



Technical Data Sheet

Enviroset 138

Performance Features

HA International's Enviroset 138 Phenolic NoBake Resin is a fast curing, high tensile strength phenolic no bake binder designed for use in a broad variety of casting applications. This binder is characterized by the following product features:

- Non-reportable Free Formaldehyde
- Low Initial Viscosity
- Low Nitrogen
- High Tensile Strength
- High Hot Strength
- Excellent Reclaimability
- Low odor at mixing

Product Description

Enviroset 138 is a phenolic resin that will react in the presence of a strong acid catalyst, at ambient temperatures, to form a cured binder. Enviroset 138 is typically catalyzed by HA International's series of sulfonic acid catalysts. It is suitable for use in the production of cores or molds, and can be used with all types of metal. Enviroset 138, with the appropriate catalyst, exhibits cure rates that approach those of most furan no bake systems at a cost savings over the furan systems. It is formulated to perform well within a broad temperature range. Typically the amount of resin applied to the sand will range between 0.8 - 1.5% resin based on the weight of sand. The quantity of acid catalyst used in the sand mix is dependent upon the type and strength of the acid, but normally ranges between 20 - 50% based on the weight of the Enviroset 138 resin utilized.

Enviroset 138 has excellent hot strength and can help eliminate many of the casting defects associated with inadequate binder hot strength. High hot strength helps maintain resistance to surface erosion, veining and early core collapse.

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Recommended practice when using Enviroset resins is to start with a clean washed and dried silica sand. Reclaimed sands are also widely used with this type of product. If mechanically reclaimed sand is used, sand that is low in fines and residual binder (Loss on Ignition) is preferred. In continuous or batch-type mixers, the acid should be the first component added to the sand, with the resin added after the acid has been dispersed. Caution should be exercised to prevent the liquid resin and acid components from coming into direct contact with one another, since the resulting reaction can be very exothermic.

The typical properties of Enviroset 138 PNB Resin are defined in the table below.

Typical Properties - Enviroset 138 PNB Resin	
Viscosity, cps	40-140
Free Formaldehyde, %	<0.1%
Nitrogen, %	<1.0%
Specific Gravity	1.20
Pounds per gallon	9.92
Karl Fischer Water, %	16-19
Refractive Index	1.531-1.539

Performance Characteristics

The cure rate of Enviroset 138 provides quick strip times and rapid tensile strength development. Enviroset 138 is slightly more reactive than 128, the product it was developed to replace, and develops core strengths superior to its predecessor as illustrated in the graph below. The cure speed of Enviroset 138 is also comparable to some furan systems presently being used, and foundries may be able to increase core and mold production without resorting to higher priced FNB binder systems.

Storage Guidelines

The shelf life of HA International's Enviroset 138 resin will exceed two months if stored at room temperature, 70 - 75 ° F, and can be further increased if stored at lower temperatures. Higher storage temperature will decrease the storage life.

Bulk Storage

Enviroset 138 is normally stable, but will polymerize with some evolution of heat in bulk storage tanks at temperatures exceeding 90 °F. This precaution is specific to bulk storage, and is a function of the mass of the material.

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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. Phenolic resins can react in an exothermic reaction if combined with the acid catalyst or other acids. Do not mix phenolic resins with any acid 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 nobake resins and catalysts. For additional information relating to the selection of resins or catalysts, please contact your HA International representative so that we may assist you in putting together a binder system and foundry team that will help you achieve your goals. Both our in-house and field experts are available to assist you with your most challenging foundry application.

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