



# User instructions

# WISIL® D



Cobalt based dental casting alloy for removable restorations.

Nickel and beryllium free.

ISO 22674



Elephant Hoorn Holland

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Made in Germany

### Chemical composition in mass-percentage

Co	63.5
Cr	30.0
Mo	5.0
Mn, Si, C	trace

### Physical and alloy properties (target values)

Type	V extra hard
Colour	White
Density	8.4 g/cm <sup>3</sup>
Vickers hardness*	360 (HV5)
Yieldpoint*	720 MPa
Elongation*	7 %
Tensile strength*	900 MPa
Modulus of elasticity*	220 GPa
Solidus temperature	1,365°C/2,489°F
Liquidus temperature	1,400°C/2,552°F
Casting temperature	1,500°C/2,732°F

\* as cast

Rx only

### Indications:

Type V, cobalt based dental casting alloy for the manufacturing of removable dental restorations.

### Contraindications:

If components of the alloy are not tolerated or cause an allergic reaction, use must be terminated.

### Adverse effects:

In exceptional cases, certain components of the alloy may cause an allergic reaction or sick feeling due to electrochemical processes.

### Interactions:

In exceptional cases, occlusal or approximal contact with different alloys may cause a sick feeling due to electrochemical processes.

## Processing instructions

### 1. Sprues

Apply 2 to 4 sprues to each wax pattern, depending on the size of the object.

Sprue diameter: 3-3.5 mm.

Connect at the pattern's thickest point expanding in delta fashion.

Arrange sprues in line with the direction of metal flow.

Keep sprues short to minimize distance between cone and cast. Attach sprue former at least 1 cm above pattern.

### 2. Painting with liquid investment

Apply a thin, even coat of liquid investment to the pattern, avoiding bubbles.

Invest model immediately, do not allow liquid investment to dry.

### 3. Investing

PH3 is ideally suited to reach optimal fit. Pour into casting ring, avoiding bubbles.

Mixture ratio	powder : liquid
Models (with duplicating compound)	100 g : 13 ml
(with duplicating silicone)	100 g : 16 ml
Moulds	100 g : 16 ml

hardening time: 30-45 min.

(see Processing instructions PH3) Alternatively to PH3, we also offers the HARTEX binder investment material for the WISIL D system.

### 4. Preheating

Preheat casting rings in preheating furnace according to PH3 processing instructions:

300°C ( 572 °F) holding time 30 min.

600°C ( 1,112 °F) holding time 30 min.

1,000°C ( 1,832 °F) holding time 30-45 min.

For plates and delicate designs preheat at 1,050°C ( 1,922 °F) holding time 30-45 min.

### 5. Required metal quantities

Simple bar: 3 ingots = 25 g

Skeletal plate: 3-4 ingots = 25-34 g

Complete plate: 5-6 ingots = 42-51 g

### 6. Casting

#### a) Open-flame melting

Use a separate, preheated ceramic crucible. Do not add any flux!

Ignite the propane/oxygen gas mixture and adjust the flame for melting.

Heat the ingots evenly until they form a molten bath by keeping the flame app. 40 mm above the crucible whilst making rotating movements.

Once the oxide layer breaks, cast immediately!

Avoid overheating the alloy.

#### b) Atmospheric high-frequency melting and centrifugal casting unit

Do not use graphite crucibles.

Use a separate, preheated ceramic crucible.

Do not add any flux!

Once the oxide layer breaks, cast immediately!

Avoid overheating the alloy.

### 7. Disembedding

After casting, allow casting ring to cool for about 20 min. Devest under water.

Use sandblasting to remove any investment residue.

### 8. Finishing

WISIL D frameworks can be easily finished using rotary instruments for CoCr/Mo removable partial dentures; use dust collector.

Clean after finishing by blaster using corundum and then glassbeads.

### 9. Electrolytic polishing

Immerse dry WISIL D cast into the electrolytic bath and polish for 5 min.; rinse, dry and inspect.

Repeat procedure if necessary to improve lustre.

### 10. Soldering and welding

WISIL D: especially suitable for the laser welding technique.

Flame soldering: Clean surfaces, removing oxides. Secure parts to be soldered. Cover surfaces with flux.

With the flame, heat parts slowly up to soldering temperature. Use CoCr solder in conjunction with soldering powder; suitable for all repair work.

Alternatively, gold solders for CoCr can be used (observe manufacturer's instructions).

Microplasma welding: Particularly recommended for marking homogeneous joints using WISIL D welding rods which the laboratory can cast itself. Place parts on model and secure. Take parts from model and clamp in holding tongs of a special welding table. Weld from both sides using WISIL D rods as filler; do not use flux.

### 11. Polishing

After electrolytic polishing, remove surface with rubber polisher.

Polish with brush and paste. Use wool buffs for high lustre.

Clean with steam jet or in an ultrasonic cleaning bath.

### 12. Re-use of sprue cones

To produce satisfactory casts, preferably use original WISIL D ingots. If however, previously cast cones are to be re-used, a **mixture ratio by weight of**

1 : 1  
(WISIL D ingots) (WISIL D sprue cone)

must be observed.

Prior to re-use, sprue cones should be carefully cleaned to remove investment and oxides.

### 13. Warranty

Our processing recommendations given in writing, orally or by practical presentation are based on our own experience and/or trials as well as on the use of materials and devices manufactured by Elephant Dental B.V.; they are non-binding in all respects.

It is the responsibility of the user to test incoming merchandise and check our recommendations with regard to the envisaged use.

Any claims for damages will be limited to the value of the merchandise supplied by us.

In all other respects, our terms and conditions of sale and delivery applicable at the time of the contract of purchase shall apply. Claims which are not expressly allowed in said terms and conditions shall be excluded unless we are liable by mandatory law in cases of (wrongful) intent or gross negligence.

As we are committed to the improvement of our products we reserve the right to make changes in composition, design, unit supplied and packaging.