

SF - 38 Syntactic Void Filler



Subsea Void Filler Three-Part Kit

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Overview

SF-38 is a specially engineered syntactic formulated to serve as a void filler for subsea applications. The material is provided as a three-part kit that is mixed and poured into any free-flood cavity or void. The mix is allowed to cure at room temperature to form a solid syntactic material that will withstand repeated ocean excursions to depths of 4,000 feet.

The easily cast system is provided in three parts; two resin components and a solid filler. The two resin components are mixed together, followed by the glass bubble filler. When the three materials are uniformly mixed, the moderate viscosity combination may be poured into its desired location. Initial cure will occur over a twenty four hour period at ambient temperatures, (50°F - 90 °F), providing a solid, lightweight article which is ready for any secondary operation such as machining, finishing or painting. Full cure will take place after 7 - 10 days. The cured material will provide an average of 26 pounds of buoyancy per cubic foot in seawater.

The SF-38 Kits are made up of the following components:

Part A: Base Epoxy Resin

An epoxy resin modified to provide a low viscosity for ease in mixing and a high compressive strength for performance in use.

Part B: Curing Agent

A low viscosity reactive polyamide curing agent that cures at low to moderate temperatures with a workable pot-life and exotherm.

Part C: Hollow Glass Bubbles

Free-flowing hollow spheres that are the key to the syntactic materials subsea performance. The bubbles provide the low density and hydrostatic performance necessary for the foam system.

Properties

Properties provided below are typical for the cast foam:

Color	White/Tan
Density (lb/ft ³)	38 ± 2
Compressive Strength (psi)	4,200 min
Compressive Modulus (ksi)	190 ksi min
Weight gain 24 hours @ 4,000 feet	3 % max
Hydrostatic Crush Strength	5,300 psi (12,000 feet)
Shelf Life	2 years from manufacture date

Storage

Store the components in a dry area. Storage temperatures should be between 45°F - 100 °F. Do not allow the resins to freeze or the glass filler to absorb moisture. Always close the containers after use.

Safety

Do not use or handle this product until the Material Safety Data Sheet has been read and understood.

Mixing Instructions

The SF-38 Kits are provided in three easily identified components which, when combined, produce seven cubic feet of syntactic. Each component is pre-weighed for simplicity, ease in handling and will yield the correct density and volume. Two 15 gallon containers make up the Part A epoxy mixture, one 6 gallon container holds the Part B curing agent, and a single sealed plastic lined box stores the Part C hollow filler. The mix of each kit is formulated by density and the components should be mixed in the weights provided.

Prior to mixing, allow the material to equilibrate at a temperature between 65°F - 90 °F. This will result in the most effective mix conditions. The material can be mixed at either lower or higher temperatures, but will result in shorter pot-life, (higher temperatures), or higher viscosity mixes, (lower temperatures). Mixing should be performed in a clean environment. Efforts should be taken to minimize exposure of the material to moisture. When handling the components, avoid contact with skin and eyes. Protective clothing and gloves are recommended. When handling the Part C glass bubbles, a dusk mask and goggles must be worn to prevent irritation of the eyes and throat during transfer of the bubbles. The Material Safety Data Sheet must be read and understood prior to working with the kits.

1. Fill the mixer with the contents of the two drums of Part A epoxy resin and mix for 5 - 10 minutes.
2. Pour the entire contents of the Part B curing agent into the mixer and mix for 5-8 minutes.
3. Slowly add the contents of the box of the Part C glass bubbles. Transfer approximately 1/3 of the box to the mix and allow the spheres to wet out, followed by the second 1/3 and the final 1/3, each time allowing the spheres to become saturated with resin. Once all the spheres are wet, allow the mix to run an additional 5 minutes.
4. Following mixing, slowly pour the contents of the mix bowl into the cavity. Allow the material to cure for 24 hours prior to machining or pouring additional castings on top.