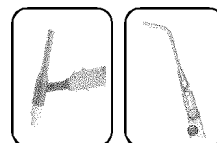
(Point the flame just beside the joint so that the heat tears solder in the joint by conduction)

The flux Lastek 3250A is especially designed to be used on aluminium and can also be used on copper alloys. For joining aluminium to stainless steel it is recommended to use the flux 3102A on the stainless steel side.

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# lastek 3414

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## Soldering aluminium without use of a flux

Lastek 3414 is a bare rod used for low temperature soldering of aluminium without the use of a flux. Joints are sound and free from porosity. A propane torch is sufficient to join aluminium parts.

It can be used for welding zamac, kayem and other zinc based alloys and for soldering galvanized steel.

As no aggressive flux is necessary, there is no risk on corrosion due to flux residues; contact with human skin is less dangerous due to the absence of corrosive flux.

## Applications

Repairing aluminium radiators, mower bodies, propellers.

Repairs on zinc alloys used in bicycles, carburators, fuel pumps, door handles, gears, injection moulding dies.

Filling up and re-threading worn out holes in aluminium castings.

## Technical data

Hardness: 100 HB

Tensile strength: 326 N/mm<sup>2</sup> (47 ksi)

Melting point: 388°C (730°F)

## Sizes

mm (inch)            3.0 (1/8")

## Directions for use

\* Vee out cracks on 45°.

\* Remove the oxide layer on aluminium (or magnesium) with a stainless steel wire brush or a file; avoid contact with iron particles. Heat the base metal with an oxy/ac. or propane torch up to approx 380°C (716°F) (no fusion). Use a neutral to slightly carburizing flame with small tip. Bring Lastek 3414 in contact with the base metal by rubbing; it should melt by the heat of the base metal without additional heat of the torch.

Tin the faces of the joint in order to avoid oxydation of the joint surfaces, and finish by filling it up completely without melting the aluminium base metal.

\* For welding zinc alloys, use the same procedure, but heat welding rod and parent metal to the same temperature by keeping the flame parallel to the surface of the V joint. Plunge the rod down into the welding pool to break the skin resistance of the alloy; otherwise it will not wet and flow over the metal surface.

On base metals that are contaminated with oil or impurities, use a stainless steel rod (1.6 or 2.0mm diameter (1/16" or 5/64")) to rub into the weld puddle for bringing impurities to the surface.

\* For TIG welding zinc alloys (zamac, kayem...) use pure tungsten electrode and alternating current.

\* Let the pieces cool down in quiet air.

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# lastek 3476IS

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## Soft solder for aluminium

Flux cored soft solder for aluminium and its alloys: pure aluminium, AlMg up to 3% Mg, AlMn, AlCu.

Contains no zinc or cadmium, provides good penetration and has a good electrolytic corrosion resistance on aluminium.

The low working temperature avoids distortion of profiles and plates.

## Applications

Soldering of most Aluminium alloys, but AlMg5, AlSi12 and anodised aluminium are very difficult to wet. Lastek 3476IS can also be used for joining aluminium to copper, brass, nickel silver, stainless steel and so on.

## Technical data

Temperature: 178-270°C (350-520°F)

Tensile strength: 38 N/mm<sup>2</sup> (5.5ksi)

## Sizes

mm(inch)	1.6 (1/16")	3.2 (1/8")
(spools 0.5kg)		

## Directions for use

Clean and degrease the pieces to be joined.

Preheat the workpieces rapidly up to a maximum of 350°C (662°F) with an oxy/acetylene, propane or butane flame (or use a soldering iron with copper tips), and apply the solder.

Do not overheat the flux (max. temperature 350°C - 662°F).

For an optimum strength, use sufficient overlapping and use a joint clearance of 0.05 - 0.10 mm (2-4 thou).



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# lastek 3605

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## Softsolder with high melting point

Lastek 3605 is a silver containing soft solder for use at higher temperatures (up to 200°C - 390°F).

Can be used on copper, brass, steel, stainless steel.

## Applications

Joining and repairing pieces used at temperatures up to 200°C (390°F).

Repairing wire type saws used for sawing stone.

Electromotors.

## Technical data

Working temperature: 300°C (570°F)

Hardness: 60HB

Tensile strength Rm: 157 N/mm<sup>2</sup> (23ksi)

## Sizes

mm (inch) 2.0 (5/64)

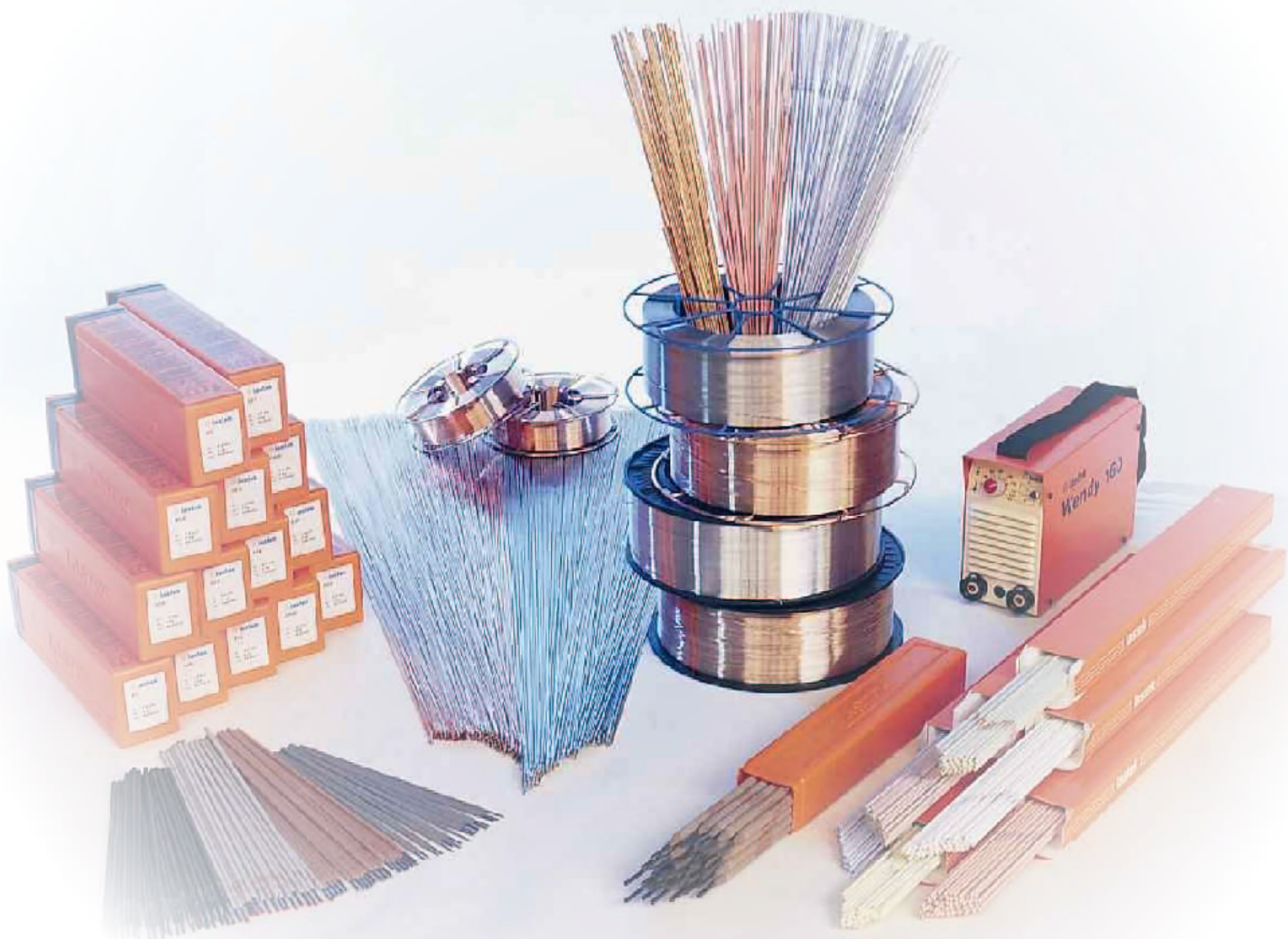
## Directions for use

Clean and degrease the workpiece.

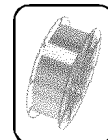
Use flux Lastek 3102A (or Lastek 3413A on Zamac or Kayem).

Remove flux residues with hot water (residues could initiate corrosion).

Avoid breathing the fumes of alloy or flux and avoid contact with the skin.



# lastofil 20



## Solid welding wire - Steel

Welding wire for steel constructions with very high requirements for mechanical characteristics and weldability.

The perfect spooling, the uniform copper coating, the low torsion in the wire, the low tolerances on the diameter, the high degree of purity, guarantee an optimal and constant welding quality.

The mechanical characteristics are higher than those of most lime type electrodes.

## Applications

Appropriate for boilerwork, machine building, ship building, sheet metal welding and so on... St 37, St 52-3, St 50-2, St 60-2 (\*\*), high strength steel St E 255 to St E 420 and St E 355, A242, A440, A441, A588. Boilerplate HI, HIII, 17Mn4, 19Mn5, A414grA,B,C,D,E,F, A662grA,B. Pipe steel St 35.8, St 45.8, St52.4, A53grA,B, A106grC, A714grI,II,III. Hull steel A,B,D,E. Cast steel GS-38, GS-45, GS-52, A27, A486gr70, A643grA, A732gr1A,2A,3A. BS 4360 grades 40,43 and 50.

## Technical data

Tensile strength Rm: 560-680 N/mm<sup>2</sup> (81-99ksi) (\*)

Yield strength Rp: ≥ 460 N/mm<sup>2</sup> (67ksi)

Elongation A5: ≥22%

Impact strength (ISO-V) Av:

+ 20°C (68°F) ≥ 100J (74ft lb) (CO<sub>2</sub> and mixed gas)

0°C (32°F) ≥ 85J (63ft lb) (CO<sub>2</sub> and mixed gas)

-20°C (-4°F) ≥ 65J (48ft lb) (CO<sub>2</sub>) and 60J (44ft lb) (mixed gas)

-40°C (-40°F) ≥ 45J (33ft lb) (CO<sub>2</sub>) and 40J (29ft lb) (mixed gas)

## Approval

TÜV

## Sizes

mm(inch) 0.8 (1/32") 1.0 (0.035") 1.2 (0.045") 1.6 (1/16")

## Directions for use

By preference welding with mixed gas (Ar-CO<sub>2</sub>) (pure CO<sub>2</sub> is possible).

Gas flow in short arc 8 to 10 litre/min ( 17-21 cu.ft./hr ), in spray arc 12 to 17 litre/min ( 25 - 36 cu.ft./hr ). When welding outdoors protect the welding area against wind and increase the gas flow.

\* You will obtain the highest mechanical strength in short arc.

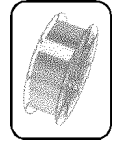
(Lower burn off of alloying elements)

\*\* Preheat steel 60 in function of the plate thickness.

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# lastofil 20GA

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## Solid wire for welding galvanized steel

Welding wire for spatter free welding of galvanized sheets.  
Low zinc burn-off and very smooth welding bead.  
Increased welding speed and high fluidity give a porosity-free deposit.  
Also suitable for welding normal carbon steel.

## Applications

Welding thin galvanized sheets as used in the car industry, fencings, street lamps, dustbins. Welding free machining steel (containing Pb), primer coated steel, rusted steel plates.

## Technical data

Tensile strength Rm: 560-590 N/mm<sup>2</sup> (81-85ksi)  
Yield strength Rp: 480-520 N/mm<sup>2</sup> (69-75ksi)  
Elongation A5: ≥22%  
Impact strength (ISO-V) Av: +20°C ≥ 100J (68°F ≥ 74ft lb)  
-20°C > 60J (-4°F > 44ft lb)

## Sizes

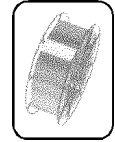
mm(inch)	0.8 (1/32")	1.0 (0.035")
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## Directions for use

Use Ar-CO<sub>2</sub> gas mixture as shielding gas (13l/min).  
Also Ar with 8 or 12% O<sub>2</sub> and Ar with 5% CO<sub>2</sub> are used for welding coated steelplate.



# lastofil 10015



## Welding low alloy high strength steels

Welding wire for joining low alloy steel with a high yield point.  
High impact strength also at temperatures below zero.

## Applications

Welding of steel with brandnames like T1, T1-A, T1-B, HOAG N-A-XTRA56, 63, 70, Superlso 70, HY80, HY100 etc.

Arms and frames of excavating equipment and cranes, steel mill and mining equipment, fans, pressure vessels, bridges, forklifts.

## Technical data

Tensile strength Rm: 780-880 N/mm<sup>2</sup> (113-128ksi)

Yield strength Rp: 690-790 N/mm<sup>2</sup> (100-115ksi)

Elongation A5: 16-24%

Impact strength (ISO-V) Av: 90-110J at 20°C (66-81ft lb at 68°F)  
> 50J at -20°C (> 37ft lb at -4°F)

## Sizes

mm(inch)	0.8 (1/32")	1.0 (0.035")	1.2 (0.045")	1.6 (1/16")
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## Directions for use

Remove grease and impurities of the base metal.

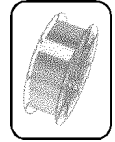
Protection gas: Ar-CO<sub>2</sub> mixtures.

In open air, use windscreens and raise the gas throughput.

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# lastofil 11017

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## Welding weathering steels

Solid wire suitable for welding weather resistant structural steels like Cortensteel and other high strength low-alloy steels.

The wire is alloyed with copper and nickel which gives a high resistance against atmospheric corrosion.

Suitable for working temperatures from -30°C to 350°C (-20°F to 660°F).

## Applications

Architectural applications, but also where weather resistant steel is used because of its higher strength (steel chimneys, railway wagons, bridges etc).

Welding of Corten A and B, Patinox, WTSt37.2, WTSt37.3, WTSt52.3, WTSt360-2, WTSt360-3, WTSt510-3, TTSt35, TTSt41, TTSt45, StE255 to StE380.

## Technical data

Tensile strength Rm: 530-640 N/mm<sup>2</sup> (77-93ksi)

Yield strength Rp: 440-540 N/mm<sup>2</sup> (64-78ksi)

Elongation A5: 22-28%

Impact strength (ISO-V) Av: > 100J (74ft lb)

## Sizes

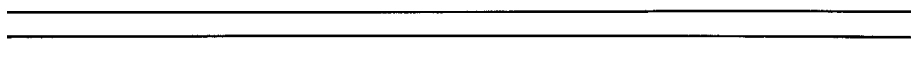
mm(inch)	1.0 (0.035")	1.2 (0.045")
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## Directions for use

Clean and degrease the weld area.

When welding in open air protect the weld area against the wind.

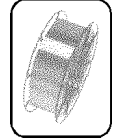
Gasprotection: Ar/CO<sub>2</sub> mixtures.



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# lastofil 1216

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## Welding creep resistant steel

Chromium - molybdenum alloyed welding wire suitable for welding creep resistant steel.

Welding steamboilers and pipes with a working temperature up to 570°C (1060°F).

Also suitable for welding case hardened steel and high strength steel, refacing workpieces that have to be nitrated.

## Applications

Welding of 13CrMo44, 15CrMo3, 13CrMoV42, ASTM A 193grB7, ASTM A333 GrP11 and P12, cast steel GS17CrMo55.

Repair of steel 25CrMo4 and 42CrMo4, when a post weld heat treatment is applied.

## Technical data

Tensile strength Rm: 560-700 N/mm<sup>2</sup> (81-101ksi)

Yield strength Rp: 480-520 N/mm<sup>2</sup> (70-75ksi)

Elongation A5: >23%

Impact value Av(Ch V): >75J (55 ft.lbs)

Hardness (as welded): 200-250 HB

## Sizes

mm(inch) 0.8(1/32") 1.0 (0.035") 1.2 (0.045")

## Directions for use

Welding of 13CrMo44: heattreatment for basemetal shall be applied: preheating 200-250°C(390-480°F) - post weld heat treatment 660-700°C(1220-1290°F) during minimum 1/2 hour.

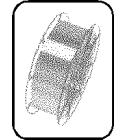
Shielding gas: argon / CO<sub>2</sub> mixture.



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# lastofil 17

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## Welding of "Armco iron"

Lastofil 17 is a copper coated welding wire for joining and repair welding of galvanizing trays made of Armco iron.

(Very limited attack by molten zinc at temperatures below 475 °C.)

Because of a vacuum degassing process, all the impurities in this wire are eliminated.

The carbon content and silicon content are both reduced to 0.010% max.

Thanks to the great purity the resistance against corrosive attack by chemicals is much better than that of mild steel.

(A thin oxydation layer adhering to the surface of the deposit will also give resistance against atmospheric corrosion.)

The electrical conductivity is excellent.

The deposit of Lastofil 17 can be enamelled.

Easily malleable and appropriate for cold deformation.

## Applications

Welding of galvanizing trays in Armco iron.

Welding of wrought iron in general.

Immersion trays for pickling.

## Technical data

Tensile strength Rm: 320 N/mm<sup>2</sup> (46ksi)

Yield point Rp: 200 N/mm<sup>2</sup> (29ksi)

Elongation A5: 40%

Electrical resistivity: 0.107 ohm mm<sup>2</sup>/m (4.21 μ ohm in)

## Sizes

mm(inch) 1.2 (0.045")

1.6 (1/16")

## Directions for use

When welding Armco iron no heat treatment after welding is necessary.

Protection gas: argon-CO<sub>2</sub> mixture (2 to 20% CO<sub>2</sub> - low CO<sub>2</sub> contents reduce the carbonizing effect).

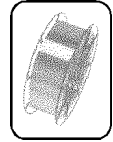
Given the very low deoxidation grade of this wire, pore formation can occur when welding thin plates. Circling back on the molten pool can be helpful to avoid this.



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# lastofil 231

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## High hardness, excellent shock resistance

Solid welding wire with air hardening weld deposit.  
Highest hardness with excellent wear and shock resistance even at higher temperatures (up to 550°C - 1.020°F).  
Very good cutting properties.

## Applications

Building or upgrading of low alloy steels to obtain high speed steel properties for hot and cold working applications.  
Repair of units that require long lasting sharp edges like tools, dies, shears, punches and knives.  
Hardfacing of hammers.

## Mechanical data

Hardness: 62-66 Rc (as deposited - without preheat - cooled in air)

## Sizes

mm(inch) 1.2 (0.045")

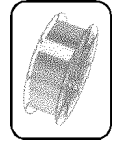
## Directions for use

Use argon + 1 to 3% O<sub>2</sub> as shielding gas.  
Remove all defects and foreign matter.  
Pre- and post-heat treatment may be necessary according to the type of base metal.

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# lastofil 350

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## Hardfacing wire 350 Brinell

Solid welding wire for hardfacing plungers, dies, punches.  
Suitable for refacing gear teeth, chain links and drive wheels.  
The deposit is machinable on a stable lathe by means of hardmetal tools.

## Applications

Hardfacing dies and punches.  
Refacings that have to be hard but must remain machinable.

## Technical data

Hardness: 350-450 HB

## Sizes

mm(inch)	1.2 (0.045")	1.6 (1/16")
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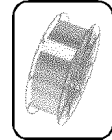
## Directions for use

Shielding gas: Ar - CO<sub>2</sub> mixtures (80Ar - 20 CO<sub>2</sub>).  
The deposit can be hardened by heating up to 820 - 850°C (1500 - 1560°F) and cooling in an oilbath.  
In order to obtain a good machinability, preheat the work pieces and cover the deposit by means of insulating blankets.

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# lastifil 600

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## Hard and impact resistant wearfacing wire

Solid wire for hardfacings combining good resistance to abrasion and impact loading.

### Applications

Earthmoving equipment (bucket teeth and edges, track links), crusher hammers, dredging equipment, conveyor screws, ripper teeth.

### Technical data

Hardness: 57-60 Rc

Tempering: 350-550°C (660-1020°F) in function of the desired hardness.

### Sizes

mm(inch)	0.8 (1/32")	1.0 (0.035")	1.2 (0.045")	1.6 (1/16")
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### Directions for use

On problem steels, apply a buffer layer with Lastifil 807.

Remove old or unknown surfacings before building up with Lastifil 600 (use Lastek 1900 to remove the old layers).

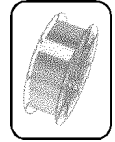
Protective gas: Ar/CO<sub>2</sub> mixtures or CO<sub>2</sub>.

The resulting hardness will be lower when the cooling rate of the deposit is low (e.g. by very thick surfacings, or on preheated workpieces). To obtain a maximum hardness level, let the workpiece cool down before applying a final layer with Lastifil 600.

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# lastofil 810

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## Corrosion resistant, machinable hardfacing

Solid wire for welding martensitic chromium steel and for hardfacing steel with a corrosion- and abrasion resistant layer.

The deposit has a good cavitation resistance and is resistant against erosion and corrosion in a not too aggressive environment.

## Applications

Welding 12-14% chromium steel and similar metals.

Refacing carbon steel with a corrosion, erosion- and abrasion resistant layer for instance for the food industry.

Repair and design changes of moulds in the plastic industry and for plastic injection dies.

Refacing pump parts, compressors, sealing surfaces on steam valves, at working temperatures up to 450°C (840°F).

## Technical data

Tensile strength Rm: > 660 N/mm<sup>2</sup> (96ksi)

Elongation A5: ≥18%

Hardness: 35-42 Rc

## Sizes

mm(inch) 1.2 (0.045")

## Directions for use

Preheat temperature (+ interpass temperature) and heat treatment in function of the base metal:

Martensitic chromium steel: preheat 200-400°C (390°F-750°F)

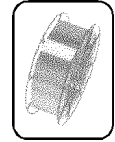
Stress relieving 650 to 750°C (1200 to 1380°F).

Protection gas argon + 1 to 3% O<sub>2</sub> or argon-helium mixture.

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# lastofil 811

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## Surfacing of rolling mills

Cr - Mo - alloyed stainless steel wire with very good wear resistance for metal to metal contact.

Corrosion resistant against water, steam, seawater and diluted organic acids.

Service temperatures up to 500°C (930°F), oxidation resistant up to 900°C (1.650°F).

Good machinability.

## Applications

Surfacing and repairing of rolling mills. Surfacing sealing surfaces of water, steam and gas valves and fittings made of unalloyed and low - alloyed steels.

Repair of dies, cutting tools, spindles and pump spindles.

## Technical data

Hardness: 39-45 HRC at 20°C (68°F)  
30 HRC at 500°C (930°F)

## Dimensions

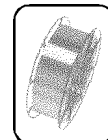
mm(inch) 0.8 (1/32") 1.2 (0.045")

## Directions for use

Preheat temperature 150-350°C (300-660°F), depending on base metal chemistry and dimensions.

Shielding gas: Argon + (1-3)%O<sub>2</sub> or Ar + (1-3)% CO<sub>2</sub>

# lastifil 812



## Hardfacing of moulds for tiles

Solid hardfacing wire with high resistance to metal on metal wear and abrasion by clay and sand (self polishing).

The stainless deposit resists to corrosion by seawater, gases and diluted acids.

Hot hardness up to 500°C (930°F).

Oxidation resistant up to 900°C (1650°F).

## Applications

Rebuilding of steel rolls for rolling mills.

Overlays on valve seats and disks, elbows in water, steam and gas with service temperatures up to 500°C (930°F). Casings of sand pumps. Rebuilding dies, cutting and mixing tools and shafts.

Furnace parts. Moulds for ceramic tiles.

## Technical data

Tensile strength Rm: >790 N/mm<sup>2</sup> (114ksi)

Yield strength Rp: >590 N/mm<sup>2</sup> (85ksi)

Elongation: >12%

Hardness: 48-55Rc as deposited  
40Rc at 500°C (930°F)

## Dimensions

mm(inch) 1.2 (0.045")

## Directions for use

Preheat tool steels at 150°C to 250°C (300 to 480°F).

Use argon + 1to3% O<sub>2</sub> or Ar/CO<sub>2</sub> (CO<sub>2</sub> containing gas gives a higher hardness).

Heat treatment: Annealing: 750°-800°C (furnace) (1380-1470°F)

Hardening: 1000°-1050°C (oil or air) (1830-1920°F)

Temper: 650-750°C (1200-1380°F)

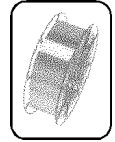




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# lastofil 5003

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## Easy flowing copper alloy for MIG welding

Solid welding wire for joining, refacing and repairing pure copper, copper-silicon, copper-manganese alloys and brass.

Also suitable for building up a copper layer on carbon steel, lowalloyed steel, cast iron and for joining copper to steel.

### Applications

Welding CuSi2Mn (Wn° 2.1522), CuSi3Mn (Wn° 2.1525) and brass (Cu-Zn alloys).

Also suitable for joining galvanised steel, where the low working temperature helps to prevent zinc burnoff.

### Technical data

Tensile strength Rm: 360 N/mm<sup>2</sup> (52ksi)

Yield strength Rp: 150 N/mm<sup>2</sup> (22ksi)

Elongation A5: 40%

Hardness: 80-100 HB

### Sizes

mm(inch) 1.2 (0.045") 1.6 (1/16")

### Directions for use

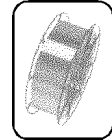
Protectiongas: argon (or Helium for thicker materials or for higher welding speeds.)

Weld thin beads in order to obtain a fast cooling rate of the deposited metal.

Preheat pure copper.

Weld CuSi castings without preheat and limit the interpass temperature to max. 70°C (160°F).

# lastofil 508



## Hard phosphor bronze refacings

Solid welding wire in a special Sn-bronze quality, suitable for refacings on steel, cast iron and copper alloys.

Can also be used for repairing casting defects in Sn-bronze and for joining Sn-bronze and brass workpieces.

Also suitable for joining galvanized plate without burning the Zn layer.

High hardness and better abrasion resistance than 6% Sn bronze.

Porous free deposit.

## Applications

Repair of castings in bronze, bearing seatings, refacing and joining steel and cast iron.  
Welding CuSn8 (2.1030) - CuSn6 (2.1020) - G-CuSn7ZnPb (2.1090), G-CuSn10 (2.1050) aso.

## Technical data

Tensile strenght Rm: 370 N/mm<sup>2</sup> (54ksi)

Yield strenght Rp0.2: > 140 N/mm<sup>2</sup> (20ksi)

Hardness: 100-120 HB

Elongation A5: 20%

Electrical resistivity: 0.11-0.14 ohm.mm<sup>2</sup>/m (4.10<sup>-6</sup> - 10.10<sup>-6</sup> ohms/in/in<sup>2</sup>)

## Sizes

mm(inch)	0.8 (1/32")	1.0 (0.035")	1.2 (0.045")
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## Directions for use

Shielding gas argon.

Clean and degrease the workpieces.

Phosphorbronze with thickness > 6mm(0,24"): preheating 150-200°C (300-390°F).

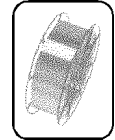
Keep molten pool and welding time as short as possible.

To avoid shrinking stresses and to refine the grains, the welding joint can be hot peened.

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# lastofil 61

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## Welding pure copper

Solid wire for MIG welding of electrolytic copper.  
Also suitable for joining copper to mild steel and for welding thin galvanized plate.  
Also suitable for building up a copper layer on steel or cast iron.  
High electrical conductivity and corrosion resistance.

## Applications

Welding in breweries, food industry, electrotechnical applications.  
Welding of oxygenfree and desoxidized copper OF-Cu (2.0040), SE-Cu (2.0070), SWCu (2.0076), SF-Cu (2.0090), E.T.P. (2.0060).

## Technical data

Tensile strength Rm: 240 N/mm<sup>2</sup> (35ksi)  
Yield strength Rp0.2: ≥100 N/mm<sup>2</sup> (14ksi)  
Elongation A5: ≥30%  
Hardness 60 HB  
Electrical resistivity: 0.05-0.07 ohm.mm<sup>2</sup>/m (2.10<sup>-6</sup> - 3.10<sup>-6</sup> ohm/in/in<sup>2</sup>)

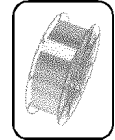
## Sizes

mm(inch)	1.0(0.035")	1.2(0.045")	1.6(1/16")
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## Directions for use

Shielding gas: argon.  
Preheat pure copper up to 300°-600°C (570-1110°F).

# lastifil 64



## Seawater resistant bronze wire

Ni alloyed aluminium bronze wire with a very high resistance against corrosion and erosion by seawater.

Refacing of propellers of aluminium bronze (with Ni and/or Mn) without danger for desaluminification in warm seawater.

Refacing and joining copper alloys, steel and cast iron (metal to metal wear).

Applicable to working temperatures up to 250°C (480°F).

Poroufree.

## Applications

Refacing shippropellers, pumphousings, augers, shafts in pumps and machinery, valves, driving wheels and gliding contacts in different industries.

Repair of casting flaws in (nickel) aluminium bronze pieces.

Joining of plates and pipes in chemical and food-industry.

Joining bronze to steel.

Welding of bronze with Wn° 2.0916, 2.0920, 2.0928, 2.0932, 2.0936, 2.0940, 2.0960, 2.0962, 2.0966, 2.0970, 2.0978, 2.0980.

## Technical data

Tensile strength Rm: > 530 N/mm<sup>2</sup> (77ksi)

Yield strength Rp0.2: ≥ 290 N/mm<sup>2</sup> (42ksi)

Elongation A5: 30%

Hardness: 140-190 HB

Electrical resistivity: 0.2 ohm.mm<sup>2</sup>/m (1.10<sup>-5</sup> ohm/in/in<sup>2</sup>)

## Dimensions

mm(inch)	0.8(1/32")	1.2(0.045")
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## Directions for use

Protectiongas argon or argon-helium.

(Helium generates a hotter pool what makes it easier to reface large bronze pieces or steel without porosity.

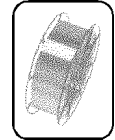
To join bronze to steel: "butter" the steel with Lastifil 64 (on an amperage as low as possible or with a pulsed arc, and make than the joint with the bronze piece (preheat 150 to 200°C (300-390°F)).



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# lastofil 71

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## Aluminium-silicon MIG welding wire

Very thin flowing AlSi alloy for joining AlSi castings with more than 7% Si.  
Can also be used for joining Al and Al alloys with less than 2% alloying elements.  
The deposit darkens after anodisation.

### Applications

Castings in AlSi, household appliances, profiles, tubes.  
Welding G-AlSi12, G-AlSi12/Cu, G-AlSi11, G-AlSi8Cu3, G-AlSi10Mg, G-AlSi9Mg.

### Technical data

Tensile strength  $R_m$ :  $\geq 130 \text{ N/mm}^2$  (19ksi)  
Yield strength  $R_p(0.2)$ :  $\geq 60 \text{ N/mm}^2$  (9ksi)  
Elongation A5:  $\geq 5\%$   
Melting range: 573-585°C (1060-1085°F)

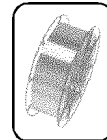
### Sizes

mm(inch) 1.2 (0.045") 1.6 (1/16") 2.0 (5/64") 2.4 (3/32")

### Directions for use

Thoroughly clean the pieces and eliminate oxidation layers.  
Thicker pieces can be preheated to 150-180°C (300-355°F).  
Shielding gas: pure argon.  
Use the appropriate driving wheels for Al wire and preferably use a push-pull torch.

# lastofil 77



## Welding AlMg 5

Aluminium-Magnesium welding wire for MIG welding AlMg5, AlMgSi1 and hardenable alloys as AlZnMg.

Excellent resistance against corrosion by seawater.

Usable in a temperature range from -196°C(-320°F) to +100°C(210°F).

Suitable for anodizing. (No darkening when the basemetal doesn't contain Si).

## Applications

Welding AlMg5, AlMg2Mn0.8, AlMg2.7Mn, AlMg3, AlMg4.5Mn, AlMgSi1, AlMgSi0.5, AlZnMg1.

Containers, yacht building, truck bodies, etc..

## Technical data

Tensile strength Rm: 275 N/mm<sup>2</sup> (40ksi)

Yield strength Rp0.2: ≥110 N/mm<sup>2</sup> (16ksi)

Elongation A5: ≥17%

Hardness: 70 HB

## Sizes

mm(inch)	0.8 (1/32")	1.0 (0.035")	1.2 (0.045")	1.6 (1/16")
(0.8 on 0.5kg spools)				

## Directions for use

Clean the workpieces very carefully.

Weld with argon, helium or argon-helium mixtures.

Workpieces thicker than 15mm can be preheated up to 150°C (300°F).

Use appropriate driving wheels for Al wire in the wire feeder.

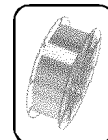
For smaller wire diameters it's preferable to use a push-pull torch.



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# lastofil 780

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## Solid welding wire for hardenable aluminium plates and profiles

Welding wire for MIG welding of aluminium alloys.

Very appropriate for welding of heat treated aluminium (AA 6000-range).

The deposit is hardly susceptible to cracking when joining hardenable aluminium alloys.

For welding AlMg-alloys with a high Mg-content, using Lastofil 77 is recommended because of hardness and strength reasons.

The weld beads become darker when anodized.

### Applications

Welding of AA6060; AA6082; AlMgSi0.5; AlMgSi0.7; AlMgSi1; AlMg1SiCu; G-AlSi7Mg; G-AlSi5Mg; G-AlSi6Cu4 and dissimilar aluminium alloys.

### Technical data

Tensile strength Rm: 120-170 N/mm<sup>2</sup> (17-25ksi) (depending on the basemetal)

Elongation A5: 8-15% (depending on the basemetal)

### Dimensions

mm(inch)	0.8 (1/32")	1.2 (0.045")
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### Directions for use

Protection gas: pure argon, helium or argon/helium mixtures.

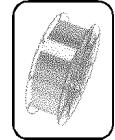
Use Teflon wire conductors and appropriate driving wheels on the wire feeder.

Preferably use a push-pull torch.

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# lastofil 79

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## Welding pure aluminium

MIG welding pure and low-alloyed aluminium.

Good fluidity.

High electrical conductivity.

High resistance against attack by chemicals or atmospheric conditions.

## Applications

Welding of roof plates, dairy factories, bakeries, household machines.

Al99.5 (3.0255), Al99 (3.0205), 1050A, 1200, 1070A.

Can be anodized without danger on discoloration.

## Technical data

Tensile strength  $R_m$ :  $\geq 65$  N/mm<sup>2</sup> (9ksi)

Yield strength  $R_{p_{0.2}}$ :  $\geq 20$  N/mm<sup>2</sup> (3ksi)

Elongation A5:  $\geq 35\%$

## Approval

TÜV

## Sizes

mm(inch) 0.8 (1/32")

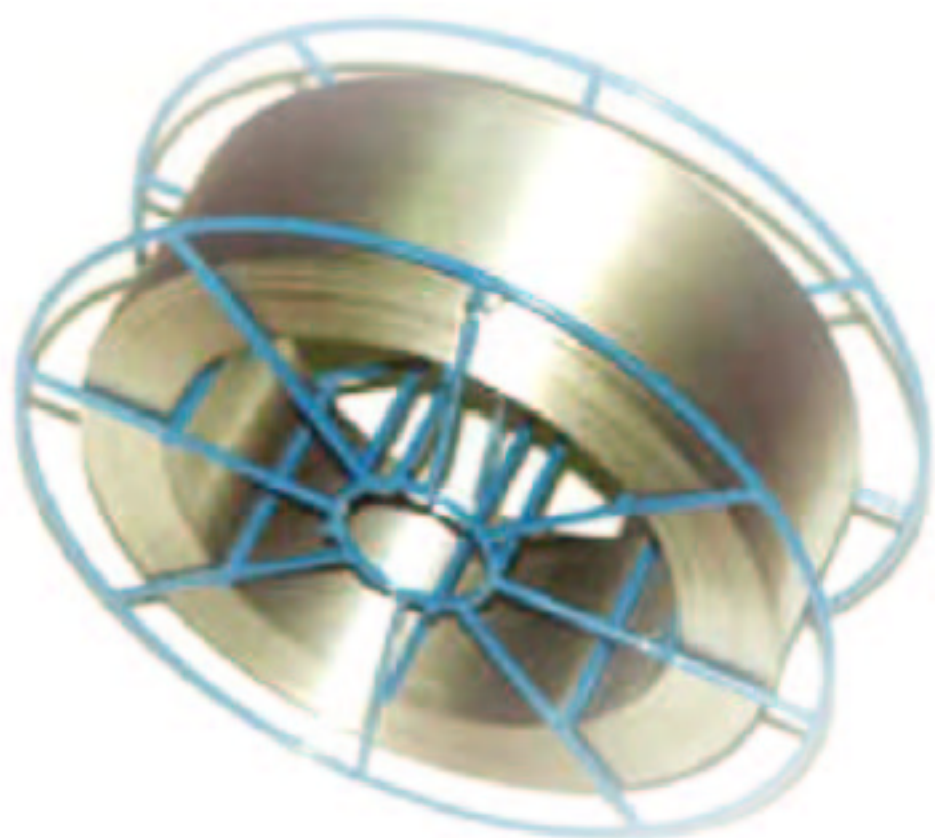
1.0 (0.035")

1.2 (0.045")

## Directions for use

Protection gas: Argon, helium or Ar-He mixtures.

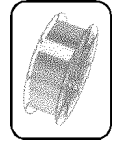
To get the correct wire feed, use special driving wheels for aluminium on the wire feeder and use a push-pull torch for the smallest wire diameters.



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# lastofil 8003

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## Welding dissimilar metals

Highly alloyed stainless steel welding wire (AISI 309L) for joining dissimilar metals. Recommended for joining martensitic and ferritic steels if preheated up to 200 - 300°C(390-570°F).

Suitable for working temperatures up to 300°C(570°F) ("black-and-white" assemblies).

Oxidation resistant up to 1000°C(1830°F).

## Applications

Joining austenitic and ferritic stainless steel to low- and unalloyed steel (17Mn4, StE355 aso).

Tough, crack-resistant underlayers for hardfacings.

Stainless surface coatings on unalloyed steel (rustproof from the first layer).

Refacings with a low frictioncoefficient.

## Technical data

Tensile strength Rm: 600 N/mm<sup>2</sup> (87ksi)

Yield strength Rp: 400 N/mm<sup>2</sup> (58ksi)

Elongation A5: 30%

Impact value ISO-V: +20°C(68°F): 100J(74ft.lb)

## Sizes

mm(inch) 0.8 (1/32")

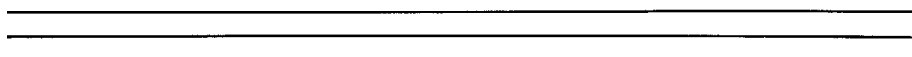
1.0 (0.035")

1.2 (0.045")

## Directions for use

Clean the weld area thoroughly and eliminate all traces of oil and grease.

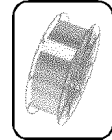
Shielding gas: Ar + 1to2% O<sub>2</sub>.



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# lastofil 8009

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## Welding stainless steel '904L'

Solid wire for welding stainless steel 20Cr - 25Ni - 4.5Mo - 1.5Cu.

Exceptional resistance against seawater corrosion thanks to the high Cu and Mo content.

Also very good resistance against sulphuric acid in all concentrations up to a temperature of 50°C(120°F), against caustic soda, and many organic acids.

Very high resistance against intergranular corrosion.

## Applications

Welding stainless steel 904L, Uranus B6, 2RK65, Wn° 1.4539, 1.4536, 1.4505, 1.4506, 1.4465.

Chemical industry (production of acetic acid, sulphuric acid), wire drawers (rebuilding hooks of pickling tanks), heat exchangers that work with seawater, flue gas pipes, fertilizer industry (phosphates and phosphoric acid).

Also used for welding AISI 317L, 1.4429 and 1.4439.

## Technical data

Tensile strength Rm: 540 N/mm<sup>2</sup>(78ksi)

Yield strength Rp0.2: 320 N/mm<sup>2</sup>(46ksi)

Elongation A5: 37%

Impact value Av (ChV): 120J (88ft.lb)

## Sizes

mm(inch) 1.0 (0.040")

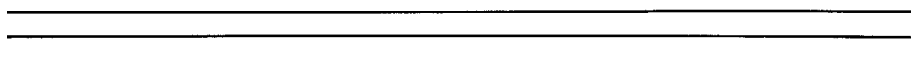
1.2 (0.045")

## Directions for use

Clean very carefully the welding area from all traces of oil and grease.

Argon with 1 to 3%O<sub>2</sub> or Argon + 1 to 2.5% CO<sub>2</sub> as shielding gas.

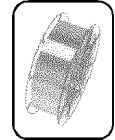
Keep the interpass temperature below 150°C(300°F).



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# lastifil 802

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## Welding of heat resistant steel (AISI 310)

Fully austenitic welding wire suitable for welding heat resistant steels with working temperatures up to 1150°C (2100°F) (oxidizing atmosphere).

Resistant against thermal shocks, against corrosion and oxidation at high temperatures.

Also suitable for welding heat resistant steel of the C-Cr-Al type, for welding armour steel and for joining austenitic stainless steel to carbon steel or low-alloyed steel.

## Applications

Welding heat resistant steel used in heat treatment installations, cement furnaces, process industry.

Wn° 1.4841, 1.4845, 1.4837, 1.4840, X15CrNiSi2520, G-X15CrNi2520, AISI 310, 310S, 309, Afnor Z5CN2520, Z10CN2520, X10CrAl7, X10CrAl24.

Remark: Staying too long at temperatures between 650°C and 850°C (1200-1560°F) decreases the toughness of Lastifil 802.

## Technical data

Tensile strength Rm: 600 N/mm<sup>2</sup> (87ksi)

Yield strength Rp(0.2): 380 N/mm<sup>2</sup> (55ksi)

Elongation A5: 30%

Impact strength (ISO-V) Av: 100J (74 ft lb) at 20°C (68°F)

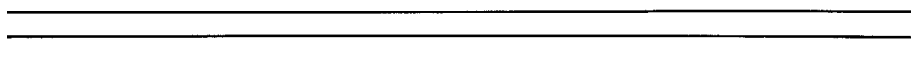
## Sizes

mm(inch)                      1.0 (0.035")

## Directions for use

Protection gas: Ar + 1 to 3% O<sub>2</sub> or Ar + 1 to 2.5% CO<sub>2</sub>.

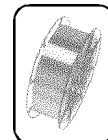
Interpass temperature when welding 25/20 CrNi alloy preferably to be limited to 150°C (300°F).



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# lastofil 803

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## Solid welding wire for stainless steel 304L

Solid welding wire for semi or fully automatic welding of stabilized and/or low carbon austenitic stainless steels of the 18/8 Mo variety.

It provides excellent resistance against pitting type corrosion and exhibits outstanding intergranular corrosion resistance up to 350°C. Welds are porosity free.

The continuity of the surface quality of this wire guarantees trouble free wire feeding.

### Technical data

Tensile strength Rm: 600 N/mm<sup>2</sup> (87ksi)

Yield strength R<sub>0.2p</sub>: 390 N/mm<sup>2</sup> (56ksi)

Elongation A<sub>5</sub>: 35%

Impact strength Av (Ch V): 100J (74ftlb)

### Approval

TÜV

### Sizes

mm("inch)	0.8(.03")	1.0(.04")	1.2(.045")
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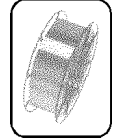
### Directions for use

Use argon with 1 to 3% oxygen as shielding gas.

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# lastofil 804

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## Solid wire for stainless steel 316L

Solid welding wire for semi or fully automatic welding with argon or argon mixed shielding gases.

It is designed for welding stabilized and/or low carbon austenitic stainless steels of the 18/8 Mo variety.

It provides excellent resistance against pitting type corrosion and exhibits outstanding intergranular corrosion resistance up to 350°C (660°F). Welds are porosity free.

The surface quality of this wire guarantees trouble free wire feeding.

### Technical data

Tensile strength Rm: 600 N/mm<sup>2</sup> (87ksi)

Yield strength Rp0.2: 400 N/mm<sup>2</sup> (58ksi)

Elongation A5: 35%

Impact strength Av (Ch V): 100J (74ft.lb)

### Approval

TÜV

### Sizes

mm(inch) 0.8(.030") 1.0(.040") 1.2(.045")

### Directions for use

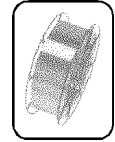
Use argon with 1 to 3% oxygen.



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# lastofil 807

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## Joining difficult to weld steel - highest toughness

Joining highly alloyed and difficult to weld steel.

Very tough, wear resistant refacings, resistant against heavy shocks, corrosion and rust.

Work hardens under impact load.

Crack resistant base layer for hardfacings.

Oxidation resistant up to 850°C (1560°F).

## Applications

Welding armour steel, wear resistant chromium steels (3CR12 for example), manganese steel (12% Mn), joining stainless steel to carbon steel.

Refacing rails, frogs, clutches, crane wheels.

Universal welding wire for maintenance and repair.

## Technical data

Tensile strength Rm: 650 N/mm<sup>2</sup> (94ksi)

Yield strength Rp0.2: 460 N/mm<sup>2</sup> (67ksi)

Hardness: 190 HB (after work hardening: approx. 400 HB)

Impact strength (ISO-V) Av: 100 J (74ft.lb)

## Sizes

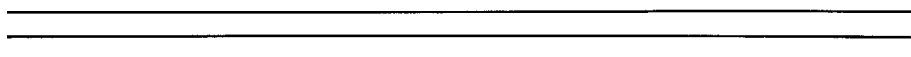
mm(inch)	0.8 (1/32")	1.0 (0.035")	1.2 (0.045")	1.6 (1/16")
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## Direction for use

Joining difficult to weld steel: in function of the chemical analysis and the workpiece thickness, preheating or cooling down slowly can be necessary.

Manganese steel (12%) is welded without preheat (max. 350° (660°F) interpass temperature).

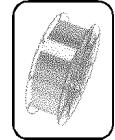
Shielding gas: argon + 1 to 3% O<sub>2</sub> or argon + 1 to 2% CO<sub>2</sub> (10-15 l/min).



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# lastifil 85

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## Joining difficult to weld steel - highest strength

Solid welding wire for joining dissimilar steel types (stainless steel to carbon steel) and for refacings.

Suitable for welding steel with a high carbon content.

An elevated delta ferrite content in an austenitic structure assures a very high resistance against hot cracking.

Suitable for welding manganese steel, armour steel, spring steel. Refacings that harden by impact load.

Oxidation resistant up to 1150°C (2100°F).

## Applications

Joining wearplates, "dissimilar" welding (stainless steel to steel), crack-resistant underlayers for hardfacings, refacings where good corrosion resistance or friction resistance is expected and where abrasion resistance is less important.

Welding or repairing cast steel with a high chromium content (1.4762, 1.4085 aso).

## Technical data

Tensile strength Rm: 720-800 N/mm<sup>2</sup> (104-116ksi)

Yield strength Rp0.2: 510 N/mm<sup>2</sup> (74ksi)

Elongation A5: 25%

Impact value (ISO-V) Av: 95J (70ft lb) at 20°C (68°F)

## Sizes

mm(inch)	1.0 (0.035")	1.2 (0.045")
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## Directions for use

Joining difficult to weld steel: in function of the chemical composition and the workpiece section, preheating and slowly cooling down can be necessary.

Avoid any heattreatment at temperatures between 550°C (1020°F) and 850°C (1560°F) and prevent that heavy welds remain too long in this temperature zone.

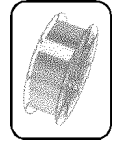
Use argon with 1 to 3% O<sub>2</sub> or 1 to 2.5% CO<sub>2</sub> as protection gas.



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# lastofil 918

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## Hardfacing wire for hotworking dies

Welding wire for hardfacing aluminium injection dies, blanking dies, hot-working dies (up to 550 - 600°C).

The resistance to wear and cracking is higher than the one of the common "hot-work" steels.

The deposited metal is machinable and hardens when in use up 50 Rc by influence of the temperature alone (without impact loading).

The surfacing becomes easily polished. No decarbonisation is to be feared during thermal treatment.

## Applications

Aluminum and zinc casting industries, plastic and rubber injection dies, cold-working dies under high pressures, tools for extrusion.

## Technical data

Hardness of deposited material: first layer +/- 33 Rc

Room temperature hardness after holding for 3 hours at 480°-510°C: +/- 50Rc.

Remark: By holding the surfaced part at higher temperatures (+/- 815°C and cooling in air) the surfacing becomes soft and machinable. Yet it will harden again when kept a few hours on +/- 500°C

## Dimensions

mm 1.0

## Directions for use

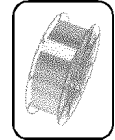
Use argon + 1 to 3% O<sub>2</sub> as protection gas.

For tempered steels, apply a base layer with Lastofil 85.

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# lastofil 925

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## Welding of Inconel®625

Appropriate for welding nickel steels (9% Ni) used at temperatures below zero, and for welding of nickel alloys as Inconel®625.

Can be used for joining dissimilar metals.

Appropriate for working temperatures from -196°C to 1000°C (-320°F to 1800°F).

Very high corrosion resistance.

## Applications

For joining copper free nickel alloys to each other or to mild steel or alloy steel.

Chemical and petrochemical industry, measuring instruments used at high temperatures, repair welding and rebuilding of hotworking dies.

## Technical data

Tensile strength Rm: 760 N/mm<sup>2</sup> (104 ksi)

Yield strength Rp0.2: > 420 N/mm<sup>2</sup> (60 ksi)

Elongation A5: 35%

Impact strength (ISO-V)Av: 130J at 20°C (96ft lb at 68°F)

80J at 196°C (59 ft lb at 385°F)

## Dimensions

mm(inch) 1.2 (0.045")

## Directions for use

Clean nickel alloys thoroughly, remove all traces of oil and grease.

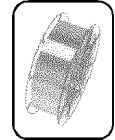
Protection gas argon + 2 to 3% CO<sub>2</sub> (or argon + 1 to 3% O<sub>2</sub> or argon + helium).

Preferably weld with a pulsed arc.

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# lastofil 979

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## Outstanding corrosion resistance

Lastofil 979 is a solid wire on a NiCrMo base with an excellent corrosion resistance to both oxidising and reducing media.

The weld deposit is resistant to most aggressive chemical process environments.

Especially resistant to pitting, crevice and stress corrosion.

## Application

Welding of nickel base alloys like UNS N10276, DIN 2.4602.

Dissimilar welding between nickel base alloys and stainless or low-alloy steel.

Protection of steel surfaces against corrosion by "cladding" with Lastofil 979.

Excellent resistance against chlorides and seawater.

Used in chemical processing, pollution control, industrial and municipal waste treatment, pulp and paper production and so on.

## Technical data

Tensile strength Rm: 690 N/mm<sup>2</sup> (100ksi)

## Sizes

mm(inch)	1.2 (0.045")	1.6 (1/16")
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## Directions for use

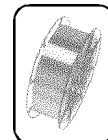
The base metal has to be thoroughly cleaned before welding.

Avoid sulphur containing cleaning products and grinding discs.

Weld with the lowest possible heat input. Let the weld metal cool down between different layers.

Use argon + 2 à 3% CO<sub>2</sub> or argon + 1 to 3 % O<sub>2</sub> as protection gas.

# lastofil 982



## For inconel and nickel alloys

Solid welding wire for joining NiCrFe alloys (Inconel, Incoloy, Nimonic) and heatresistant steels.

Dissimilar joints between Ni alloys, stainless steel and steel, especially when stress relieving at 650°C (1200°F) is applied or where working temperatures above 300°C (570°F) could be met. (Where carbon diffusion could occur).

Welding of problem steels and joining copper to steel.

Joining cryogenic steels (9%Ni).

Suitable for working temperatures from -196°C(-320°F) to + 1000°C(+ 1830°F) (but don't use nickel alloys in sulphurcontaining atmospheres).

Very good corrosion resistance (general corrosion, stress corrosion and intergranular corrosion).

## Applications

Welding of Inconel 600, 601, Incoloy 800, 800H, Nimonic 75, 80A, Wn° 2.4816, 2.4951, 1.4876, 1.4958, Ni-steels 1.5662, 1.5680, 1.5637 aso.

Joining difficult to weld steels and dissimilar metals.

## Technical data

Tensile strength Rm: 660 N/mm<sup>2</sup>(96ksi)

Yield strength Rp0.2: 400 N/mm<sup>2</sup>(58ksi)

Elongation A5: 45%

Impact value (ISO-V):       + 20°C(68°F) : 200J(147ft.lb)  
                                      -196°C(-320°F) : 70J(51ft.lb)

## Sizes

mm (inch)                   1.2 (0.045")

## Directions for use

Clean nickel alloys thoroughly, remove all traces of oil and grease.

Protection gas argon + 2 to 3% CO<sub>2</sub> (or argon + 1 to 3% O<sub>2</sub> or argon + helium).

Preferably weld with a pulsed arc.

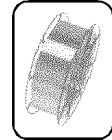




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# lastofil 20TB

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## Basic flux cored wire

Lastofil 20TB is low hydrogen flux cored wire for welding mild and low alloyed steels.

The basic flux in the core guarantees good low temperature impact properties. Lastofil 20TB gives no spatters and has an excellent slag release.

It can be used in all positions, except vertical down.

The wire is copper coated for better feeding characteristics and is hermetically closed so that moisture pick up is avoided.

## Applications

Welding structural steel and low alloy steel with tensile strength up to 600 N/mm<sup>2</sup>.

Hull steel A, B, D, E, AH32 up to EH36.

API steels X42 up to X70.

## Technical data

Tensile strength Rm: 540-640 N/mm<sup>2</sup>

Yield point Rp: >470 N/mm<sup>2</sup>

Elongation A5: >27%

Impact strength (ChV): -20°C: >100J  
-40°C: >60J

## Current

DC, reverse polarity

## Sizes and amperage

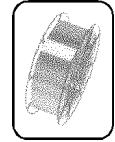
mm(inch)	1.2 (0.045")	1.6 (1/16")
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## Directions for use

CO<sub>2</sub> or Argon/CO<sub>2</sub> mixtures are used as shielding gas (10-15 l/min).

Use a stickout of 20 to 25mm (0.8-1inch) in function of the diameter.

# lastifil 20TM



## Cored wire for high quality steel welding. (Ar-CO2).

Lastifil 20TM is a gas shielded metal cored wire designed for use with Argon CO2 gas mixtures.

It has excellent welder appeal and superior arc stability. It produces spatter free welds, eliminating the need for costly cleaning.

Slag free welds allow for multi-pass welding without deslagging or worry of slag entrapment.

Fillet and butt welds can be made in flat, horizontal, vertical up and vertical down position.

Lastifil 20TM combines the high deposition rate of flux cored wires with the low slag volume and the efficiency of solid wires. (Deposition rate 7 to 10 kg/hr.)

The high current density characteristics allow for faster travel speeds than obtained with solid wires.

## Applications

Boiler work, general plate and sheet metal fabrication, off shore constructions, all mild and medium tensile steels. Hull steel A,B,D,E,AH32-EH36 ; Koolstofstaal S185, S235-S355 (EN 10025);

Hull steel P235GH, P265 GH, P295 HG (EN 10028-2); Pipe steel P235 T1-P355N (EN 10217-1); P235T2-P355N (EN 10217-3); StE290.7 TM-StE480.7 TM (EN 10208-2); API steel X42-X70; Fine grain steel StE355-StE460 (EN 10028-3).

## Technical data

Tensile strength Rm: 575 N/mm<sup>2</sup> (83 ksi)

Yield strength Re: 500 N/mm<sup>2</sup> (72 ksi)

Elongation A5: 26%

Impact value (Ch V): + 20°C: 130J (+ 63°F: 96ft.lb)

0°C: 120J (+ 32°F: 88ft.lb)

-20°C: > 100J (-4°F: 74ft.lb)

-40°C: > 60J (-40°F: 44ft.lb)

## Sizes

mm ("inch)	1.0 (.035")	1.2 (.045")	1.6 (1/16")
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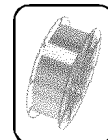
## Directions for use

Use a stick-out of 1 to 3 cm (0.4 - 1.2 inch) depending on the diameter and the welding method. To obtain a correct wire supply adapted driving rollers have to be used.

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# lastofil 20TR

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## Rutile flux cored wire

Lastofil 20TR is a rutile cored wire for welding unalloyed and low alloyed steel (up to St52) with protective gas.

Very good weld ability and smooth aspect. Slag can be removed easily.

Extra low hydrogen content (<5ml/100 gr.).

Can be used to weld steel that is rusty or coated with primer.

Lastofil 20TR can be used in all positions, also vertical down.

## Applications

Welding steel St35, St35.4, St35.8, St45, St52, St52.3; boiler steel HI, HII, 17Mn4; hull plate A,B,D,E; fine-grained steel from StE255 to St460.

## Technical data

Tensile strength Rm: 550-650 N/mm<sup>2</sup> (80-94 ksi)

Yield point Rp: >460 N/mm<sup>2</sup> (67 ksi)

Elongation A5: >22%

Impact strength Av (ChV):      80J (-20°C) (59 ft.lb at -4°F)  
   >60J (-40°C) (>44 ft.lb at -40°F)

## Current

DC, reverse polarity

## Sizes and amperages

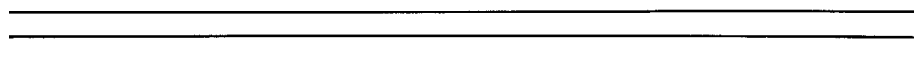
mm (inch)	1.0 (0.035")	1.2 (0.045")	1.6 (1/16")
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## Directions for use

CO<sub>2</sub> or Argon/CO<sub>2</sub> mixtures are used as shielding gas (10-15 l/min).

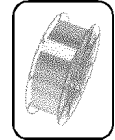
Use a stickout of 20 to 25mm (0.8-1 inch) in function of the diameter.

Before welding a second layer, slag must be removed from the previous layer.





# lastofil 10015 TM



## Metal powder cored wire with high tensile strength

Lastofil 10015 TM is a copper coated cored wire for welding low alloy high strength steel.

The absence of slag permits multilayer welding without time consuming slag removal. Excellent weldability in short arc and spray mode.

High efficiency. All positions.

## Application

High strength steel applications in bridges, cranes, vessels, excavating and roadbuilding equipment.

StE 690V, XAB0620, Weldox 700, N-AXTRA 63 and N-AXTRA 70, StE 690.7TM, 1.8931, 1.8914, 1.8964, 1.8979, 1.6779, 1.6781.

## Technical data

Tensile strength Rm: 780 - 960 N/mm<sup>2</sup> (113 - 139 ksi)

Yield strength R<sub>p0.2</sub>: > 690 N/mm<sup>2</sup> (100 ksi)

Elongation A5: >17%

Impact strength (ISO-V) Av as welded: >60J at -20°C (44 ftlb at -4°F)  
> 47J at -47°C (35 ftlb at -53°F)

## Sizes

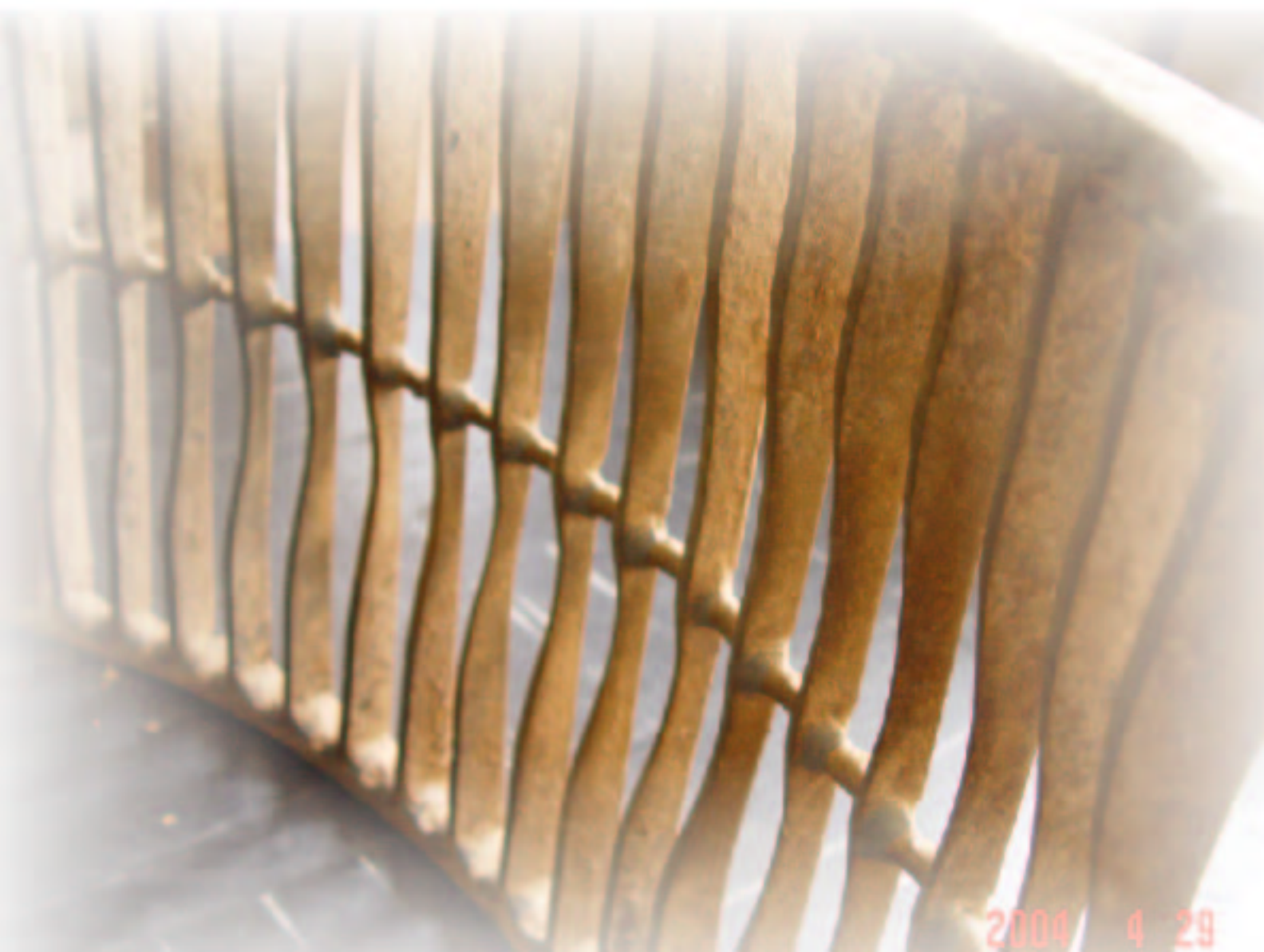
mm (inch)	1.0 (0.035")	1.2 (0.045")	1.4 (0.055")	1.6 (1/16")
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## Directions for use

Remove grease and impurities of the weld area.

Protective gaz: Ar - CO<sub>2</sub> mixture.

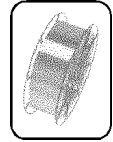
DC, rev. pol.



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# lastofil 236TM

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## Metal powder cored wire - 600 Brinell

Hardfacing wire with very high resistance to wear caused by the abrasive action of minerals, clay, sand, gravel, and so on.

Also good resistance to shocks.

The molten pool is easily controlled, the beads are smooth.

The absence of slag allows welding in several layers, without the necessity to remove the slag.

The deposited metal is crack-resistant, also after several layers.

Lastofil 236 TM can be welded in every position, also vertical downward and upward. (For example rebuilding shafts).

The copper-plated wire is hermetically closed and does not take up any moisture, not even after a longer period of storage.

## Applications

Mechanical spades, bulldozers, scrapers, crushing hammers.

## Technical data

Hardness: 600 HB

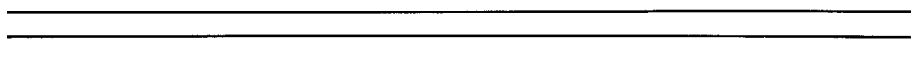
## Sizes

mm/inch:                    1.2 mm (0.045")                    1.6 mm (1/16")

## Directions for use

Standard wire feed rolls suffice for feeding this wire without problems.

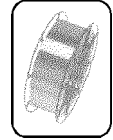
Mixed gas Ar-CO<sub>2</sub> about 12 litres a minute.



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# lastifil 238GM

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## Metal powder cored wire - 62/66 Rc - open arc

Lastifil 238GM is a slag-free, open arc cored wire for hardfacing workpieces subject to high abrasion or abrasion combined with impact.

Several crack free layers can be build up one top of another. The deposits are not machinable (only grinding).

All positional. Excellent weldability and weldor appeal.

## Applications

Agricultural tools (cultivator sweeps, tillage tools) cement chutes, bulldozer blades, screw conveyors, shovel buckets, mixer paddles.

## Technical data

Hardness: 62-66Rc

### Sizes

mm	1.2 (0.045")	1.6 (1/16")
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## Current

D.C., reverse polarity.

## Directions for use

Open arc welding (no shielding gas required)

Stick-out: 30 - 40 mm (1.2"-1.6")

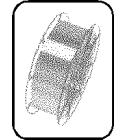
Use stringer beads.



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# lastifil 239GM

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## Metal powder cored wire - 600 Brinell - open arc

Cored wire for hardfacing parts that have to resist severe abrasion in combination with high impact loads.

The combination of the tough matrix and the very hard Niobium carbides gives an abrasion resistant deposit that can withstand shocks.

The absence of slag allows welding in several layers without the elimination of slag.

Three layers can be built up without cracking.

You obtain 60 Rc hardness from the first layer.

## Applications

Crusher cylinders, crusher hammers, bucket teeth and lips, sandpumps, impellers and screws, cane shredders and knives, knives and mixers in the pulp and paper industry.

## Technical data

Hardness: 60Rc

## Sizes

mm      1.2 (0.045")      1.6 (1/16")

## Current

D.C., reverse polarity.

## Directions for use

Open arc welding (no shielding gas required)

Stick-out: 30 - 40 mm (1,18 - 1,57")

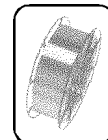
Remove all worn out material. Preheat high carbon and low alloyed steels.

On steels with bad weldability, it is advisable to apply a base layer with Lastifil 8071 in order to avoid cracking.

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# lastifil 2400G

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## Flux cored wire with outstanding abrasion resistance

Lastifil 2400G is a flux cored wire that can be used without shielding gas. It is recommended for applications involving severe abrasion, or for abrasion coupled with impact.

The weld metal is not machinable.

Good hot-hardness up to 550°C (1020°F).

## Applications

Mineral wear applications as excavator teeth, bulldozer blades, bucket lips, coal screw conveyors, chip chute liners, spreader cones (brick industry), rotary hoe teeth, pulping knives, extrusion of rubber. Crushers for stone and rock (cement industry - stone quarries). Bone crushers.

## Technical data

Hardness : 63-67 Rc

## Sizes

mm(inch)	1.6 (1/16")	2.4 (3/32")	2.8 (7/64")
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## Directions for use

Use a stickout (distance from contact tip to the extremity of the wire) of 20 to 50 mm (1-2") for open arc welding.

Lastifil 2400G can be used without shielding gas. However the best fluidity and almost spatter free welding is obtained by using an extra gas Ar + 2% O<sub>2</sub> in the spray arc zone.

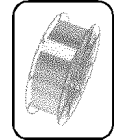
For a correct wirefeed, use the appropriate drive rolls in the wire feeder and a water cooled torch that is smoothly inclined.

On crack sensitive steels or for hardfacings where heavy impact occurs, use a base layer of Lastifil 8071.

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# lastofil 2401G

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## Abrasion resistance at elevated temperatures

Lastofil 2401G is a self shielded flux cored wire that provides excellent abrasion resistance at temperatures up to 650 °C.

## Applications

Overlaying of spines and grids in ore processing installations; impact crusher parts, conveyor screws. Steel mills and sinter plants, blast furnace bells and hoppers.

## Technical data

Hardness : 63-65 Rc

Hardness at 550 °C : approx. 54 Rc

Hardness at 600 °C : approx. 50 Rc

## Sizes

mm      1.6      2.0

## Directions fo use

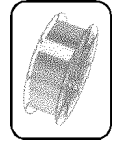
Use a stickout (distance from contact tip to the extremity of the wire) of 20 to 50 mm.

For a correct wire feed, use the appropriate drive rolls in the wire feeder.

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# lastofil 2461GM

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## Metal powder cored wire 65-68Rc

Lastofil 2461GM is a highly alloyed cored wire that can be used without shielding gas. The hard structure of the deposit is rich in chromium and yields an excellent resistance to abrasion by sand and minerals.

There is no slag that has to be removed.

The wire is copper coated for best feedability.

The weld is not machinable.

## Applications

Rebuilding cane cutting knives, rotary cultivators, mixing paddles, clay extruding machines, earth moving equipment, cement pumps and so on.

## Technical data

Hardness 65-68Rc

## Sizes

mm (inch): 1.6 (1/16") 2.4 (3/32")

## Directions for use

Use a stickout (distance from contact tip to the extremity of the wire) of 20 to 50 mm (1-2") for open arc welding.

Lastofil 2461GM can be used without shielding gas. (Extra gas Ar + CO<sub>2</sub> can be used if required).

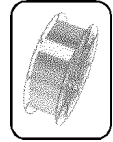
For best wirefeed, use the appropriate drive rolls in the wire feeder and a water cooled torch that is smoothly inclined. The wire however permits also working with 2 roller wire feeders.

On crack sensitive steels use a base layer of Lastofil 8071.

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# lastofil 251G

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## Cored wire on cobalt base - very hard

Lastofil 251G deposits an alloy on cobalt base that is resistant against abrasion, corrosion and high temperatures (up to 1000°C (1830°F)).

The hardness obtained is independent of the cooling rate and is not changed by any heat treatment.

## Applications

Rebuilding cutting blades, valve seats, guides in hot-rolling mills, extrusion blades, tar scrapers.

## Technical data

Hardness: 51-56 Rc

## Sizes

mm(inch)                      1.6 (1/16")

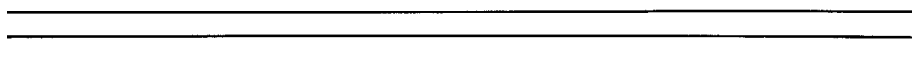
## Directions for use

Remove dirt, oil and all fatigued metal by grinding.

Preheat thick pieces that are prone to cracking to about 250°C (480°F).

Protection gas: Argon (8-12 l/min).

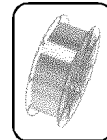
Cool down slowly.



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# lastofil 256G

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## Flux cored wire on Cobalt base

Tubular hardfacing wire with exceptional resistance against corrosion and wear at red heat (up to 1100°C - 2010°F).

Surfacing of parts subjected to thermal or mechanical shocks and metal to metal wear.

The original room temperature hardness is picked up again even after prolonged exposure to high or fluctuating temperatures.

The deposit can be machined with hardmetal tools.

## Applications

Petrochemical industries: valves, valve seats, nozzles.

Parts that must resist to rubber, plastic, petroleum, and corrosive attack by oxidising acids.

Valve and valve seats of ship engines.

Food and pharmaceutical industry.

## Technical data

Hardness: 38-44 Rc

## Sizes

mm(inch)      1.2 (0.045")      1.6 (1/16")

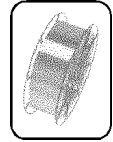
## Directions for use

Use pure argon as protective gas.

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# lastofil 8070

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## Flux-cored wire for joining dissimilar metals

Self shielded flux cored wire for joining difficult to weld steels, high-carbon steel castings and manganese steel. Dissimilar metal applications, e.g. 12% manganese steel to mild or medium carbon steel.

Excellent resistance to cracking, even on manganese steel.

Also used as buffer layer prior to hardfacing on badly worn components.

Self hardening build-up layer for applications requiring a great impact resistance.

## Applications

Armour plate, manganese steel in earth moving, dredging and cement industries.

General repair and maintenance.

## Technical data

Tensile strength Rm: > 580 N/mm<sup>2</sup> (84ksi)

Elongation A5: ≥40%

Hardness as deposited: 200-220 HB

Hardness work hardened: 400 HB

## Sizes

mm	1.6	2.8
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## Directions for use

Use a stickout (distance from contact tip to the extremity of the wire) of 20 to 50mm (1to2").

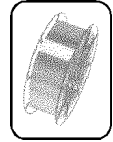
For a correct wire feed, use appropriate drive rolls in the wire feeder.

Lastofil 8070 can be welded without gas. When required Ar/O<sub>2</sub> with 1-2% O<sub>2</sub> can be used.

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# lastofil 8071

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## Flux cored hardfacing wire - heavy impact resistance Joining problem steels

Self shielded flux cored wire for building up multi-layer deposits on badly worn components. To be used as buffer layer on crack sensitive steels. Under repeated impact the austenitic deposits become tougher and harden very quickly.

Lastofil 8071 can also be used for joining 12% Manganese steel and high carbon steels.

The ductile deposit prevents crack formation on those carbon steels and on problem steels.

The deposit is rust proof.

### Applications

Crusher jaws, swing hammers, rail crossings, gyratory cones, dredge bucket lips.

Joining of 12%Mn steel. Buffer layers for Lastofil 2400G.

### Technical data

Hardness as deposited : 250 Brinell (work hardened : 500 Brinell)

Tensile strength Rm: 850 N/mm<sup>2</sup> (123ksi)

Elongation A5: 35%

### Sizes

mm (inch):	1.6 (1/16")	2.4 (3/32")	2.8 (7/64")
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### Directions for use

Lastofil 8071 can be used without separate shielding gas.

(Ar/O<sub>2</sub> (1-2%O<sub>2</sub>) can be used if required.)

Use a stickout (distance from contact tip to the extremity of the wire) of 20 to 50 mm (0.8-2inches).

For a correct wire feed, use the appropriate drive rolls in the wire feeder.

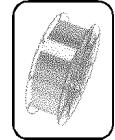




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# lastofil 41G

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## Flux cored wire for welding cast iron

Lastofil 41G is a flux cored wire specifically designed for welding of grey and nodular cast iron and for joining cast iron to steel and to other metals.

Using Lastofil 41G can yield important benefits in time for applications where large areas must be rebuilt (although all precautions for welding cast iron need to be respected).

There is practically no slag, which makes the wire very interesting for multiple layers build-up welding.

The deposit is porosity free, even after several layers.

## Applications

Build-up of dies in automotive plants, rebuilding of coke oven doors, repair of foundry defects, repair of cast iron pumps and blowers.

Joining steel flanges to cast iron pipes (waste water).

## Technical data

Tensile strength Rm: > 500 N/mm<sup>2</sup> (72ksi)

Yield strength Rp(0.2): > 320 N/mm<sup>2</sup> (46ksi)

Elongation A5: > 20%

## Sizes

mm(inch)	1.2 (0.045")	1.6 (1/16")
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## Directions for use

D.C., straight polarity.

Weld with open arc (no gas); Argon/CO<sub>2</sub> or Argon/O<sub>2</sub> gas mixtures possible.

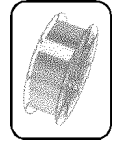
A very thin slag layer could jump away by cooling down. Wear goggles to protect your eyes.



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# lastofil 570G

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## Aluminiumbronze wire 300 Brinell

Lastofil 570G is a flux cored aluminiumbronze wire for rebuilding ship propellers, for repairing cast pieces in nickelaluminiumbronze and for hardfacing steel parts. Good resistance to corrosion, cavitation and erosion in seawater. Adding 5% Nickel in the wire avoids desaluminification of the aluminiumbronze in warmer seawaters and superheated steam.

### Applications

Rebuilding ship propellers, friction surfaces, deep-drawing dies for steel and stainless steel parts (kitchen utensils), steel shafts and pistons, pump parts in bronze, flanges and turbineblades.

Hardfacing steel and rebuilding aluminiumbronze. (Ball joints, gear rims and other parts in heavy machinery, where the gliding speed is not too high).

### Technical details

Hardness: 280 - 340 Brinell (depending of the dilution with the base metal)

### Sizes

1.6 mm

### Directions for use

Protective gas: pure argon approx 15 l/min (or argon helium mixture)

Current: direct current, reverse polarity

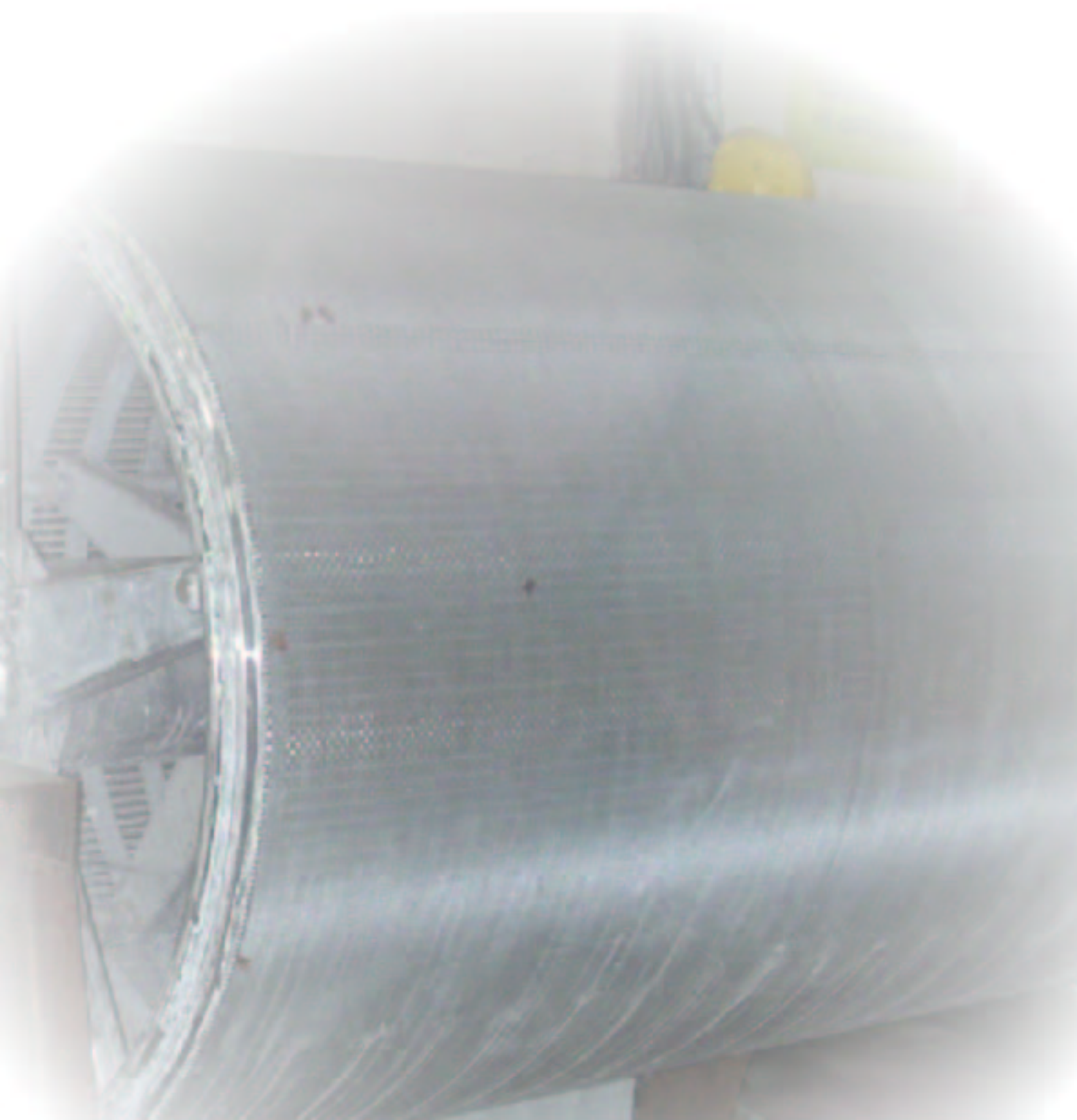
Preparing the parent metal: remove carefully all oxides and impurities.

Preheat aluminiumbronze basemetal between 50°C and 300°C, depending on the type of bronze and the thickness of the pieces; a post weld heat treatment at 650°C, followed by cooling on air down to room temperature, can be applied in order to obtain an optimal corrosion resistance in the heat affected zone.

Preheattemperatures that are too high could create oxidation so that insufficient cleaning of the molten pool could take place.

Remove carefully all slag residues between 2 layers by means of grinding in order to avoid poreformation. Weld by pushing the arc.

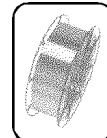
Copper fumes are toxic; Take proper security measures.



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# lastofil 803G

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## Cored wire for stainless steel 304L

Cored wire for welding low carbon ( $C < 0.03\%$ ) stainless steel of type 18/8. Very good resistance against intergranular corrosion. High fluidity. Regular and beautifully formed beads. Excellent X-ray quality.

### Applications

Stainless steel: AISI 304L - 304...

### Technical data

Tensile strength  $R_m$ :  $\geq 532 \text{ N/mm}^2$  ( $\geq 77 \text{ ksi}$ )

Allongation  $A_5$ :  $\geq 39\%$

### Sizes and amperage

mm(inch)	0.9 (.035")	1.2 (.045")
Amp	95	175

### Directions for use

Gas (20l/min): mixture gas (80% Ar + 20%  $\text{CO}_2$ ),  $\text{CO}_2$ .

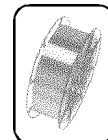
Remove all traces of dirt from the weld edges. Weld with a "stick-out" of 15 to 25mm (0.6-1"). Before applying a second layer, always remove the slag with a stainless steel brush or grinding disc.

The interpass-temperature in the welding zone has to remain under  $200^\circ\text{C}$  ( $400^\circ\text{F}$ ): if not, cool down before applying a new layer. To get the exact wirefeed, it is necessary to use the appropriate driving wheels for flux cored wires on the wirefeeder.

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# lastifil 804G

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## Cored wire 316L

Cored wire for welding low carbon ( $C < 0.03\%$ ) stainless steel of type 18/8/Mo.  
High resistance against intergranular corrosion.  
Regular and beautifully formed beads.  
Excellent X-ray quality.

## Applications

Stainless steel with Cr/Ni/Mo: AISI 316L - 316.  
Cast steel: ASTM CF3M - CF8M - CF12M.

## Technical data

Tensile strength Rm:  $\geq 525$  N/mm<sup>2</sup> (76ksi)  
Elongation A5:  $\geq 40\%$

## Sizes and amperages

mm(inch)	0.9 (.035")	1.2 (.045")	1.6 (1/16")
Amp	95	175	225

## Directions for use

Gas (20l/min): gas mixture (80%Ar + 20%CO<sub>2</sub>), CO<sub>2</sub>.

Remove all traces of dirt from the weld edges.

Weld with a "stick-out" between 15 and 25mm (0.6-1").

Before depositing a second layer, always remove the slag with a stainless steel brush or grinding disc.

The interpass-temperature in the welding zone has to remain below 200°C

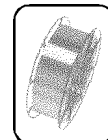
(400°F): otherwise, first cool down before laying a new layer. To get a correct

wirefeed, it is necessary to use the appropriate driving wheels for filled wires on the wirefeeder.

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# lastofil 809G

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## Cored wire for crack-resistant joints

Cored wire for welding under shielding gas. Used for joining stainless steel and difficult to weld steels. Joining Cr/Ni/mo steels with low carbon content ( $C < 0.03\%$ ). Very good corrosion resistance. High strength and creep resistance at high temperatures. High fluidity. Regular and beautifully formed beads. Excellent X-ray quality.

### Applications

Joining stainless steel and difficult to weld steels, Cr-Mo steel, high carbon containing steel, Mo-containing steels.

### Technical data

Tensile strength  $R_m$ :  $\geq 580$  N/mm<sup>2</sup> (84ksi)

Elongation A5: 31%

### Sizes and amperage

mm(inch) 1.2 (.045")

Am 175

### Directions for use

Gas (20l/min): (80% Ar + 20% CO<sub>2</sub>), CO<sub>2</sub>.

Remove all traces of dirt from the weld edges. Weld with a "stick-out" from 15 to 25mm. Before applying a second layer, always remove the slag with a stainless steel brush or grinding disc.

The interpass-temperature in the welding zone has to remain under 200°C (400°F): if not, cool down before applying a new layer. To get the exact wirefeed, it is necessary to use the appropriate driving wheels for flux cored wires on the wirefeeder.

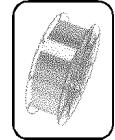




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# lastofil 98G

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## Refacing hotworking tools

Cored wire for refacing under protection gas (hotworking dies. Hardens by Shock load. Retains a good hardness at very high temperatures. Oxydation resistant up to 1200°C (2192°F). The refacing is resistant to strong acids and fume gases (f.i. hydrochloric acid, sulphuric acid, phosphoric acid, depending on concentration and temperature). Crack-free refacings.

## Applications

Hot press- and forging dies, punches, plate shears, drums and cutting tools that are exposed to high temperatures (redglow heat).  
Dies for tube extrusion.  
Accessories for thermal treatment: gratings, baskets,...  
Refacings where extreme seawater resistance is needed.

## Technical data

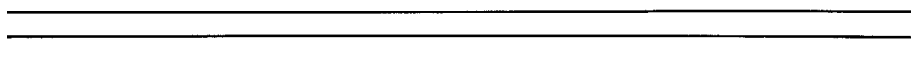
Hardness after welding: 220 HB  
Hardness after cold deformation:  $\pm 400$  HB  
Hardness at 760°C (1400°F):  $\pm 140$  HB

## Sizes

mm(inch)                      1.6 (1/16")

## Directions for use

Remove small fatigue cracks in the base metal by grinding.  
Clean thoroughly the surfaces and remove all traces of oil and grease.  
Reface under pure argon or argon + 1 to 2% O<sub>2</sub>.  
On dies where large thickening up is necessary or on steel with a high susceptibility to cracking, apply an underlayer with Lastofil 8070.  
Preheat difficult to weld steel in function of the chemical analysis.





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# lastek P7012-8

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## **Special plasma transferred arc powder with excellent wear and corrosion resistance at high temperatures**

This cobalt based powder is specially developed for use in the plasma transferred arc process.

The combination of high hardness and excellent corrosion resistance even at elevated temperatures makes this alloy very suitable for surfacing parts that are used in severe conditions.

The very low coefficient of friction makes it appropriate for adhesive wear resistant coatings.

### **Applications**

All applications involving high wear and corrosion at elevated temperatures.

Specially developed for surfacing valve seats of diesel engines.

Valve seats and gates, pump impellers and casings, conveyor screws and extruders in chemical and petrochemical industries.

Cutting edges of knives for cutting carpet, plastics, paper and rubber.

Cold working tools, tipping saw blades, etc...

### **Technical data**

Hardness: 50-54 Rc

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# lastek P902

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## **Machinable spraying powder with excellent bond strength on chromium steel.**

Chromium free, Nickel base metal spray powder for surfacing with the Lastispray-system.

Very thin flowing and excellent bond on stainless steel, carbon steel, cast iron.

Machinable with ordinary tools.

Corrosion and oxidation resistant (good resistance against seawater).

Recommended for metal to metal wear applications.

Can also be used for joining thin cast iron pieces.

Base layer for harder metal powders on base metals that are difficult to wet.

## **Applications**

Rebuilding worn shafts in machine repair, gears, moulds in the glass industry, bearing seatings, press tools, corrosion resistant coatings, repair of machining errors on cast iron and steel pieces.

## **Technical data**

Hardness: 190-250 HB

Fusing temperature: 1090-1120°C (1994-2048°F)

Density of deposit: 8,45 gr/cm<sup>3</sup> (0.306 lb/cu.in)

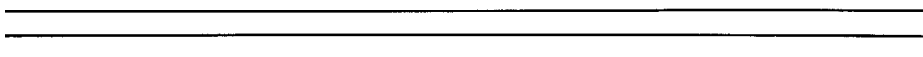
## **Directions for use**

The surface to be hardfaced should be degreased and free of dirt. If grit blasting is used for surface preparation all residues have to be removed by metal wire brush.

Do not touch prepared surfaces with fingers.

Preheat the workpiece up to 300°C (572°F) and deposit a thin layer to avoid oxidation.

Heat locally up to red-hot to ensure a good bond and spray more powder to obtain the required thickness. Spraying and melting of P902 should be done alternately.



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# lastek P9026

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## Moulds and bottom plates in the glass industry

Spraying powder for Lastispray-system used for repairing worn cast iron moulds in the glass bottle manufacturing industry.

P9026 is a chromium-free alloy yielding good build-up properties and a balanced fluidity, and can be used for the lower temperature applications (up to about 600°C (1100°F)).

## Applications

Cast iron moulds, bottom moulds, bottom plate, mould neck, blowing head, guide rings

## Technical data

Hardness: 24-31 Rc

Temperature: 1070-1100°C (1960-2010°F)

Apparent density: 5,1 gr/cm<sup>3</sup>

## Directions for use

Prepare cast iron surface before spraying by removing all dust and oil. Spray thin layer over the surface and then preheat thick pieces up to 300-700°C (570-1300°F). Use a neutral flame to spray and fuse the alloy.

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# lastek P903

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## Copper containing spraying powder

Very soft Nickel based spraying powder for surfacing with the Lastispray system. It contains a high amount of Copper. P 903 is corrosion resistant against sea water. Its primary use is in repairing cast iron (including nodular iron), due to its excellent ductility and colour match, and refacings on bearings and press tools, due to its very low coefficient of friction.

Easily machinable.

## Applications

Toothed wheels, sprockets, bearings, engine blocks, pumpshafts, press tools for deepdrawing and forming steel plates, repair of casting defects.

## Technical data

Hardness: 170-220 HB

Fusing temperature: 975-1245 °C (1787 - 2273 °F)

Density of the deposit: 8.57 gr/cm<sup>3</sup> (0.310 lb/cu.in)

## Directions for use

The surface to be hardfaced should be degreased and free of dirt. If grit blasting is used for surface preparation all residues have to be removed by a metal wire brush.

Do not touch prepared surfaces with fingers.

Preheat the workpiece up to 300 °C (572 °F) and deposit a thin layer to avoid oxidation.

Heat locally up to red-hot to ensure a good bond and spray more powder to obtain the required thickness. Spraying and melting of P903 should be done alternately.

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# lastek P905

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## Corrosion resistant spraying powder

Very hard nickel base metal spray powder that combines wear resistance with excellent corrosion resistance (due to Mo and Cu additions).

Despite its hardness, the deposit also withstands impact loading.

The powder is less fluid than P909, permitting a thicker buildup.

Resistant against seawater, diluted acids (sulphuric-, phosphoric acid).

It can only be finished by grinding.

## Applications

Cutting knives, pump and turbine sleeves, valve seats, fan blades, wire drawing tools, mixing equipment in chemical and fertilizer industry, textile spindles.

## Technical data

Hardness: 54-60 Rc

Fusing temperature: 980-1010°C (1796-1850°F)

Density of the deposit: 7.5 gr/cm<sup>3</sup> (0.271 lb/cu.in)

## Directions for use

The surface to be hardfaced should be degreased and free of dirt. If grit blasting is used for surface preparation all residues have to be removed by a metal wire brush.

Do not touch prepared surfaces with fingers.

Preheat the workpiece up to 300°C (572°F) and deposit a thin layer to avoid oxidation.

Heat locally up to red-hot to ensure a good bond and spray more powder to obtain the required thickness. Spraying and melting of P905 should be done alternately.



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# lastek P906

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## Metal spray powder containing tungsten carbides

Hardfacing metal spray powder for hot spraying. The thin layer from 0.05 up to 5 mm (2 thou up to 0.2inch)(Lastispray system) yields a noticeable longer life of workpieces.

Nickel-chromium base alloy with tungsten carbides.

The Ni-Cr matrix has excellent corrosion resistance, especially in reducing environments, combined with high hardness.

Due to the special carbides, uniformly distributed in the matrix, the layer has high resistance to abrasive wear.

Although the carbide content is very high, Lastek P906 has good wetting properties and may be used on thicker pieces, in difficult to reach areas and on very thin cutting edges.

## Applications

Press moulds, dies and extrusion mandrels for ceramics and bricks.

Chip knives for debarking, scrapers and mixer blades for refractories and concrete, centrifuges, ploughshares...

## Technical data

Matrix hardness: 60-64 Rc

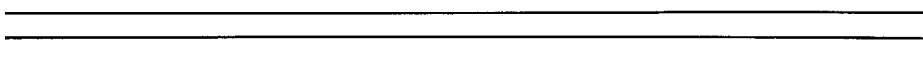
Tungsten carbide: 9 Mohs

Density of the deposit: 10.58 g/cm<sup>3</sup> (0.383 lb/cu.in)

## Directions for use

The surface to be hardfaced should be degreased and free of dirt. If grit blasting is used for surface preparation all residues have to be removed by a metal wire brush. Do not touch prepared surfaces with fingers.

Preheat the workpiece up to 300°C (572°F) and deposit a thin layer to avoid oxidation. Heat locally up to red-hot to ensure a good bond and spray more powder to obtain the required thickness. Spraying and melting of P906 should be done alternately.



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# lastek P907

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## Machinable spraying powder for metal to metal wear

Nickel based spraying powder (with chromium) for use with the Lastispray system.

Excellent bond on cast iron (also on steel and stainless steel.)

Can be machined with ordinary tungsten carbide based tools.

Shock resistant. Dense, porous free deposits give excellent corrosion resistance against water, industry - atmosphere, diluted acid.

Low coefficient of friction makes P907 usefull for metal to metal wear applications.

## Applications

Plungers in the glass industry (bottle manufacturing plants), sealing rings, water pumps, valve seats, cutting knives for plastic and rubber, gears and sprocket wheels.

## Technical data

Hardness: 35-42 Rc

Fusing temperature: 1030-1060°C (1886 - 1940°F)

Density of the deposit: 8.14 gr/cm<sup>3</sup> (0.295 lb/cu.in)

## Directions for use

The surface to be hardfaced should be degreased and free of dirt. If grit blasting is used for surface preparation all residues have to be removed by a metal wire brush. Do not touch prepared surfaces with fingers.

Preheat the workpiece up to 300°C (572°F) and deposit a thin layer to avoid oxidation.

Heat locally up to red-hot to ensure a good bond and spray more powder to obtain the required thickness. Spraying and melting of P907 should be done alternately.

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# lastek P909

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## Spraying powder for very hard, smooth and dense coatings

P909 is a Nickel based powder with high chromium content for spraying with the Lastispray system.

The deposit has a very low friction coefficient, making it the best choice for general maintenance applications where abrasion is involved.

It has an excellent resistance to corrosion by many chemicals (ammonium sulphate, calcium chloride, lactic acid, phosphoric acid, tartaric acid and others).

It is recommended for thin and dense coatings with a very smooth surface.

It can be used on steel, stainless steel, cast iron.

Machining only by grinding.

## Applications

Pistons, rotors, mixerblades, valves and valve seats, extruders, brick industry, plowshares, sieving installations, cutting knives, cams.

## Technical data

Hardness: 59-63 Rc

Fusing temperature: 970-1000°C (1778-1832°F)

Density of the deposit: 7.7 gr/cm<sup>3</sup>

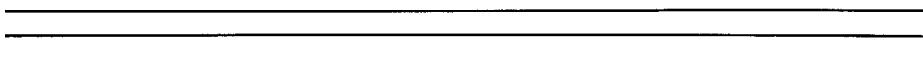
## Directions for use

The surface to be hardfaced should be degreased and free of dirt. If grit blasting is used for surface preparation all residues have to be removed by a metal wire brush.

Do not touch prepared surfaces with fingers.

Preheat the workpiece up to 300°C (572°F) and deposit a thin layer to avoid oxidation.

Heat locally up to red-hot to ensure a good bond and spray more powder to obtain the required thickness. Spraying and melting of P909 should be done alternately.



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# lastek P910

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## Spraying powder with tungsten carbides

Hardfacing powder for 'spray and fuse' torches as Lastispray.

P910 is a mixture of NiCr powder with a very high percentage of tungsten carbide particles.

The NiCr matrix yields an excellent corrosion resistance against many acids (reducing media) and a high hardness.

The special tungsten carbide particles guarantee an excellent wear resistance of the deposit against the abrasive action of sand, minerals and so on.

P910 flows well on all pieces, very massive pieces and thin edges.

## Applications

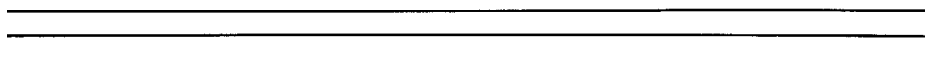
Brick kilns, centrifugal separators, fanblades in cement factories, plowshares, rotary hoes, mixers, rollers and guides in the steel industry.

## Technical data

Matrix: 62-65Rc

Tungsten carbides: 9Mohs

Density (as fused): 12.20gr/cm<sup>3</sup>



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# lastek P912

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## Cobalt based spraying powder - 49 Rc

Spraying powder for the Lastispray system for use in the plastic, wood and paper industry.

Excellent resistance against combinations of corrosion, high temperatures (up to 750°C (1380°F)), abrasion and even impact.

Low coefficient of friction.

Can be machined with carbide tipped tools, but grinding is recommended.

### Application

Carpet knives, ribbon saws for wood, pump sleeves, pyrometer tubes, punches for plastic, valve seats.

### Technical data

Hardness: 49 Rc

Fusion temperature: 1060-1100°C (1940-2010°F)

Density of the deposit: 8.35 gr/cm<sup>3</sup> (0.302 lb/cu.in)

### Directions for use

The surface to be hardfaced should be degreased and free of dirt. If grit blasting is used for surface preparation all residues have to be removed by a metal wire brush. Do not touch prepared surfaces with fingers.

Preheat the workpiece up to 300°C (572°F). Spray a thin layer of P902, followed with one layer of P912.

Fusing is done with a large torch tip and with the feather flame rather than with the inner cone in order to avoid porosity.

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# lastek P956

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## Cobalt based spraying powder - 42 Rc

Spraying powder for the Lastispray system with excellent resistance against combinations of corrosion by acids, high temperatures (up to 900°C (1650°F)), impact or thermal shocks.

Low coefficient of friction.

Resistant to attack by liquid metals as aluminium and zinc.

Can be machined with carbide tipped tools.

### Application

Cutting tools, bearings, plastic-, rubber- and resin- industry. Mixers in food industry. Pharma industry.

### Technical data

Hardness: 42 Rc

Fusion temperature: 1080-1140°C (1976-2010°F)

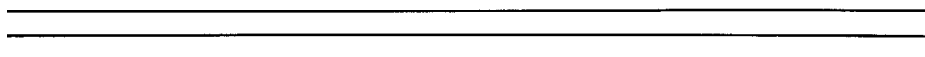
Density of the deposit: 8.32 gr/cm<sup>3</sup> (0.30 lb/cu.in)

### Directions for use

The surface to be hardfaced should be degreased and free of dirt. If grit blasting is used for surface preparation all residues have to be removed by a metal wire brush. Do not touch prepared surfaces with fingers.

Preheat the workpiece up to 300°C (572°F). Spray a thin layer of P902, followed with one layer of P956.

Fusing is done with a large torch tip and with the feather flame rather than with the inner cone in order to avoid porosity.



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# lastek P921

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## Exothermic spraying powder to be used as bond coat

P921 is a metallic powder to be used as first layer with the Lastigun cold spray method. Due to the exothermic reactions in the flame, the spraying particles are heated up more than any other powder, creating an unsurpassed bond strength on any base metal (carbon and alloy steels, cast iron, bronze, brass, ceramics and so on). The temperature of the base metal itself does not reach 250°C (480°F) avoiding distortion or structural changes.

## Applications

Anchoring layer beneath other 'cold' spraying powders as P922 - P923 - P924. (Also to be used as intermediate powder between layers of powders with different chemistry - e.g. when P922 is used for its ease of building up and a top layer of P924 has to be applied on top of P922, as the nickel base powder P924 gives better results when running in bronze bearings.) Sprayed in higher thicknesses (up to 0.3mm (0.01")) without other top coat, it can be used as oxidation resistant layer to protect surfaces against the influence of very high temperatures and temperature changes.

## Technical data

Hardness: 100-150 HB

Density of the deposit: approx. 8.4 g/cm<sup>3</sup> (0.304 lb/cu.in)

## Directions for use

Remove fatigued metal and roughen the surface to be sprayed by grit blasting, filing, roughly threading. Clean with degreasing agents to avoid any trace of oil or even fingerprints. Preheat with a neutral flame to approx. 50-100°C (120-210°F) (the workpiece rotating at a speed of approx. 20 meter a minute (65 ft/min)), and spray one layer of 0.1mm (4thou") thickness with P921.

(distance nozzle to workpiece approx. 15cm (6") - torch perpendicular on workpiece - oxygen pressure approx. 4kg/cm<sup>2</sup> (57psi), acetylene pressure 0.3 to 0.4kg/cm<sup>2</sup> (4.3-5.7psi) (tips n° 3 or 5).

Continue with the desired top coat (example: P922, P923, P924).

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# lastek P922

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## 'Cold spraying' bronze powder

P922 is a spraying powder to be used with the Lastigun cold spray method. The aluminium bronze deposit resists metal to metal frictional wear against hard surfaces (lubricated for best results) and fretting.

The corrosion resistance of the almost dense deposit is excellent (seawater, atmospheric influence, diluted acids).

The low-shrink characteristics permit heavy and rapid build ups (up to 6mm (0.24") and more).

Machinable by turning or milling.

## Applications

Machine parts where heavy build up is necessary. (Even when you want a Nickel based top coat as P 924 as final layer (for mating parts on bronze base e.g.), a build up with P922 can be used, followed with 1 layer of P921 and finally P924.)

Propeller shafts, bearing areas, sliding surfaces.

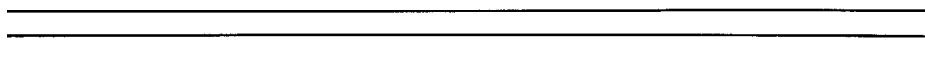
## Technical data

Hardness: 130-170 HB

Density of the deposit: 7.7 g/cm<sup>3</sup> (0.279 lb/cu.in)

## Directions for use

Always spray a bondcoat with P921 on the correctly prepared surface (see instructions P921). Follow immediatly with capping layers of P922 (spraying temperature 100 to max 250°C (210-480°F)). Flame settings: strongly oxidizing flame must be used for P922 (oxygen pressure approx. 5kg/cm<sup>2</sup> (71psi)) in order to avoid fume during spraying. Acetylene pressure 0.3 to 0.4kg/cm<sup>2</sup> (4.3-5.7psi) (tips n° 3 or 5) - distance nozzle - workpiece approx. 15cm (6") - torch prependicular to workpiece.





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# lastek P923

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## 'Cold spraying' powder for metal to metal wear

P923 is a spraying powder to be used with the Lastigun cold spray method. It has an excellent wear resistance on sliding surfaces and bearings; the unsealed deposit can retain oil, releasing it as needed to fight friction.

It can easily be machined with the standard hardmetal tools (ISO K10).

The deposit is oxidation resistant up to temperatures of about 450°C (840°F).

## Applications

All lubricated sliding surfaces, bearing areas, pistons, valve stems. All other machine parts that have to be machined with tungsten carbide tools after spraying.

## Technical data

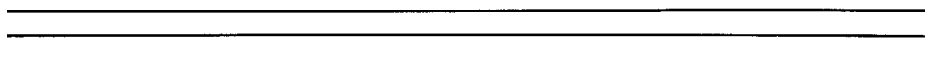
Hardness: 140-200 HB

Density of the deposit: 7.9 g/cm<sup>3</sup> (0.286 lb/cu.in)

## Directions for use

Always spray a bond coat with P921 on the correctly prepared surface (see instructions P921). Follow immediately with the capping layers of P923 (at the correct spraying temperature of 100 to max 250°C (210-480°F)). P923 can be build up in thicknesses up to 4mm (0.16").

Flame settings: neutral flame - oxygen pressure 4kg/cm<sup>2</sup> (57psi) - acetylene pressure 0.3 to 0.4 kg/cm<sup>2</sup> (4.3-5.7 psi) (tips n° 3 or 5) - distance nozzle - workpiece approx. 15cm (6") - torch perpendicular to workpiece.



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# lastek P927

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## Replacement for chrome plating on plungers

Self-adhesive (one step) coldspraying powder with a good abrasion resistance to be used with Lastigun.

A base layer with P921 is superfluous on roughened, grit blasted or grooved surfaces.

The sprayed alloy is resistant against corrosion by water, humidity and many chemicals (comparable with Inconel).

The one step spraying technique is very economical as you need only one powder.

## Applications

Suitable for spraying worn out bearing surfaces on pump shafts, sealing rings, washers and so on. Repairing chrome plated plungers for lifting truck platforms and containers.

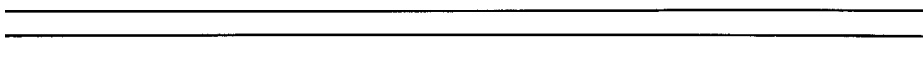
## Technical data

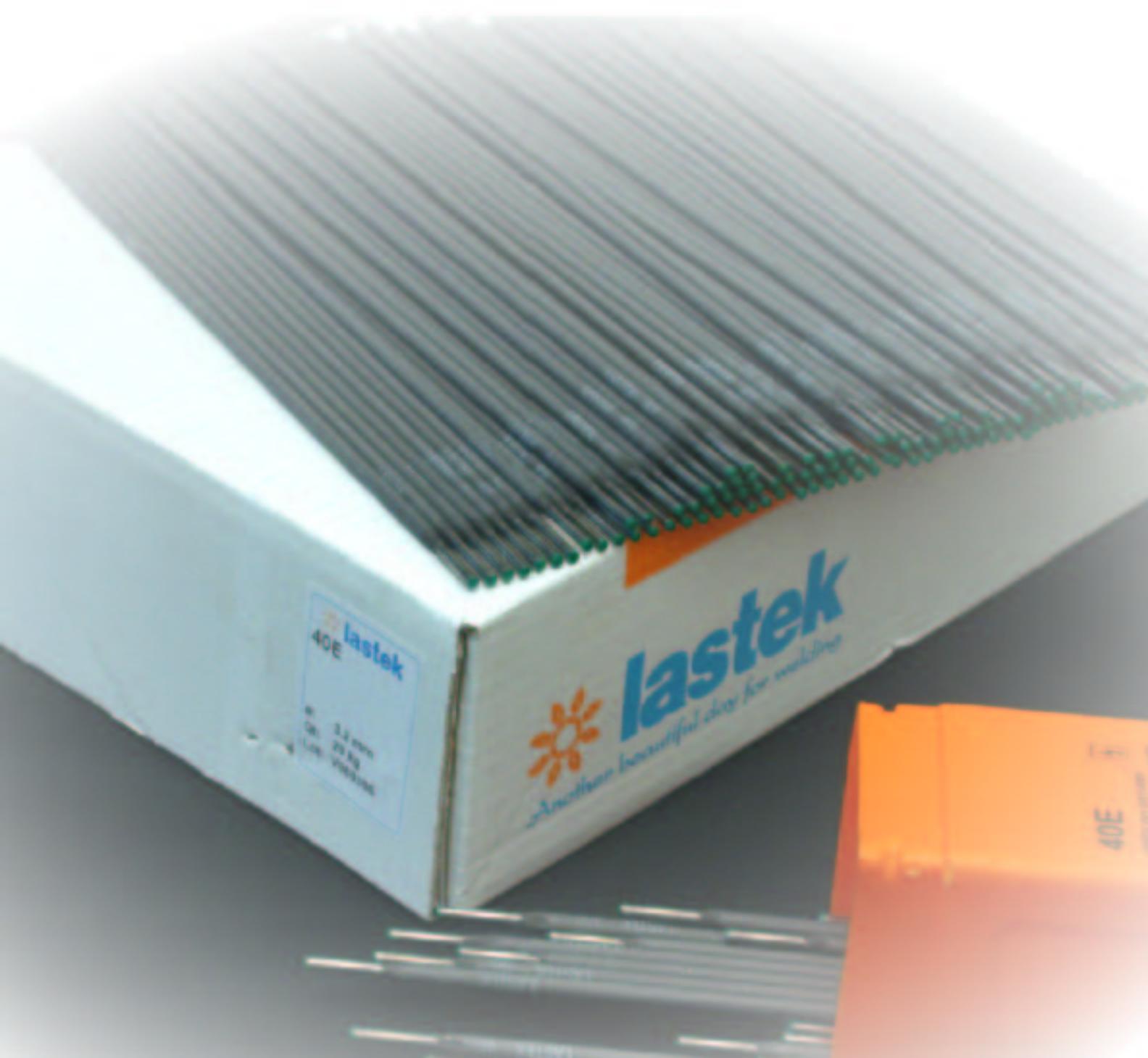
Hardness: 360 - 400 HB

## Directions for use

Remove all traces of oil and grease.

To get a good bond it is recommended to spray the surface with corundum(1 - 1.4mm), if possible combined with a threaded surface.





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# Backup tape

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## Self adhesive glass fibre tape for one-side welding

Lastek Backup tape consists of a special heatresistant glass-fibre ribbon on an aluminium adhesive foil.

By means of this adhesive foil the glass-fibre tape is applied on the back side of beveled joints (stainless steel, aluminium, titanium, steel aso), and provides shielding or backup for one - side welding (TIG, MIG and electrode) with a perfect finish. (up to approx. 160 Amps)

The flexible tape can be used on curved workpieces (all kinds of stainless steel apparatus and tanks in the foodindustry).

The (non toxic) fume emission is limited. The fibreglass cloth is non hygroscopic and avoids pore formation in the weldbead.

Using the backup tape yields a lot of advantages: working hours and filler metals for gouging and depositiong backing runs fall away; the insulating effect of the tape permits a higher speed of travel; a lower heatinput and thus less deformation of the stainless steel plates and sheets; inert gas backing of vessels can be omitted with tremendous savings on purginggas; repair of incorrect root passes can be avoided.

Lastek backup tape can be used for plate thicknesses up to +- 6mm (0.24 inch).

The tape can be applied in large lengths or cut of in pieces of about 50cm (20").

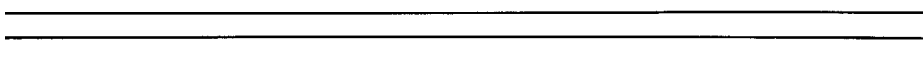
Used tape can be easily removed after welding; it cannot be reused.

### Sizes

Width of the glass-fibre tape: 25.4mm (1")

Width of the aluminium adhesive tape: 75mm (3")

Length of 1 roll: 8.2meter (27 feet)



 **lastek**  
Another beautiful day for welding



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# lastek 31C

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## Silver brazing flux

Lastek 31C is a flux in powder for silver brazing ferrous and non-ferrous alloys. The flux is active over a broad temperature range and can be used with most of the Lastek silver brazing alloys.

## Technical data

Temperature range : 480-800°C (896-1470°F).

Powdery fluxes may become clumpy under influence of air humidity. Therefore containers have to be kept tightly closed. During use, do not hold containers open for a long time; close them as soon as possible.

Stock containers always frost-proof and do not expose at temperatures above 50°C (122°F).

## Directions for use

The flux can be used as a powder or as a paste. A paste can be made by mixing the powder with distilled or de-ionized water.

Apply flux on the joint. Immerse the heated brazing rod in the flux that will adhere to the surface of the rod.

Preheat with neutral or reducing (excess of gas) flame. As soon as the flux melts and becomes transparent, melt a bit of the silver alloy and spread it along the joint with the flame.

Silver brazing flux residues will be corrosive and need to be removed after brazing (brush with hot water or use Lastacid).

Do not braze or work with fluxes without sufficient ventilation and fume extraction. Do not breathe brazing fumes and gases. Avoid contact with eyes and skin, especially injured skin. In case of contact with eyes or skin rinse immediately with plenty of pure water.

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# lastek 31CH

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## Silver brazing flux

Lastek 31 CH is a flux in powder form for silver brazing ferrous and non-ferrous alloys. Especially suited for use at higher temperatures as for instance in case of brazing thick copper pieces and large workpieces.

The flux is active over a broad temperature range and can be used with most of the Lastek silver brazing alloys.

## Technical data

Temperature range : 500-800°C (930-1470°F).

Powdery fluxes may become clumpy under influence of air humidity. Therefore containers have to be kept tightly closed. During use, do not hold containers open for a long time; close them as soon as possible.

Stock containers always frost-proof and do not expose at temperatures above 50°C (122°F).

## Directions for use

The flux can be used as a powder or as a paste. A paste can be made by mixing the powder with distilled or de-ionized water.

Apply flux on the joint. Immerse the heated brazing rod in the flux that will adhere to the surface of the rod.

Preheat with neutral or reducing (excess of gas) flame. As soon as the flux melts and becomes transparent, melt a bit of the silver alloy and spread it along the joint with the flame.

Silver brazing flux residues will be corrosive and need to be removed after brazing (brush with hot water or use Lastacid).

Do not braze or work with fluxes without sufficient ventilation and fume extraction. Do not breathe brazing fumes and gases. Avoid contact with eyes and skin, especially injured skin. In case of contact with eyes or skin rinse immediately with plenty of pure water.

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# lastek 31CN

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## Silver brazing flux

Lastek 31CN is a flux in paste form for silver brazing of ferrous and non-ferrous alloys including stainless steel.

Especially suited for brazing in furnaces where the workpieces have to be positioned beforehand and for brazing in vertical positions.

Also appropriate for brazing thick copper pieces and large workpieces.

The flux is active over a broad temperature range and can be used with most of the Lastek silver brazing alloys.

## Applications

Joining copper, brass, nickel, silver and stainless steel.

## Technical data

Working temperature: 500-800°C (932-1472°F)

Melting temperature: 500°C (932°F)

Density: 1.8 g/cm<sup>3</sup> (20°C) (0.065 lb/cu.in at 68°F)

## Directions for use

Apply the flux with a brush or a spatula on the degreased surfaces.

Immerse the heated point of the brazing rod in the flux.

Preheat the parent metal widely with a neutral to carburising flame.

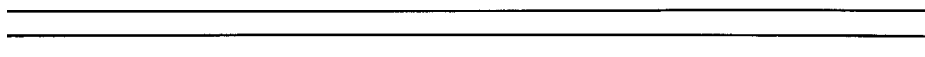
As soon as the flux melts and becomes transparent, melt a bit of the silver alloy and spread it along the joint with the flame.

Silver brazing flux residues will be corrosive and need to be removed after brazing with hot water (and brush finishing).

A flux in paste form can dry out. Therefore it is best practice to store the jars very well closed. During the process avoid leaving the jar open for a long period. Paste that became too thick, can be diluted with some water (preferably free of lime).

Stock unused jars hermetically closed and don't expose them to temperatures above 50°C (122°F).

Do not braze or work with fluxes without sufficient ventilation and fume extraction. Do not breathe brazing fumes and gases. Avoid contact with eyes and skin, especially injured skin. In case of contact with eyes or skin rinse immediately with plenty of pure water.





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# lastek 3250A

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## Flux for soldering Aluminium

Lastek 3250A is a chloride free organic flux for low temperature soldering of aluminium. It is also used for joining aluminium to copper and brass and to many other metals.

### Technical data

PH: 10.1

Application temperature range: 177°C-288°C (The flux deteriorates near 316°C with loss of fluxing action)

Solubility in water or alcohol: 100%

Corrosivity: mildly corrosive to steel.

### Directions for use

The flux is used undiluted or can be diluted up to 25% by weight with ethyl or methyl alcohol or distilled water.

Prepared flux solutions should be stored in glass or plastic containers.

Avoid overheating.

In torch soldering, the flame should not be impinged on the flux. The flux will burn and carbonise. Instead, the flame should be directed just behind the joint so that the heat will conduct into the joint.

Flux residues are electrically conductive and slightly corrosive, so they should be removed with hot water or alcohol whenever possible.

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# lastek 71A

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## Aluminium brazing flux

Lastek 71A is a powder type flux for oxy-acetylene brazing of aluminium. It can also be used for furnace brazing operations.

### Technical data

Melting range: 490-600°C (1080-1110°F)

Solubility in boiling water: 93-97 %

Effect of exposure to humidity: excessive moisture in the flux will inactivate it via the formation of hydroxy chloride intermediates which form on the surface of the aluminium brazing joint.

### Directions for use

Lastek 71A is normally mixed with distilled or deionized water to form a 60-75 % by weight slurry. This paste is brushed on the joint area. Heat the joint with a slightly reducing flame until the flux melts. Deposits from the flux will darken the joint area slightly; those deposits aid filler metal wetting. Filler alloy Lastek 71 is then fed into the joint.

Flux residues promote corrosive attack if left on the joint area. Remove the residues in boiling water, eventually followed by an acid dip. (For instance 50% nitric acid (40° Be) in water for 10-20 minutes at 20°C followed by hot or cold water rinsing).

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# lastacid

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## Removal of flux residues

When brazing with silver alloys, the removal of the flux residues can often be rather difficult, due to the incorrect use of the flux: too often the flux is overheated, or insufficient flux is used (the flux on the workpiece will be oversaturated with oxides and becomes very hard), or even the removal itself is done incorrectly.

(Cooling in water makes the flux residues crack and permits an easy brushing away).

Whenever problems occur with flux residues, these residues can be removed easily by using LASTACID. Brazed workpieces (steel, stainless steel, copper alloys) will be dipped or treated with LASTACID for 5 -10 minutes. LASTACID is used at room temperature, for extreme cases it can be heated up to 50°C (120°F) to obtain quicker results.

For very small or very thin pieces, LASTACID can be diluted with water (two parts LASTACID to one part water).

Workpieces treated with LASTACID must be rinsed thoroughly with cold or preferably warm water. After drying, the surface will be perfectly clean.

LASTACID contains corrosive elements, so safety precautions are recommended; wear rubber gloves and glasses.

Used LASTACID cannot be dumped into the sewerage. The acid should be neutralized with lime milk.

Remark: For brazing steel sheets without using flux, Lastek 508 can be used.

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# lastalu-AR

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## Pickling agent for aluminium

Lastalu-AR is a jelly pickling product that removes welding contamination on aluminium and on other metals (e.g. brass).

After pickling you obtain a smooth bright surface.

The working time is determined experimentally in function of the degree of contamination and the type of base metal.

Shake well before using Lastalu-AR.

1kg Lastalu-AR is sufficient for 6 to 10 m<sup>2</sup> (64 -108 sqft).

It can be diluted from 1:1 to 1:3 in function of the desired action.

A treatment with Lastalu AR makes the metal surface suitable for being lacquered.

Do not use Lastalu-AR in circumstances where high temperatures arise.

Clean well with plenty of water after pickling.

The product is etching. Beware of all safety regulations. (Ask for the material safety data sheet.)

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# lasticool

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## Heat-absorbing paste

Special paste with exceptional thermal properties.

Lasticool protects all kinds of material against the heat of the oxy-acetylene flame during welding, brazing or soldering - it saves a lot of disassembling-time - and prevents even glass, rubber, paint, plastics and textiles from burning, flaking or tearing.

A 1 cm (0.39 inch) thick layer is applied on the workpiece in a width of at least 5 cm (2inches).

Lasticool is used by pipefitters and plumbers as well as by repair- and maintenance-welders. It is used in refrigeration equipment (to protect thermostats, pressure gauges and so on), for electrical devices, HIFI equipment (soldering lips, cables, wires, plastic parts are protected from deformation).

Also polyester and plastics are protected against heat (e.g. welding metal parts in contact with polyester plates in boat repair).

Lasticool prevents deformations and distortion when welding very thin sheets (steel, stainless steel as used in the roof of train wagons).

When repairing cracks in a painted sheet, Lasticool will be applied at both sides of the crack to prevent the paint from burning or discoloration.

Dies can be protected to maintain their mechanical properties while repairing or hardfacing.

Lasticool is usefull when welding aluminium- and copper alloy castings with high heat conductivity, as it prevents the heat from flowing away.

Lasticool is made out of high-grade ceramic material and is free of asbestos and other harmful materials. The paste can be used repeatedly without loss of quality (eliminate the thin hardened surface layer).



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# lastinox SP-K

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## Pickling agent for stainless steel surfaces

Lastinox SP-K was especially developed for pickling large surfaces (stainless steel containers and tanks).

The pickling agent cleans surfaces and welding joints in stainless steel AISI 316 and 304.

Oxides and tempering colours are dissolved and can be washed away completely after the pickling process.

By adding a violet colour indicator, you can see immediately where you have already sprayed, so that losses are reduced and the liquid is applied homogeneously.

In the meantime the indicator helps to degrease the surface and prevents the formation of nitride in the waste water.

A possible attack of the underlying base metal by the small amount of hydrofluoric acid in the pickling liquid is prevented by this indicator.

After a certain working time the indicator decolourises, and this has no influence on the pickling activity.

You have to mix  $\pm 20$ gr. indicator with 1kg SP-K. This means that you have to use approximately 1/4th of the little bag delivered with 20 kg Lastinox SP-K.

The storage time you can keep Lastinox SP-K mixed with the colour indicator is limited: after 48 hours the indicator becomes inactive so that you'll lose all the existing advantages; the pickling agent itself remains active, but can be thickened somewhat.

1kg Lastinox SP-K is enough for  $\pm 2$  to 5 square meters.

## Directions for use

Before starting, beware of the danger- and safety precautions on the packaging. You don't have to degrease slightly greasy surfaces.

Just before using you add the indicator to the pickling liquid and you stir it for about 5 minutes.

Spray with the Lastek pickling jet on the surface to clean it.

Working time: 30 to 90 minutes.

Immediately afterwards spray off carefully the pickling agent with clean water, preferably with a high-pressure spraying gun.

Neutralization of the waste water can be done with lime milk (or Lastinox HD).

When adjusting the correct PH-values in the waste water treatment and when draining off the deposit containing stainless steel alloy elements, please take care off the local draining prescriptions.



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# lastinox TS

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## Pickling and passivating

When welding stainless steel, layers of oxide are created on the surface of weld and adjacent zones; tarnish colours can form on the surface because of the action of oxidizing gases; ferritic, rust prone particles, can get rubbed into the austenitic stainless steel during contact with shears, transport equipment, brushes and suchlike.

Oxide layers have a varying composition and consist out of oxides of molybdenum, titanium and especially iron.

Under the influence of moisture they will start rusting and will attack the protective chromium oxide layer of the stainless steel. After treatment with lastinox TS pickling paste, the undesired oxides are dissolved up to the bright stainless steel and a thin protective surface-film of chromium-oxide is created.

Thanks to its gel-like character, there is no danger for drying out and the paste retains its homogenous composition.

Contains no chlorides which may cause damage.

No staining of the steel surface will be visible when the surface is rinsed with water.

## Directions for use

Apply lastinox TS paste with a plastic brush (no steel parts) on the surface or joints to be treated.

Remove it by brushing with water after 10 to 120 minutes.

Don't bring the unused paste into contact with steel, otherwise it loses its cleaning action.

Thanks to the non-fluid paste-form it becomes easy even to clean vertical surfaces and joints.

When using the TS paste, wear rubber gloves and glasses.

Take care of a good ventilation and respiration protection.

1kg lastinox TS is sufficient to pickle a joint of 80 to 150 metres.