

# Wires for laser welding: instructions for use

(Products with catalogue number in the appendix)

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## Processing instructions

When trimming alloys, wear safety glasses and a face mask and use a dust extractor.

Whenever working with a laser welder, the safety precautions recommended by the manufacturer must be taken to protect the user.

With the publication of these instructions for use all previous editions are no longer valid.

The manufacturer refuses any liability for damages due to disregard of the instructions for use below.

## Intended use

Fixed and removable dentures.

## Product description

Precious metal laser wires are used for laser joining precious metal alloys. When welding the laser wire material is melted selectively with a laser so that it can be alloyed with the connected parts. This method is a weld in which the alloy can be easily melted.

## Expected clinical benefit

Restoration of chewing function and improved aesthetics.

## Qualification

Professional dentist and dental technician know-how is required. The instructions for use must be available and understood before the first application. The manufacturing work must be carried out by qualified specialists. For information and additional details, please contact your Cendres+Métaux representative.

## Side effects

With patients having an existing allergy to one or several elements contained in an alloy, this particular alloy must not be used. With patients suspected of having an allergy to one or several elements contained in an alloy, this alloy can only be used after preliminary allergological testing and proof of a non-existing allergy.

## Traceability of lots numbers

If different lots of a laser-welding wire are being used for the realisation of a restoration, all relevant lot numbers have to be recorded to ensure that they can be traced.

## Optimum joints

To create optimum joints, the laser welder must be adjusted for precious metal alloys as recommended by its manufacturer.

Note: The relevant working parameters listed overleaf have been established for x-shaped connections with the use of filler material. These parameters have been established with the laser welding unit DL 3000 (Dentaurum).

Attention: These parameters can only serve as basic values for your orientation, due to differing welding results between laser welding units. Therefore, they must be considered as basic values.

**Testing the base values with your own laser welding unit**

We recommend the correct adjustment of your laser welding unit by test welding on a piece of casting sprue (rubber-polished), consisting of the alloy you want to join. Depending on the results, the welding parameters should then be adjusted before the real joining of the dental restoration takes place.

**Laser welding wire specifications**

The laser welding wires do not contain additives such as flux etc. Flooding the area with protective gas (approx. 8 l/min) during the laser impulse effectively prevents oxidation of the welding area and welding wire.

The welding wires are 0.4 mm in diameter and 200 mm long when supplied.

**Thermal treatments of cast metal frameworks**

All cast metal frameworks should be heat-treated before the laser welding process in order to eliminate possible tensions, especially when rejoining separated bridgework. In the case of metal ceramic alloys, their specific indications for the oxide firings can be employed. Crown and bridge alloys should first be annealed, then hardened according to the manufacturers indications.

**Thermal treatments of bars**

The Elitor® versions of the Cendres+Métaux Dolder® bars and Cendres+Métaux round bars are delivered in an annealed state. Thus, after the laser welding the root caps, the bars E and the weld must be thermally treated in order to achieve their maximum mechanical properties:

1. Annealing: 700°C 10 min./then quench in H<sub>2</sub>O and
2. hardening: 400°C 15 min./benchcool slowly

**Labelling on packaging/symbols**

	Date of manufacture
	Manufacturer
	Catalogue number
	Batch code
	Quantity
 <a href="http://www.cmsa.ch/docs">www.cmsa.ch/docs</a>	Observe the Instructions for Use, which are available in electronic form at the address specified.
Rx only	Attention: According to US federal law, this product may only be sold by or on behalf of a physician.
	Cendres+Métaux products with CE labelling meet the requirements of the relevant European requirements.
 	Unique Device Identification – UDI
	European Authorised Representative
	Importer in EU
	Medical device



### Instructions for use (example)

Fig. 1

Prepare the surface of the root cap (Protor® 3) right-angled to the direction of insertion.

Fig. 2

Position the laser welding male part (Cat. No. 055 921) in the desired area, fix it with 4 welds (over crossing), then weld it circularly.

Fig. 3

Circular filling of the undercut of the laser welding male part E using the laser welding rod LW N° 5 as filler material.

Fig. 4

Burnish the weld circularly.

Note: Avoid the removal of too much material by not exceeding the marking groove on the base plate (towards the centre).

Fig. 5

Refining the surface of the weld. In order to guarantee the stability of the laser-welded joint, avoid grinding off too much material.

Note: The welded area has a hardness of about HV5 190 because it has cooled very rapidly. This hardness can be increased up to HV5 260, by heat-treating the whole work as follows:

1. Annealing: 700°C/10 min. then quench in H<sub>2</sub>O and
2. hardening: 400°C/15 min., then benchcool slowly.

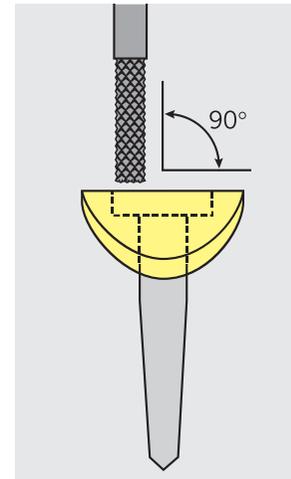


Fig. 1

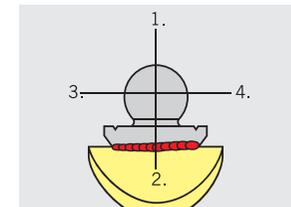


Fig. 4

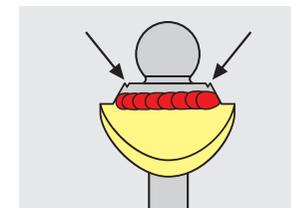


Fig. 4

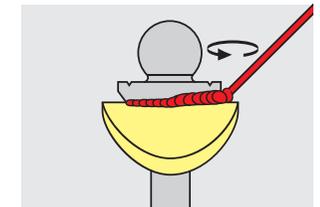


Fig. 5

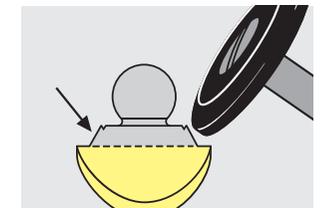


Fig. 5

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