Technical Data Sheet

Sigma Cure 7706 Pt 2 PUCB Resin

Premium Performance Urethane Cold Box Part 2 Resin for General Purpose Non-Ferrous Applications

Performance Features
Sigma Cure 7706 Isocyanate Part 2 Resin was specifically developed for use with Sigma Cure Phenolic Urethane Part 1 Resins and has been designed for high-strength, high production non-ferrous applications. Sigma Cure 7706 offers a number of distinct features and advantages when compared other Sigma Cure Part 2 Resins designed for non-ferrous applications. These features include:

- High Tensile Strengths
- Extended Bench Life of Mixed Sand
- High Resistance to Humidity and Moisture
- Reduced Hot Strength
- Improved Shakeout

Product Description
Sigma Cure 7706 is a polymeric MDI-type isocyanate resin that is used in conjunction with a phenolic resin, such as Sigma Cure 7211, for non-ferrous cold box applications. Typically, the Part 1 and Part 2 resin components are combined with a suitable new sand, normally a dry silica sand or lake sand, or a reclaimed sand, in ratios ranging from 50/50 to 60/40, and at a total resin content in the range of 0.6 to 1.5%. The resulting sand mix is then blown into a core box and is subsequently crosslinked by passage of a vaporized tertiary amine catalyst such as triethylamine, dimethylethylamine, or dimethylisopropylamine to produce a urethane bond.

<table>
<thead>
<tr>
<th>Typical Properties - Sigma Cure 7706</th>
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<tr>
<td>Viscosity, cps</td>
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<tr>
<td>Refractive Index</td>
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<tr>
<td>Specific Gravity</td>
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<td>Density, pounds/gallon</td>
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**Tensile Strength Development**

Tensile strength development occurs almost instantaneously before the core is ejected from the core box. Initial tensile strength at ejection typically ranges from 60 to 80% of the ultimate tensile strength, which is normally achieved after 24 hours. The value is adversely affected by clay and other alkaline contaminants, and by moisture in the sand or high dew points in the compressed purge air. Tensile strength values will vary as a function of the degree of angularity and the AFS grain fineness number of the sand that is selected.

**Storage Guidelines**

Recommended storage temperature is between 60 - 90 °F. At lower temperatures, viscosity will increase, making pumping and mixing more difficult. At high temperatures, solvent loss can occur. Drum storage should be in a dry area, out of direct sunlight. Partially used drums should be tightly closed to prevent contamination, primarily from water, which can react to form solids and carbon dioxide gas. Part 2 resins are reactive with moisture and humidity. Protect drums with desiccant if rate of use is slow. Protect bulk storage tank with dry nitrogen or dry air (-40 °F or less dew point).

**Safe Handling**

Chemically resistant gloves and eye protection should be used when handling or using chemical binders. Material Safety Data Sheets are available for all products. Drum labels also contain handling information. This material will react with the Part 1 resin, without catalyst, in an exothermic reaction, to give a solid polymer. Do not mix Part 1 and Part 2 except on sand during use.

**Technical Service**

Proper selection of a binder system that meets your specific needs is key to achieving maximum performance benefits. HA International, LLC provides in-depth technical assistance and a wide range of urethane cold box binder systems. Both our in-house and field experts are available to assist you in your most challenging foundry applications. Please contact your HA International, LLC representative so that we may assist you in putting together a binder system and foundry team that will help you achieve your goals.

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