

Safety instructions and general instructions for BEGO investment materials

BEGO is an official co-partner of the German Olympic teams for **Salt Lake City in 2002** and **Athens in 2004**



Safety instructions

- Investment materials contain quartz. **Do not inhale dust!** Risk of damage to lungs (silicosis, lung cancer).
Recommendation: Use gas mask type FFP 2 – EN 149:2001. Cut open bag with scissors and avoid generation of dust when filling into mixing bowl. Rinse out empty bag with water before crumpling up. Remove dust at workplace only when **moist**. To avoid dust during deflasking, place the mould in water after it has completely cooled down after casting until it is thoroughly moistened. Use suction extraction system with fine dust filter when blasting.
- Remove dried-up mixing liquid only when **moist** (fine dust). Seal bottle securely after use.
- Suction-extract escaping furnace gases during preheating and discharge outdoors!
- Only with shock heat investment materials: **Risk of injury during shock heating!** Place all moulds in the furnace within 10 seconds – then keep the furnace door closed for 15 minutes!

General instructions

- The ideal processing temperature for BEGO investment materials is **20 °C**. To keep it constant at a higher ambient temperature, use a temperature control cabinet if necessary. At a high ambient temperature also place the mixing bowl and mixing bowl in the temperature control cabinet.
- Observe shelf life dates of investment material and mixing liquid! Do not use without checking after the specified date. Do not bring phosphate-bonded investment material into contact with plaster or investment material containing plaster.
- Do not use crystallized mixing liquid any longer. The higher the concentration of mixing liquid, the greater the expansion. **A practical tip: Keep spare bottles!** Fill BegoSol® bottle up to desired % mark with BegoSol® and top up to 100 % with distilled water. Label this spare bottle with % data. Advantage: The mixing liquid is available with the desired concentration and can be measured in one operation.
- Data on the concentration of the mixing liquid are based on our own experience and tests and are regarded as reference values. Work results may be influenced by such parameters as temperature, mixing intensity, investment system, etc.

Application-related recommendations made by us, whether given verbally, in writing or by way of practical instructions, are based on our own experience and tests and may therefore be regarded only as general guidelines.

Our products are subject to continuous development. We therefore reserve the right to change the design and composition of our products.

Consignes de sécurité et observations pour les matériaux de revêtement BEGO

BEGO est l'un des partenaires officiels de l'équipe d'Allemagne pour les prochains jeux Olympiques de **Salt Lake City 2002** et d'**Athènes 2004**



Consignes de sécurité

- Les matériaux de revêtement contiennent du quartz. **Ne pas inhaler la poussière!** Danger pour les poumons (silicose, cancer des poumons).
Conseils: porter un masque de protection de type FFP 2 – EN 149:2001. Ouvrir les sachets avec une paire de ciseaux et éviter toute formation de poussière lors du remplissage des bols de mélange. Rincer les sachets vides sous l'eau avant de les froisser.
 - Ne retirer la poussière sur le poste de travail qu'après l'avoir **mouillée**.
 - Afin d'éviter la poussière lors du démoulage, immerger dans l'eau les cylindres entièrement refroidis après la coulée jusqu'à ce qu'ils soient humidifiés.
 - Sabler sous aspiration et avec un filtre contre les poussières fines.
- Ne retirer le liquide de mélange sec sur le poste de travail qu'après l'avoir **mouillé** (poussière fine). Bien refermer les flacons après usage.
- Lors du préchauffage, aspirer les gaz dégagés par le four et les évacuer à l'air libre!
- Uniquement pour les matériaux de revêtement Shock heat: **risque d'accident lors de l'enfournement rapide!** Enfournement tous les cylindres dans les 10 secondes – maintenir la porte du four fermée pendant 15 minutes!

Observations

- La température idéale de mise en oeuvre pour les matériaux de revêtement BEGO est de **20 °C**. Pour en conserver la stabilité en cas de température ambiante plus élevée, se servir éventuellement d'une armoire de réfrigération. Dans ce cas, en faire autant pour les bols et le liquide de mélange.
- Respecter les dates de péremption du matériau et du liquide! Après expiration des dates, ne pas utiliser sans contrôle préalable. Les matériaux de revêtement à base de phosphate ne doivent pas être mis au contact du plâtre ou de matériaux de revêtement à base de plâtre.
- Ne plus utiliser le liquide de mélange s'il est cristallisé. Plus le liquide de mélange est concentré, plus l'expansion est élevée! **Conseil pratique: préparer des flacons à l'avance!** Remplir le flacon de BegoSol® (1000 ml) de liquide jusqu'au repère de concentration désiré et finir le remplissage avec de l'eau distillée. Marquer le taux de concentration sur le flacon de réserve. Avantage: vous disposez d'un litre de liquide à la bonne concentration.
- Les indications données pour la concentration du liquide reposent sur nos propres expériences et essais et n'ont qu'une valeur indicative. Les résultats peuvent être influencés par des paramètres tels que la température, un mélange plus ou moins soigné, le système de mise en revêtement et autres.

Nos conseils techniques, qu'ils soient donnés verbalement, par écrit ou au cours de démonstrations pratiques, reposent sur l'état actuel de nos propres connaissances et essais cliniques. Ils n'ont donc qu'une valeur indicative. Nous faisons constamment évoluer nos produits, en fonction des dernières connaissances scientifiques. Nous nous réservons donc le droit d'en modifier la conception, le design, l'aspect et la composition.

Investment Material – Cobalt-Chrome Technique – for the Silicone Duplicating Technique

Instructions for use

Safety instructions

1. Investment materials contains quartz. **Do not inhale dust!** Danger of lung harms (silicosis, lung cancer)
 - Cut open bags with scissors and avoid generation of dust when weighing and filling the material into the mixing bowl. Wash out empty bags with water before crumpling them up.
 - Always remove dust at place of work with a **moist** cloth.
 - To avoid dust when deflasking, place the completely cooled-off mould in water briefly before casting.
 - When blasting, use extraction system with fine dust filter.
2. Always use a **moist** cloth to remove dried mixing liquid (fine dust).
 - Seal bottle securely after use.
3. Exhaust furnace gases escaping during pre-heating and direct into the open air.

Important instructions:

- Observe shelf-life of investment material and mixing liquid! After this date do not use without checking.
- Do not bring Wiroplus® S into contact with plaster or investment materials containing plaster.
- As mixing liquid only use BegoSol® and aqua dest. Do not continue using mixing liquid that has crystallised!
- The higher the concentration of BegoSol® the greater the expansion!
- Before mixing rinse the clean mixing cup out with water and wipe it. Dirty or dry cups draw the moisture from the investment material!
- Mix Wiroplus® S under vacuum, if possible. Do not shake moulds any longer after filling!
- The base for master and duplicate models must be at least 1 cm thick.

Table 1: Mixing ratios

	Wiroplus® S	BegoSol®	Distilled water	Total mixing liquid	Concentration BegoSol®
Duplication (2 duplicate models)	1 x 400 g	51 ml	13 ml	64 ml	80%
Investment* (1 mould)	1 x 400 g	0 ml	64 ml	64 ml	0%
	1 x 400 g	19 ml	45 ml	64 ml	30%

* 30% BegoSol® prevents cracks in the mould, which may occur due to rapid heating. As a rule, distilled water is used for mixing.

A practical tip for mixing: keep reserve bottles available!

Fill BegoSol® bottle (1000 ml) with BegoSol® up to desired % mark (see Table 1) and top up to 100 % with distilled water. Mark this reserve bottle with % data. Advantage: the mixing liquid is available with the desired concentration and can be measured in one work step.

Every dental technician knows it:

The storage and processing temperatures for investment material and mixing liquid play a significant role for setting expansion and thus for the fitting accuracy and surface finish of the casting. The ideal processing temperature for BEGO investment materials is **20 °C**. Top keep it constant while the ambient temperature fluctuates, use a temperature control cabinet if necessary. At high ambient temperatures also place the mixing bowl, mixer and, of course, BegoSol® in the temperature control cabinet.

1. Processing

1.1 Comply with processing time: approx. 4 minutes at 20 °C. Higher room temperatures involve shorter processing times.

1.2 Quantities required: see **table 1**. If a smaller quantity of investment material is needed it should be weighed out from the portion bags.

Mixing ratio

Wiroplus® S 100 g	Mixing liquid 16 ml
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1.3 Preparations for investment of duplicate models

- Apply Wiropaint plus fine investment briskly and evenly with a moistened brush. Then mix investment material and invest immediately. Wiropaint plus must not start drying. Do not use any wetting agent!
- If working without Wiropaint plus coat model sparingly with Aurofilm preparation liquid then blow dry.

1.4 Mixing

Stir Wiroplus® S with the mixing liquid for **10–15 seconds using a spatula**. **Then mix in a vacuum mixer** such as EasyMix for **60 seconds**.

Processing without mixer:
Mix for **2 minutes** on the vibrator.

1.5 Refill

Fill duplicating mould or mould ring on the vibrator. **Then remove from the vibrator.**

NB: When working with the pressure compaction unit ensure that silicone mould and duplicate model are produced under the same pressure conditions.

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for the Silicone Duplicating Technique

2. Setting and drying times for duplicate models

2.1 Remove model from duplicating mould after a setting time of 30- 40 minutes.

2.2 Harden duplicate models with Durofluid model spray:

- dry 30- 60 minutes at 250 °C,
- spray weakly,
- dry approx. 5 minutes at 250 °C.

3. Setting and preheating times for casting moulds

NB:

- Select holding times from 30- 60 minutes depending on the size and number of moulds.
- A second holding stage at 570 °C for 30- 60 minutes allows consistent results to be achieved with even greater reliability.

3.1 Furnaces with conventional control system:

After allowing to set for 30 minutes lay moulds in a cold or preheated to 250 °C furnace. Heat to 250 °C and hold for 30- 60 minutes. Then heat to the final temperature and hold for 30- 60 minutes.

3.2 Furnaces with computer control system:

After allowing to set for 30 minutes lay moulds in a cold furnace. Heat to 250 °C at 5 °C/minute and hold for 30- 60 minutes. Then heat to the final temperature at 7 °C/minute and hold for 30- 60 minutes.

3.3 Recommended final temperatures: see table.

4. After casting

After casting allow moulds to cool at room temperature until lukewarm, **do not cool by immersing in water!**

Table 2: Recommended final temperatures

	HF vacuum pressure casting machine (Nautilus [®] MP)	HF induction casting machine (Fornax [®])	Motorized and spring-loaded casting machine (Fundor)
Partial plates:	950 °C	1000 °C	900 °C
Full plates:	950 °C	1050 °C	1000 °C

Physical data

Workable period at 20 °C approx. 3 minutes
Total expansion with 80% BegoSol[®] mixing liquid: approx. 2.3%

Characteristic Material Values as per DIN EN ISO 9694:

Initial set (Vicat time) 5.5 minutes
Resistance to pressure 18 [MPa]
Linear setting expansion (measured in extensometer) 0.4%
Linear thermal expansion 1.2%

Availability

Wiroplus® S investment material:

- 1 box = 18 kg = 45 pcs. 400 g bags - **Order No. 50248**
- 1 box = 6 kg = 30 pcs. 200 g bags - **Order No. 54353**

BegoSol® Mixing liquid:

- 1 bottle = 1000 ml, 1 measuring cup - **Order No. 51090**
- 1 can = 5 l - **Order No. 51091**

DIN ISO

This product was manufactured according to DIN EN ISO 9694 and fulfills all its requirements.



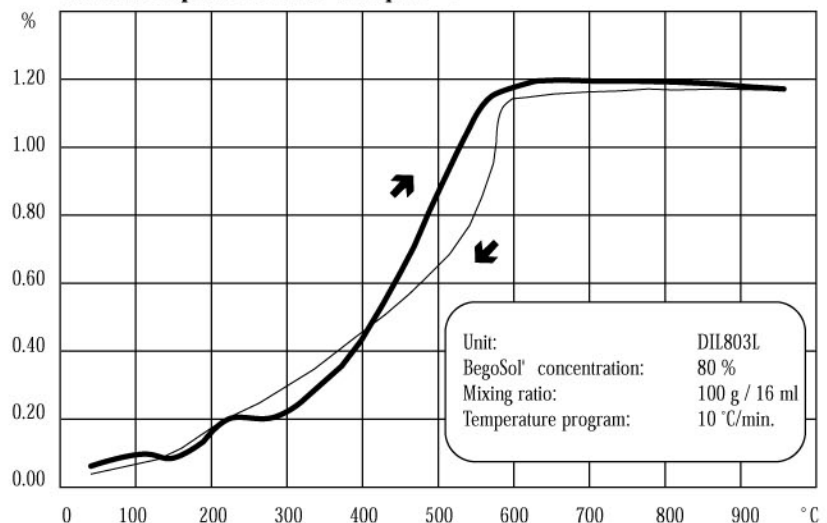
BEGO maintains a quality control system which is certified under DIN EN ISO 9001 and DIN EN 46001.

Warranty

Whether given verbally, in writing or by practical instructions, our recommendations for use are based upon our own experience and trials and can only be considered as standard values.

Our products undergo constant further development and are therefore subject to modification regarding design and composition.

Thermal expansion curve Wiroplus® S



BEGO thermal analysis for development of material