SAFE HANDLING

Chemically resistant gloves and eye protection should be used when handling or using resins and acids. Material Safety Data Sheets are available for all products. Drum labels also contain handling information. Furan resins will react in a violent exothermic reaction with the acid catalysts or other acids. Do not mix furan resin with any acid except on sand during use. Refer to the Material Safety Data Sheet for additional information.

TECHNICAL ASSISTANCE

HA International can help you optimize your operation, improve your performance, and help you choose components to meet all your core making needs. HA International will help you choose the right binder level and catalyst for your application. Both our in-house and field experts are available to assist you with your most challenging foundry applications. Call your sales representative for additional technical information and to help you find the best binder to achieve your goals.

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For more information please speak with your HA International representative.

Alternatively, contact Ayax Rangel, Product Manager, Resins at 630-575-5775

HA International LLC

Member of HA Group

630 Oakmont Lane
Westmont, Illinois 60559

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ENVIROSET® 3D JET RESIN

Low viscosity thermosetting furan resin for all 3D printers

HA International LLC

Member of HA Group

THE RESULTS WE DELIVER

800.323.6863
HA-International.com

Enviroset® 3D Jet Resin, is a low viscosity thermosetting furan resin that has been specially manufactured for use in all 3D Printers for sand cores and molds and is suitable for use with all types of metal.

Features:

- **Contains no nitrogen**
- **Low water**
- **Non-reportable formaldehyde and phenol**
- **Low viscosity**
- **High tensile strength**

DESCRIPTION

Enviroset 3D Jet Resin is a thermosetting furan resin that will react in the presence of a strong acid catalyst at ambient temperatures to form a cured binder. The low viscosity resin has been specially manufactured for use in all sand core and mold 3D printers. This resin can be used to make castings with all types of metals.

Typically the amount of Enviroset 3D Jet Resin applied to the sand/substrate will range between 1.0% and 1.5% resin, based on the weight of the sand. In 3D sand printing, the amount of resin is also determined by the X resolution chosen. The quantity of acid used in the sand mix is dependent upon the type and strength of the acid, but normally ranges between 0.14% - 0.24% based on sand weight. It is determined based on sand as it is pre-coated on the substrate first. Recommended acid catalysts (activator) for pre-treating the printing substrate are TW-40 for highest strength and TC-50 for fastest part cleaning and highest resolution.

Recommended practice when using Enviroset 3D Jet Resin is to start with a clean, washed, and dried silica sand or aggregate. The acid should be the first added and thoroughly mixed with the sand or aggregate. The resin is then jetted through the print head onto the sand/substrate after the sand has been layered by the recoater. Caution should be exercised to prevent the liquid resin and acid components from coming into the direct contact with one another since the resulting reaction can be very exothermic.

TYPICAL PHYSICAL PROPERTIES

- Viscosity @ 25°C, cps <10
- % Water <1.0
- % Nitrogen 0
- % Free Formaldehyde 0
- % Furfuryl Alcohol 92
- Density, pounds per gallon 9.34

PERFORMANCE CHARACTERISTICS

Measurable tensile strength begins to develop shortly after the Enviroset 3D Jet Resin is jetted onto the sand mix containing the acid. The rate of strength development is related to the chemistry of the resin and the catalyst used. Tensile strength will vary due to the many factors known to affect binder performance: sand quality, sand temperature, mixing efficiency, etc. Also, part orientation in the printer will affect strength properties.

STORAGE GUIDELINES

Recommended storage temperature is between 60-90°F. At lower temperatures, viscosity will increase, making pumping and mixing more difficult. Freezing temperatures should be avoided. At higher temperatures, shelf-life can be adversely affected. Drum storage should be in a dry area, out of direct sunlight. Partially used drums should be tightly closed, to prevent contamination. The recommended stock rotation is six months when properly stored.