# INTRODUCTION FOR USE / Cr-Co Metal Works

**GC Initial INmetalbond** CE 0086

## Oxide Firing

Fire for 5 min. under vacuum at 950-980˚C (10˚C more than back-ground material firing temperature).

After firing, the oxide layer has to be carefully sandblasted using disposable oxide-aluminium equipment 110 to 150µm at a pressure of 2.5-3 bar., then steam.

If the framework has a homogeneous grey surface, then you can apply and fire ceramic, following its manufacturer's instructions.

| | |
|---|---|
| Co | 60 |
| Cr | 28 |
| W | 9 |
| Si | 1.5 |
| Others | Mn; Fe |

| | |
|---|---|
| Solidus-liquidus temperature | 1308 - 1386 °C |
| Thermal expansion coefficient | (25 - 500 °C) 14.2 x $10^{-6}K^{-1}$ (25 - 600 °C) 14.4 x $10^{-6}K^{-1}$ |
| Density | 8.5 g/$cm^3$ |

| | |
|---|---|
| Melting point | 1436 °C |
| Vickers hardness | 273 HV10 |
| Percentage elongation at fracture | 16 % |
| Yield load strength (Rp 0.2) | 361 MPa |
| Modulus of elasticity | 183 GPa |
| Colour | White |
| Highest firing temperature | 980 °C |
| Recommended ceramics | Interaction Antagon by Elephant Dental BV; VITA VMK Master by Vita Zahnfabrik |
| Percentage of lons release after 7 days | 1.75 µg/cm |

## GC Initial INmetalbond

Buffer between GC Initial metal ceramics and dental alloys.

**GC Initial INmetalbond**
INmetalbond is used as a thin layer between the alloy and the first Opaque layer.
The INmetalbond blocs the escaping metal oxides and neutralizes differences in the expansion coefficient.
The bonder does not increase the bonding strength as such but allows a wider span of CTE compatibility.

**Recommended indications**
Can be used on all PFM alloys, precious as well as non-precious.

**Instruction For Use**
- Metal framework needs to be prepared according manufacturer's instructions.
- Oxidation firing again according manufacturer's instructions.
- Stir paste before using.
- Apply the Bonder in a thin layer but mask the metal completely.
  IMPORTANT:
  - To change the consistency of the INmetalbond paste, use the "GC Initial Paste Opaque Thinner".
  - Only use it in very small quantities.
  - To avoid drying out, close the cap after using.
- The fired Bonder should have a yellowish, slightly shiny surface.
  NOTE:
  - The colour of the fired bonder can vary depending on the composition of the alloys.
  - When using NPA (non-precious alloys) with the INmetalbond, the final temperature of the Opaque Washbake does not need to be increased by 20°C anymore.
    e.g.: 1st Opaque Firing on NPA:
    GC Initial MC = 940°C
    GC Initial LF = 830°C

**Firing instructions**

| Preheating Temp. | Drying Time | T° increase | Vacuum | Final Temp. | Holding Time |
|---|---|---|---|---|---|
| 550°C | 6min | 80°C/min | Yes | 980°C | 1min no vacuum |

**Storage**
Store in a cool, dry place.

**Shelf life**
GC Initial INmetalbond: 5 years

**Packages**
GC Initial INmetalbond, 2x4gr.

Last revised: 10/2014


CE 0086

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Prior to use, carefully read the instructions

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# INTRODUCTION FOR USE / Cr-Co Metal Works

**Bredent Ceram Bond** CE 0483

## Oxide Firing

Fire for 5 min. under vacuum at 950-980˚C (10˚C more than back-ground material firing temperature).

After firing, the oxide layer has to be carefully sandblasted using disposable oxide-aluminium equipment 110 to 150µm at a pressure of 2.5-3 bar., then steam.

If the framework has a homogeneous grey surface, then you can apply and fire ceramic, following its manufacturer's instructions.

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| Co | 60 |
| Cr | 28 |
| W | 9 |
| Si | 1.5 |
| Others | Mn; Fe |

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|---|---|
| Solidus-liquidus temperature | 1308 - 1386 °C |
| Thermal expansion coefficient | (25 - 500 °C) $14.2 \times 10^{-6} K^{-1}$ (25 - 600 °C) $14.4 \times 10^{-6} K^{-1}$ |
| Density | 8.5 g/cm³ |

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|---|---|
| Melting point | 1436 °C |
| Vickers hardness | 273 HV10 |
| Percentage elongation at fracture | 16 % |
| Yield load strength (Rp 0.2) | 361 MPa |
| Modulus of elasticity | 183 GPa |
| Colour | White |
| Highest firing temperature | 980 °C |
| Recommended ceramics | Interaction Antagon by Elephant Dental BV; VITA VMK Master by Vita Zahnfabrik |
| Percentage of Ions release after 7 days | 1.75 µg/cm |

## Bredent Ceram Bond

**Before using the product, please read instructions for use carefully.**

### 1. Indication range

Ceram Bond is a ceramic material which is used as a layer between all metals and ceramic. It compensates differences in the expansion coefficients between metal and ceramic and blocks escaping metal oxides.

### 2. Processing

2.1. Preparation of the object:
After finishing, sandblast the framework with aluminium oxide. Then clean thoroughly with distilled water in the ultrasonic unit for ten minutes or using the steam cleaner. Afterwards the metal surface must not be touched any more.
2.2. Applying Ceram Bond:
Use a brush for stains to apply one covering coat with a uniform layer thickness onto the metal surface.
2.3. Predrying Ceram Bond in the ceramic furnace:
Open the ceramic furnace which has been preheated to 650° C and dry the framework onto which Ceram Bond has been applied for one minute in the open furnace.
2.4. Firing Ceram Bond in the ceramic furnace:
Firing of Ceram Bond is started at 650° C and continued up to 980° C. The temperature increase rate is 55° C/minute. Firing is performed under vacuum. After completion of the firing process, the framework is immediately removed from the furnace. After firing, the framework should exhibit a beige to golden yellow color.
2.5. Opaque firing and further processing:
Apply the opaque material – according to the tooth shade – onto the fired Ceram Bond. A wash bake is not required. Then further processing is carried out according to the instructions of the manufacturer of the ceramic material.

### 3. Error sources and their elimination:

To ensure successful use, we recommend to test the desired alloy with Ceram Bond.
3.1. Cracks in Ceram Bond: Ceram Bond was applied too thickly (very fine cracks are acceptable/normal)! Sandblast the material and reapply as described above.
3.2. Bubbles in Ceram Bond: The metal must be degased. Sandblast Ceram Bond and degas the framework at 980° C under vacuum for ten minutes before Ceram Bond is applied again.
3.3. Green and/or blacks spots in Ceram Bond: Ceram Bond was applied too thinly or the framework was wet or greasy.
3.4 Cracks in the ceramic: If Ceram Bond reveals a rusty brown color after firing, the alloy is not suitable. Please use a different alloy.
The following alloys have proved to be unsuitable: Crutanium by Krupp Austenal, Crysatalloy by Shofu and Ticonium.

### 4. Safety recommendations and hazard warnings

4.1. Personal protective equipment:
When processing Ceram Bond, protective gloves, safety goggles and protective working clothes must be worn.
4.2. Skin contact: Wash off immediately using water and soap and rinse carefully.
4.3. Eye contact: Rinse eyes for several minutes under running water with eyelid being opened.
4.4. After swallowing: If complaints persist, seek medical attention.

### 5. Storage and durability:

5.1. The product must be stored in the sealed container under dry conditions. If proper storage is ensured, the product features unlimited durability.
5.2. Proper disposal: Ceram Bond can be disposed of together with the regular household garbage.

### 6. Additional information

The information contained in these instructions for use is always updated according to the latest knowledge and experience. Therefore we recommend to read the instructions for use again before using a new package.


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