North Sea Resins®
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Technical Data Sheet

Product: NSR-250
Adhesive, Filler, Sealant
Harsh Environments,
Cure-On-Command

Product Description:
NSR250 is a single component, solvent free, photo-curable resin designed for adhesive, filler and sealant applications that benefit from the cure-on-command characteristics of the resin. The product also cures across a broad temperature range and in moist, including fully submersed, environments. The product has been optimized for adhesion to copper, brass, bronze, steel, aluminum and cast iron. The product cures in as fast as 30 seconds when exposed to a specified wavelength of light or when in direct contact with full sunlight.

Typical Applications:
NSR250 can be used to fill cracks or holes by applying the resin directly to a properly prepared surface. As a high viscosity material, the resin can be applied in vertical applications without concern of running. It can be used for encapsulating, coating and sealing. It can be machined when properly applied.

Suggested Light Source:
Visible light cure: 470 nanometers, > 2.5mW/cm2
Portable light sources are available from North Sea Resins based on LED technology. Sunlight is an effective light source.

Typical Uncured Properties:

Chemistry	Acrylate
Color	Yellowish, white colored
Specific Gravity	1.14
Viscosity, ASTM D1084, Brookfield (cP) Temperature (°F) Spindle Speed (rpm)	168,000 70 #4 5

Typical Physical Properties of Cured Material:

Hardness, ASTM D-1474, ASTM E-384 (HV) Vickers, 25g, 18s	14
Tensile Strength, ASTM D-638 (psi)	3,500
Elongation, ASTM D-638 (%)	2.6
Modulus, ASTM D-638 (psi)	143,000

Typical Performance of Cured Material:
Block Shear strength test were conducted according to ASTM D-4501. A clear acrylic plate was bonded to each of the materials noted below. Conducting block shear strength tests according to ASTM D-4501, the following typical performance is noted:

Acrylic to Aluminum, cured in air (psi)	230
Acrylic to Aluminum, cured underwater (psi)	260
Acrylic to Copper, cured in air (psi)	190
Acrylic to Copper, cured underwater (psi)	170
Acrylic to Steel (1018 carbon), cured in air (psi)	200
Acrylic to Steel (1018 carbon), cured underwater (psi)	100

Pipe Repair Pressure Strength Performance:

¾" diameter Aluminum (2024-T6) pipe with wall thickness of 0.125"	Repair hole diameter 0.052" Cured underwater	700psi
¾" diameter Aluminum (2024-T6) pipe with wall thickness of 0.125"	Repair hole diameter 0.040" Cured in air	700psi
¾" diameter Copper pipe (75-15) with wall thickness of 0.125"	Repair hole diameter 0.040" Cured in air	800psi
¾" diameter Copper pipe (75-15) with wall thickness of 0.125"	Repair hole diameter 0.052" Cured underwater	800psi

Repair point was properly prepared with 150 grit sandpaper. Resin was applied using NSR Applicator tabs. Resin was cured using NSR light unit. Water pressure was maintained for more than 1minute. Test stopped at noted pressure with no failure.

Additional Typical Properties of Cured Material:

Electrical Properties	Insulator
Resistance to solvents	Good
Temperature Resistance (°F)	-65 to 300

Directions for use:
Syringe cap twists on and off for multiple uses of resin. The product is light sensitive and exposure to daylight will initiate curing process. When cured in an open-air (oxygen) environment, a slightly tacky surface will result. **Use of North Sea Resins® (NSR) applicator tabs are recommended for applications that prefer a tack-free surface**. A light sanding with 150 grit sandpaper is recommended prior to application of the resin. For optimal adhesion, the surface should be clean of dust and dirt. An important consideration is the resin will cure-on-command only if the appropriate light reaches the resin.

1. Pipe with pin hole. Relieve pressure. Surface can be wet or dry.

2. Clean/roughen area with 150 grit sandpaper.

3. Cut Applicator Tab to desired size. Apply resin to NSR Tab.

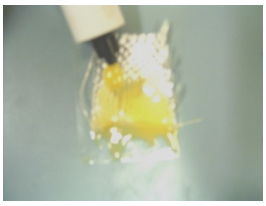
4. Using NSR Tab, apply gentle pressure.

5. Shine NSR High Intensity Light directly on the applicator tab/ resin for 30 seconds or until fully cured.

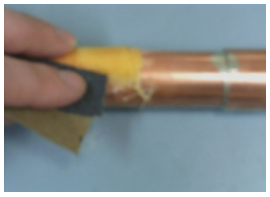
6. Remove NSR Tab. Completed repair. Note resin covers an area larger than the actual hole.

For larger holes (1/4" or greater) use of fiberglass mesh is recommended. Lay fiberglass mesh on NSR Applicator Tab. Apply resin to mesh material so it is fully moist. Follow steps 4& 5 from above. Apply a second coat of resin on top of mesh to insure a strong repair. **Sand off any fiberglass strands. Do not pull.**

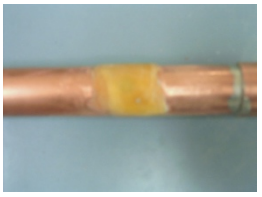
1. Quarter inch hole.



2. Apply resin to tab/mesh until fully moist.



3. Sand fibers.



4. Finished repair.

Storage and Shelf Life:
This product is light sensitive. Store in original container. Store product at 60-80°F or refrigerate for maximum shelf life.

Shelf life is 24 months when stored at 60-80°F

Precautionary Information:
Refer to Material Safety Data Sheet for health and safety information before using this product.

Important Notes:
Data contained herein are furnished for information only and are believed to be reliable. Due to the variety of factors that can affect the use and performance of a North Sea Resins® (NSR) product, some of which are uniquely within the user's knowledge and control, user is responsible for determining whether the NSR product is fit for a particular purpose and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. NSR makes no warranties, expressed or implied, including but not limited to, any implied warranty of merchantability or fitness for a particular purpose.

If NSR product is proved to be defective, the exclusive remedy, at NSR's option, shall be to refund the purchase price of or to repair or replace the defective NSR product. NSR disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of NSR products. NSR specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.