

USG HYDROPERM™ METAL CASTING PLASTER SOUTHARD, OK

DESCRIPTION

USG Hydroperm™ Metal Casting Plaster is a specially formulated product that incorporates an air-entraining agent to provide permeability while maintaining excellent detail to castings. USG Hydroperm Metal Casting Plaster is ideal for producing permeable plaster molds for the precision casting of low temperature melt (2642 °F (1450 °C)) metals, non-ferrous metals such as aluminum, and alloys.

Please contact your local USG Sales Representative for further assistance for specific use information.

TYPICAL PHYSICAL PROPERTIES

Normal Consistency	52 - 60 lbs. water/100 lbs. product (24 - 27 kg water/45 kg product)
Machine Mix Vicat Set, Target	8 - 12 minutes
Density, Wet	38 - 44 lbs./cu. ft. (609 - 705 kg/m³)
pH Reaction	7.5 - 7.8
% Expansion, Final	0.160%

NOTE The *Typical Physical Properties* in the above table were achieved under controlled laboratory conditions with freshly produced material, results may vary.

MIXING INSTRUCTIONS

MIX PREPARATION

Use potable water at temperatures between 70 °F (21 °C) and 110 °F (43 °C). Because variations in slurry (USG Hydroperm Metal Casting Plaster and water mixture) temperature produce variations in set time, it is important to keep both the USG Hydroperm Metal Casting Plaster and water in a stable temperature environment prior to use. The higher the temperature of the slurry, the shorter the set time. Conversely, the lower the temperature of the slurry, the longer the set time.

Weigh both the USG Hydroperm Metal Casting Plaster and the water prior to use for each mix. The water-to-USG Hydroperm Metal Casting Plaster ratio is critical because it governs the strength and the density of the final cast.

SOAKING

Sift or strew USG Hydroperm Metal Casting Plaster into the water slowly and evenly. Do not drop large amounts of USG Hydroperm Metal Casting Plaster directly into the water as proper soaking of the USG Hydroperm Metal Casting Plaster may not occur. USG Hydroperm Metal Casting Plaster should be fully dispersed in the water prior to mixing. Small batches require less soaking time than large batches. See USG IG503 *Plaster Mixing Procedures* for specific soaking instructions.

MIXING

Mixing USG Hydroperm Metal Casting Plaster slurry is one of the most important steps in producing USG Hydroperm Metal Casting Plaster casts with optimal strength, absorption, hardness and other important properties.

Mechanically mixed slurries develop uniform casts with optimal strengths. USG Hydroperm Metal Casting Plaster can be mechanically mixed through both batch and continuous processes. Proper blade and bucket dimensions are important for obtaining the best batch mix (see USG IG503 *Plaster Mixing Procedures* for details).

BATCH MIXING

When sizing the mixing disk to the mixing vessel, it is recommended they be at a ratio of 1:2 or 1:3 to provide for the best entrainment of air. Starting the mix at the bottom of the vessel and working it up the wall allows for maximum air entrainment. The total mixing time is usually between 1 to 2 minutes depending on the size of the mix, the size of the mixer and the mixer speed. Once the desired increase in volume is achieved (typically 85-110%), take the mixer below the surface for a few seconds to help disrupt any large air bubbles which may have formed.

Longer mixing times result in higher mold strength and shorter set times.

POURING

To prevent air entrainment and provide a uniform, smooth surface, careful pouring of USG Hydroperm Metal Casting Plaster slurry is necessary. Gentle agitation of the filled mold is a further step used to prevent air at or near the mold surface. Whenever possible, USG Hydroperm Metal Casting Plaster slurry should be poured carefully in the deepest area so that the slurry flows evenly across the surface of the case mold.

Pouring a large amount of slurry directly on the face of the case mold may result in slight densification of the USG Hydroperm Metal Casting Plaster mold at the point where it strikes the surface of the case. This produces a hard spot, giving uneven absorption.

DRYING

One of the most important operations in successful plaster-mold casting is drying the mold. Complete dehydration is necessary to avoid generating gas that can cause defects in the casting when poured. Many drying methods can be used successfully, depending on the nature of the work, but all require a source of heat and air circulation.

Set up molds for pouring immediately after removal from dryer because the plaster will pick up moisture if exposed to air for long periods.

IMPORTANT – It is very dangerous to pour molten metal into a mold that contains moisture and is not completely dried – this must be avoided.

STORAGE AND USE

When properly used, USG Hydroperm Metal Casting Plaster is easy to work with. Keep indoors at temperatures between 65 °F - 75 °F (18 °C - 24 °C) and 45% - 55% RH. Do not stack more than two pallets high. Keep from drafts. Rotate stock. USG Hydroperm Metal Casting Plaster should be used within 6 months of the manufacturing date located on the package. Always follow handling and use directions and safety warnings on the package.

PRODUCT INFORMATION

See usg.com for the most up-to-date product information.

DANGER

Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection. Use only in a well-ventilated area, wear a NIOSH/MSHA-approved respirator. If swallowed, inhaled, or skin irritation occurs get medical attention. When mixed with water, this material hardens and becomes very hot sometimes quickly. DO NOT attempt to make a cast enclosing any part of the body using this material. If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses and continue rinsing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Dispose of in accordance with local, state, and federal regulations. For more information call Product Safety: 800-507-8899 or see the SDS at usg.com

KEEP OUT OF REACH OF CHILDREN.

TRADEMARKS

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NOTE

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SAFETY FIRST!

Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read SDS and literature before specification and installation.

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