



...a system to improve the productivity in pressureless casting in ceramics applications

1 What is Multicast?

The companies of IMC and BK-Giulini developed a system called **MULTICAST** which offers the customer significant improvements in the production process in pressureless casting.

MULTICAST is a mixture of high-quality special gypsum and other mineral components. It was developed to improve the properties of natural gypsum used for pressureless casting. The system has a liquefying and stability-increasing effect.

For use, the **MULTICAST** compounds are mixed at the customer's site with the used natural gypsum. By using **MULTICAST** ...

- ✓ *the mechanical strength is increased*
- ✓ *the absorption rate is improved*
- ✓ *the removal strength is increased:*
 - *After removal from the mould, the bodies are more stable*
 - *Less deformations occur*
- ✓ *the casting cycle is reduced*

Despite the higher material price, significant savings can be obtained in casting **with regard to overall costs** and the processes can be made safer.

The advantages when using **MULTICAST** are:

- ✓ *Lower material consumption, thus also lower storage and transport costs*
→ **A small contribution to climate protection**
- ✓ *Less plaster mould production, thus lower mould costs*
- ✓ *Less production downtimes thanks to fewer changes of moulds*
- ✓ *Lower disposal costs for used plaster moulds*

With regard to **significance for the environment**, the same precautions are to be taken as apply to natural gypsum.

2 Supply and storage

MULTICAST is supplied in paper bags with inliner of 25 kg or in big bags of 1 t on pallets as required by the customer.

As all other binders, Multicast must be stored **in a dry place and frost-free**.

Before use, the material should be ideally stored at **room temperature**. Excessive ambient temperatures result in an excessive shortening of the casting time.



Opened bags should be used as soon as possible.

The **storage time** should not exceed 6 months. Bags stored for more than 6 months must be checked before use.

3 Processing of MULTICAST

3.1 Mixing parameters

3.1.1 Mixing ratio

In order to obtain an optimal result, the optimal **mixing ratio** of the **MULTICAST** compound and the used natural gypsum is to be determined first. It is recommended to start with the following ratio:

MULTICAST : natural gypsum
60 % : 40 %

Depending on the result in casting and the objectives, the mixing ratio can be increased or reduced a bit.

Addition of the **MULTICAST** compound should never fall below 50%.

3.1.2 Ratio water/gypsum

At the same time, a **water : gypsum ratio** of 1 : 1.6 should be chosen, i.e.

water : gypsum ↔ 1 ℓ water : 1.6 kg solids

The water/gypsum ratio can also be varied. The lower limit of 1 : 1.5 may not be undershot.

Only pure tap water should be used because otherwise contaminations of the water could have a negative effect on the setting and thus the efficiency of the **MULTICAST** compound.

3.1.3 Mixing time/agitation time

The **mixing time/agitation time** is **3 minutes**. This time may not be reduced because otherwise the components of the **MULTICAST** compound are not correctly dispersed.

Longer mixing times result in a shortening of the casting time and a quicker setting. At the same time, the strength is increased without having a negative effect on the body formation. The optimal mixing time should be determined in field tests and defined as standard.

3.2 Mixing process

At first, the determined amount of natural gypsum is added to the measured mixing water identical to usual moulding. Directly after, the **MULTICAST** compound is added without any time delay.

Subsequently, mixing is performed according to the specifications described in item 3.1.3.

The mixture is then to be cast directly after completion of the mixing process without any time delay.

→ Note: *Excellent casting results are obtained if the components are mixed in a mixer under vacuum.*

If required, the mixing speed is to be adapted. Although a high mixing speed increases the strength, the flow behaviour and the setting time are reduced by this.



4 Setting/removing from the mould

The right time for removal can be determined based on the knife cut method. In any case, a sufficient edge strength is to be ensured to prevent damages to edges.

The mould takes approx. 4 h to completely settle. During this time the mould should thus not be stored under excessively dry conditions.

Subsequently, the mould is dried at max. 45°C. **MULTICAST** moulds do not require any special precautions.

Subsequently, the mould is ready for use.

→ **Note:** *Minor colourations might occur with Multicast moulds. This is not a quality defect but related to the components of the **MULTICAST** system.*

5 Processing

When using the moulds, no special precautions must be taken.

A convection drying at the location of the moulds is of advantage to prevent an excessive humidity.

Using **MULTICAST** moulds together with other moulds may lead to different casting results because of a quicker body formation, i.e. also to cracks. In this case, the absorption time is to be adapted.

→ **Note:** *This is to be considered above all in the introductory phase to obtain a realistic evaluation of the **MULTICAST** system.*

The above information is given to our best knowledge and after thorough examination based on the present state of art. Deviations may be possible because experience has shown that operational conditions are differing. Changes may result from further development and new knowledge. Please contact us, we will be happy to inform you.

MULTICAST

a product development in cooperation
with the company:

Innovation Material Consultants

