Instructions for use

Precious Metal Alloys for the Ceramic-fused-to-metal Technique

Mixing of different alloys or alloys of similar types is not allowed!
Wear darkened eye protection and protective gloves when melting.
Protect eyes, hands and breathing when pickling.
Protect eyes and breathing during processing with rotating instruments with an aspirator device.

With the publication of these instructions for use all previous editions are no longer valid.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

Directions for High Noble Metal Alloys for the ceramic-fused-to-metal Technique

These gold reduced alloys are also known as economical alloys. When processed according to instructions these alloys have a fine-grained, homogenous cast structure, good corrosion resistance and are biocompatible. They are suited for short- and long-span bridgework, for milled and combined work. These alloys can be soldered before and after firing without problems. They are also applicable for the casting-on technique with root canal posts and prosthetic attachments.

General instructions for use

Modelling
Usual modelling technique for ceramic-fused-to-metal works. Minimal wall thickness 0.4 mm. With bridgework the connections must have a minimum section of 6 – 9 mm². Modelling of garlands or inlay shaped reinforcements in the palatal region will give added stability. The application of air and cooling vents improves casting results.

Investing
The following investments are recommended for this type of alloys:
Cendres+Métaux-Ceramicro® (phosphate-based, containing graphite)
CM-20 (based on quartz and cristobalite without graphite for the rapid preheating technique).
Plaster-based investments must not be used for these types of alloys!

Re-use of alloy
Only use perfectly cleaned (by sand-blasting with aluminium oxide) buttons and sprues and add at least ⅓ of new alloy.

Traceability of lot numbers
If different lots of an alloy are being used for the realisation of a restoration, all lot numbers concerned must be noted in order to assure traceability.

Surface quality of cast objects
In order to prevent corrosion the cast object must have a surface free of shrink holes and porosities after trimming and polishing.

Cooling of castings
Do not quench the casting cylinder after casting, but bench cool to room temperature.

Removal of oxide layers
Oxides due to casting, firing or soldering can be removed by sandblasting.

Thermal treatments (not compulsory)
After casting, some of the high gold metal alloys have not yet obtained their maximal mechanical properties. For long-span bridgework and for works with attachments in combustible plastic or ceramic spacer technique which will not be veneered with ceramic, a simulation firing of the work in the as cast condition (cleaned frameworks, sprues not yet removed) in the ceramic furnace can be done.
This procedure has the following advantages:
The hardness increase allows easier and faster trimming of the frameworks. Grinding overlaps are prevented. Possible tensions due to the casting process are reduced.
(Firing data see table overleaf).

Gilding of frameworks
Gilding is carried out at the user’s own risk.

Rx only

The products carry the CE sign.
See packaging for details.
Polishing
After the last firing free metal surfaces must be polished to a high shine in order to completely remove the oxide layer.

Disinfection
Each prosthetic restoration must be cleaned and disinfected before try-in or definite insertion in the mouth of the patient.

Further information
On processing precious metal alloys, soldering and casting-on are included in the Dental documentation of Cendres+Métaux.

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

<table>
<thead>
<tr>
<th>Alloys</th>
<th>Indications</th>
<th>Colour</th>
<th>Composition in weight %</th>
<th>Solder before firing</th>
<th>Solder after firing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Au + Pt % Met.</td>
<td>Au</td>
<td>Pt</td>
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<tr>
<td>Esteticor® Economic</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Esteticor® Plus</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
</tbody>
</table>

### ISO 22674 / ISO 9693

- **Indications**
  - a: Inlays, onlays, crowns
  - b: Single crowns
  - c: Short-span bridgework
  - d: Long-span bridgework
  - e: Milled work
  - f: Clasps, lingual bars, palatal plates

© The use of solders not mentioned in the table is subject to the user’s risk. In case of uncertainties, consult the instructions of the manufacturer involved.

<table>
<thead>
<tr>
<th>Alloys</th>
<th>Density</th>
<th>Melting range</th>
<th>Casting temp.</th>
<th>Crucible</th>
<th>Hardness as cast</th>
<th>Hardness after firing</th>
<th>Young's Modulus as cast</th>
<th>Young's Modulus after firing</th>
<th>0.2% proof stress, Rp as cast</th>
<th>0.2% proof stress, Rp after firing</th>
<th>Elongation A5 as cast</th>
<th>Elongation A5 after firing</th>
<th>Linear coefficient of thermal expansion CTE (25–600 °C)</th>
<th>Linear coefficient of thermal expansion CTE (25–600 °C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esteticor® Economic</td>
<td>14.2</td>
<td>1145–1255</td>
<td>1390–1420</td>
<td>●●</td>
<td>205</td>
<td>235</td>
<td>115</td>
<td>445</td>
<td>535</td>
<td>15</td>
<td>16</td>
<td>14.8</td>
<td>15.1</td>
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</tbody>
</table>

* Universal ceramic crucible
* Vitrified carbon crucible

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

<table>
<thead>
<tr>
<th>Alloys</th>
<th>Preheating temperature</th>
<th>Recommended casting systems (not compulsory)</th>
<th>Vacuum-pressure casting with electric resistance furnace</th>
<th>Centrifugal casting with electric resistance furnace</th>
<th>High frequency induction in atmosphere</th>
<th>High frequency induction in protective gas atmosphere</th>
<th>Thermal treatment of the framework before surface treatment (not compulsory)</th>
<th>Trimming of the framework surface with ceramically bonded grinding stones</th>
<th>Sandblasting with non-recycled aluminium oxide (Al₂O₃) 50µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esteticor® Economic</td>
<td>850°C</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>950°C / 10 min</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Esteticor® Plus</td>
<td>850°C</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>950°C / 10 min</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Alloys</td>
<td>Cleaning with steam jet</td>
<td>Oxide firing with vacuum</td>
<td>without vacuum</td>
<td>Not recommendable for ceramic compounds with sensible reaction on silver oxides</td>
<td>Sandblasting after oxide firing with non recycled aluminium oxide (Al₂O₃) 50µm</td>
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</tr>
<tr>
<td>Esteticor® Economic</td>
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<td>960°C / 5 min</td>
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<td></td>
</tr>
<tr>
<td>Esteticor® Plus</td>
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<td>960°C / 5 min</td>
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</tr>
<tr>
<td>Alloys</td>
<td>Special indications for veneering with ceramic compounds</td>
<td>Tested compatible ceramic compound</td>
<td>Other ceramic compounds</td>
<td></td>
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<tr>
<td>Esteticor® Economic</td>
<td>✓</td>
<td>VITA VMK 95</td>
<td>The alloys are compatible with the usual high fusing ceramic compounds. In case of doubt, consult the instructions of the ceramic manufacturer concerned.</td>
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