



Technical Data Sheet

SIGMA SET™ 6100 PART I PHENOLIC RESIN

Premium Performance Phenolic Urethane NoBake Part 1 Binder

Performance Features

Sigma Set 6100 Phenolic Urethane Part 1 Resin is designed for general foundry use. As with all Sigma Set binders, Sigma Set 6100 has been formulated to contain no reportable formaldehyde. Sigma Set 6100 Part 1 Resin can be used with a number of Part 2 Isocyanate components, the choice of which is dependent on the particular performance features desired. Features available when using Sigma Set 6100 with the appropriate part 2 component include the following:

- Unique Internal Release Characteristic
- High Tensile Strength
- Superior Hot Strength for Ferrous Applications
- Environmentally Friendly - Low VOC and Low Free

Formaldehyde

Product Description

Sigma Set 6100 Part 1 resin is a phenolic resin which is used in conjunction with an MDI-type isocyanate component, the Part 2 resin. Typically, both the Part 1 and Part 2 resin components are mixed with a suitable new sand, normally a silica 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 0.8 to 2.0 based on the weight of the sand. The sand mix also includes an amine catalyst, which is typically pumped into the Part 1 resin stream just prior to discharge into the sand. This catalyst is typically used

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION BY SELLER, except that the product shall conform to contracted specifications, and that the product does not infringe any valid United States patent. The information provided herein was believed by Seller to be accurate at the time of preparation or prepared from sources believed to be reliable but it is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe handling and use of product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for damages and no claim of any kind, whether to product delivered or for non-delivery of product and whether based on contract, breach of warranty, negligence or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.

at a level of from 2 - 10% based on the Part 1 resin. Sigma Set 6100 works well with a large range of liquid amine catalysts used to accelerate the formation of urethane bond. The selection of an appropriate catalyst will allow a wide range of strip times to be achieved.

Typical Properties - Sigma Set 6100	
Naphthalene, %	< 1.0
Free Formaldehyde, %	< 0.1
Flash Point, oF, TCC	142
Density, pounds per gallon	9.0
<i>Viscosity, cps</i>	110
Refractive Index	1.541

Performance Characteristics

Sigma Set Part 1 resins are patented, high-performance, phenolic resins. Patented chemistry provides the highest hot strength available for this type of resin. Additional patented chemistry provides very low residual free formaldehyde with no sacrifice in either tensile strength or other performance characteristics.

Tensile Strength Development

Work time / strip time characteristics and tensile strength development related to the use of the Sigma Set 6100 Part 1 Resin with an appropriate Part 2 component, are dependent upon the catalyst chosen, as well as a number of other parameters such as sand quality, sand temperature, and catalyst level used. The graph given below indicates some typical tensile strengths achieved with a Sigma Set catalyst and two of the available part 2 resins.

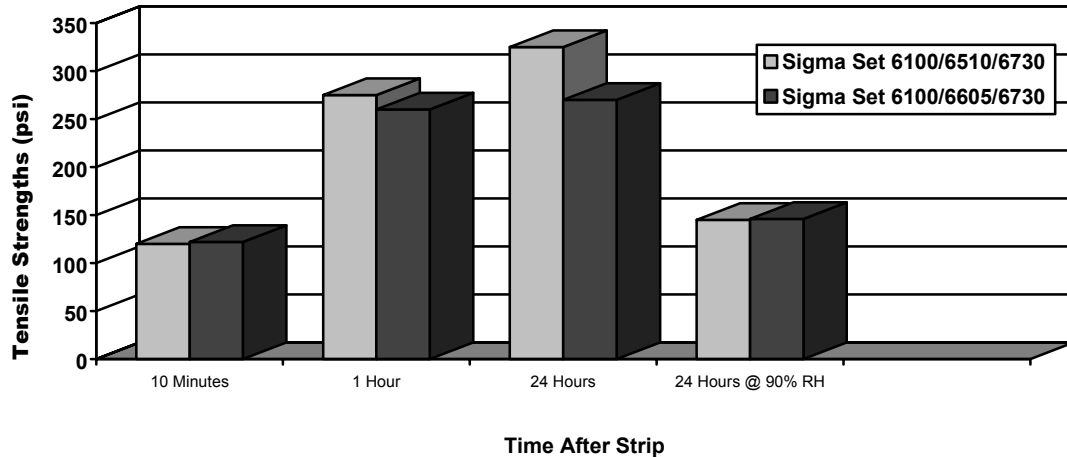
HA International LLC

“The Best Total Solution”

630 Oakmont Lane
Westmont, IL 60559

Telephone (630) 575-5700 Fax (630) 575-5800

TENSILE STRENGTH DEVELOPMENT



Sand tests conducted under the following conditions:

Base Sand	Wedron 530
% Binder	1.25% Based on Sand Weight
Part 1/Part 2 Ratio	55/45
% Catalyst	2.7% Based on Part 1 Resin

Strip Time	Sigma Set 6100/6510/6730; 6'17"
	Sigma Set 6100/6605/6730; 5'56"

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 adversely affect performance.

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 2 component, without catalyst, in an exothermic reaction, to give a solid polymer. Do not mix Part 1 and Part 2 except on sand during use.

HA International LLC

“The Best Total Solution”

630 Oakmont Lane
Westmont, IL 60559
Telephone (630) 575-5700 Fax (630) 575-5800

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 nobake 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.

June 2001

HA International LLC

“The Best Total Solution”

630 Oakmont Lane
Westmont, IL 60559

Telephone (630) 575-5700 Fax (630) 575-5800