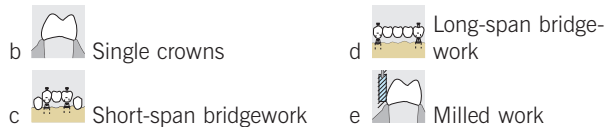


Instructions for use

## Medium-Gold dental Alloy for Porcelain bonding, extra hard, white, Silver free, type 4

### Indication

For porcelain-to-metal, C&B technique, crowns and bridges application, milling works, suprastructures on implants.



### Physical properties

Composition in weight %

Au + Pt group metals	90.00
Au	51.50
Pd	38.40
Ru	0.10
In	8.50
Ga	1.50
Density g/cm <sup>3</sup>	14.5
Melting range °C	1210–1310
CTE (25–500°C) 10 <sup>-6</sup> K <sup>-1</sup>	13.6
(25–600°C) 10 <sup>-6</sup> K <sup>-1</sup>	13.9
Young's Modulus GPa *	115

### Mechanical properties

	1	2	3
Hardness HV5 *	225	245	250
0.2 % Proof stress, Rp 0.2 % MPA *		525	550
Elongation A5 % *		25	20

### State

1	as cast
2	after firing
3	hardened

### Solders before bonding

S.W 1125	1005–1125°C
S.G 1120	1040–1120°C

### Melting range

### Solders after bonding

S.G 750	695–750°C
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### Melting range

\* The values indicated result from measurements obtained under exactly defined conditions. Individual deviations of ± 10 % are possible and to be considered as normal.

### Preventive measure (contraindication) and important notes

These instructions for use must be precisely followed. It has been suggested in specialized literature that some of its components can, in extremely rare cases, have allergy effects. The choice of the material is the decision of the practitioner based on his knowledge of the sensitivity of the patient.

### Corrosion resistance and biocompatibility

V-Delta® SF has been submitted to the following tests:

**Corrosion resistance** according to ISO 22674

**Cytotoxicity** test according to ISO 10993-5

**Sensitization** test according to ISO 10993-10

**Mutagenicity** test (AMES) according to 10993-3

The alloy is considered to be highly corrosion resistant and showed neither a cytotoxic nor a mutagenic potential nor did it cause any allergic sensitization.

Launch year 1980

V-Delta® SF corresponds to the standards EN ISO 22674 / EN ISO 9693

V-Delta® SF has been manufactured according to the quality standards ISO 9001 / ISO 13485.

Rx only

The products carry the CE sign.  
See packaging for details.

**Waxing up**

The ultimate thickness of the cast metal coping should not be less than **0.3 mm**.

Therefore: Consideration must be given to this fact at the wax-up stage, long span frameworks require structural reinforcement to ensure stability and anticipated solder joints should be of adequate surface area to provide sufficient stability to the frame.

**Spruing**

Wax sprues of no less than **Ø 3.5 mm** are required. Direct (**Ø 3.5 mm**) and cross bar (**Ø 5 mm**) spruing produce excellent results. Feeder sprues to heavy pontics should be of at least **Ø 4 mm**. Air vents (**Ø 1 mm**) may be used to advantage.

Wax patterns should be set outside the thermal centre, i.e. near the casting ring wall and about **5 mm** from the end. For individual copings and small bridges (up to three units), use of the circular sprue provides ideal positioning of the wax patterns and ensure controlled solidification of the frameworks.

**Investing**

When using steel casting rings always use refractory liner in order to allow free expansion of the investment. All regular or phosphate-bonded (e.g. **Univest®Plus** or **Univest®Rapid**) investments for precious metal alloys may be used. Follow the procedures recommended by the manufacturer.

**Preheating**

Observe manufacturer's recommendations with regard to setting times, temperature levels etc. On reaching the end temperature a soaking period of **20 to 45 min.** is advisable depending on the size of the cylinder.

Preheating temperature: **850 °C**

**Crucibles**

Glaze the crucible before first use with a recommended flux (e.g. Borax/Boric acid). The following crucibles can be used:

Ceramic crucible: Casting temperature **1450 °C**

**Re-melting**

When melting down thoroughly cleaned casting buttons, add at least **½ of new alloy**. The used copings have to be clean, free of investment and flux residue.

**Melting**

It is important, when using a torch for melting (for inst. **Meteor type «O»**) that the recommended propane (approx. **0.5 bar** or **7.25 psi**) / oxygen (approx. **1.0 bar** or **14.5 psi**) mixture and pressure are observed. Before melting add a pinch of flux to the alloy. Once the alloy has completely melted, continue heating for a further approx. **5 sec.** before releasing the casting machine arm. When melting by induction or resistance heating, the power must be maintained for an additional approx. **5 sec.**

Flux: boric acid

**Cooling**

Bench cool the casting ring.

**Devesting/Cleaning**

Clean by blasting with glass beads or pure aluminium oxide ( $Al_2O_3$ ) particle size (**50 µm** to **125 µm**) at **1.5 to 2.0 bar** (**21.7 to 29 psi**) pressure.

**Pickling**

Following casting or soldering, the frame at room temperature may be pickled in hot **Desoxid** for at least **2 min.** – Desoxid I (75%).

**Finishing**

Trim the framework first preferably using carbide burs and then fine grinding points at low speed. Blasting is done using pure aluminium oxide (approx. **110 µm**).

Recommended grinding points: Cerasiv Brown (5'000–10'000 rpm)  
Pressure: **1.0–2.0 bar**

**Cleaning**

Frameworks must be cleaned preceding oxidation either in boiling water for **10 min.** (distilled water is recommended) – in an ultrasonic unit for **5 min.** – or with a steam cleaner.

**Gilding (Aurofilm® 2000)**

The application of a gilding layer of Aurofilm is possible according to the instructions for use. Aurofilm should be fired in a ceramic oven.

Firing temperature: **920 °C–940 °C**

**Oxidation**

**10 min.** without vacuum to **950 °C** and bench cool. The framework should have a uniform grey appearance.

**Porcelain application**

Porcelain or resin applications are subject to the manufacturers instructions. The alloy is compatible with most known porcelain brands. Consider the CTE of the alloy in conjunction with the cooling recommendation of the porcelain manufacturer. Paste opaques should be pre-dried for approx. **10 min.** before firing at manufacturers recommendation.

Pre-drying temperature: 300°C–400°C.

Excellent results have been obtained with the following porcelains (in alphabetical order), with a normal cooling cycle:

Carat, Ceramco II, Creation &, dSign, Duceram Plus, Finesse, IPS Classic, MagicCeram, Omega, Omega 900, Super Porcelain EX-3, Symbio Ceram, Synspar, Vintage, Vintage Halo, VMK-95

**Soldering/Laser**

We recommend using a propane/oxygen torch (**Meteor Type «L»**) for soldering and a flux like **Fluxor**. During soldering wear dark goggles for protection. The design of the soldering block is a compromise between minimising its thermal mass whilst retaining sufficient strength to avoid its fracturing during soldering. Leave a parallel gap of **0.1–0.2 mm** between surfaces to be soldered and sufficient area to ensure adequate strength of the joint.

Laser welding wire: LW No. 3

**Heat treatments**

Self-hardened by slow (bench-) cooling of the casting ring

Hardened 600°C/15 min. – let bench-cool

**Polishing**

The oxide layer may be removed in **Desoxid**. Thorough rubber-wheeling ensures easy polishing. For best prepolishing results, soft brushes, felts and cotton wheels are employed using **Legabril Diamond** diamond-paste. «Whiting chalk» (chalk-powder) mixed with water on soft brushes or cotton wheels may be used for final high polish.