Technical Datasheet

AR 870

Acrylate gel injection resin

Description

AR 870 is designed for leak sealing in concrete structures. Hydrophilic in nature, it is a multi-component system developed using an advanced non-toxic aqueous solution of multifunctional acrylate and methacrylate monomers. The components include the AR 870 resin, TEA, SP and water. The monomers are reacted in the presence of water and the previously listed additives to produce various elastomeric gel consistencies. In wet or dry conditions the weight of gel increases or decreases in a reversible manner.

AR 870	Solution of acrylate and methacrylate monomers
Primeset TEA	Liquid activator to AR 870 resin side to vary the set time
Primeset SP	Powder initiator added to water side

Primary Applications

- Water treatment tanks
- Below-grade concrete walls
- Tunnels
- Elevator service pits

Advantages

- Swells in the presence of water
- Penetrates easily into cracks and joints—very low viscosity
- Suitable for sealing leaks in concrete structures
- Great adhesion to concrete
- Variable set times over hydrophilic polyurethane gels
- Soap and water clean-up
- Not flammable or explosive
- Operates in the same equipment as acrylamide grouts

Packaging

AR 870	5 gallon pails & 55 gallon drums (acrylate / methacrylate monomers)
Primeset TEA	5 gallon pails (triethanolamine)
Primeset SP	5 gallon pails (sodium persulfate)

Technical information: Physical properties

Properties will vary depending upon site conditions, application method, mixing method and equipment, material temperature, and curing conditions.

Cured characteristics — 50% concentration	
Appearance	White flexible gel
Consistency	Soft silicone gel with excellent adhesiveness
Solubility	Insoluble in water, kerosene, gasoline
Permeability	Substantially impermeable to water (5x10-9 cm/sec) Stable in 100% humidity. Gel swells slightly in presence of water, marginal shrinkage occurs upon dehydration.
Chemical resistance	Resistant against bacteria, fungi, and chemicals found in sewer systems

Head Office: 2291 Plunkett Road, Conyers, GA 30012
T: 770-388-0626 F: 770-388-0936 W: www.primeresins.com E: info@primeresins.com
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Uncured	
AR 870	
Appearance	Amber in color
Density	9.25 lbs/gallon
Percent solids	39 - 41%
Specific gravity	1.11
Boiling point	200°F (93°C)
Solubility in water	100%
Toxicity	Very low toxicity (no certification program required)
Acute oral toxicity	LD50, 5000 mg/kg
Primeset SP—sodium persulfate	
Specific gravity	2.6
Solubility in water	43% by weight @ 25°C
PH	6.0 - 8.0
Primeset TEA - triethanolamine	Concentration 85%
Packaging 5 gal / 55 gal steel drum	
Specific gravity	1.10

Mix Ratio

When immersed in water the unconfined gel can absorb up to two times its own weight, expanding slightly. Humid conditions allow the gel to remain relatively constant. In the absence of water, the gel shrinks without cracking. These dimensional changes are reversible and do not degrade the gel.

AR 870 system may be treated as a 1:1 by volume two-component system after premixing AR 870 with Primeset TEA and premixing Primeset SP with water. These two premixes may then be mixed at a ratio of 1:1.

In order to prepare the “A” component, the AR 870 premix is made directly by adding TEA. The second premix (“B” component) is made with SP adding to water. These premixes may then be mixed 1:1.

AR 870 premix	- One gallon AR 870
	- TEA % addition to obtain desired set time (see chart)
Water premix	- One gallon of water
	- SP % addition (equal to TEA%) to obtain desired set time

TEA and SP additional levels for set times

The Primeset TEA and Primeset SP are added to the AR 870 and water respectively for the purpose of controlling the set time of the gel. This level should be kept between 1% and 4% of each tank's liquid weight depending upon the set time desired. The set time is influenced by a number of factors, including TEA/SP concentration, water dilution level and temperatures. The following chart provides expected set times for TEA/SP addition levels at various water dilutions and temperatures.

After determining the desired dilution and set time, the premix formulations can be finalized and prepared. In order to make the premixes you will need appropriate size plastic mixing containers, a mixer, a scale and appropriate amounts of AR 870, TEA and SP. It will also be useful to know the following:

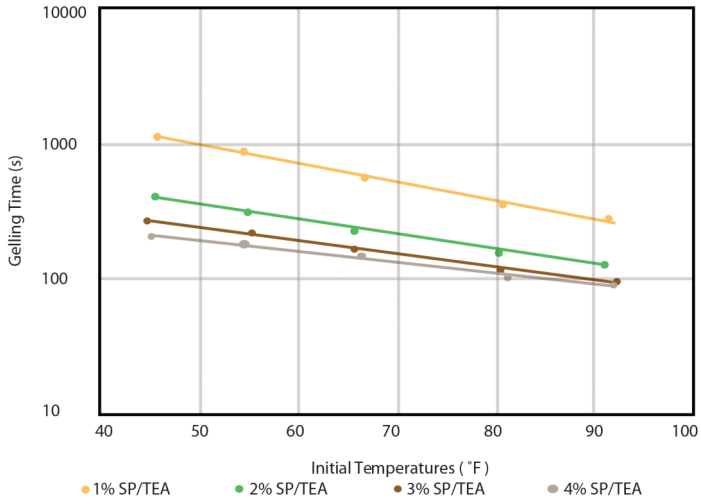
- 1 gallon of AR 870 weighs 9.25 lbs
- 1 gallon of water weighs 8.34 lbs

Material Preparation

The AR 870 premix is prepared by first adding 10 gallons of AR 870 to the mixing tank. While you are mixing, add 1.85 pounds of TEA and thoroughly mix – completing the AR 870 premix preparation. The water/SP premix is prepared by adding 10 gallons of water to a second plastic mixing tank. The SP is a white crystal and dissolves in the water readily. While mixing you should add 1.67 lbs of SP to the water and continue to mix until the SP is fully dissolved – completing the water/SP premix. The AR 870 premix and water/SP premix can now be mixed 1:1 obtaining a soft silicone consistency setting up in 60 seconds at 72°F (22°C).

Final Check

Before final 1:1 mixing we recommend mixing a few ounces of AR 870/TEA and water/SP premix to confirm gelling in the desired time frame. If the gelling time needs to be shortened, using the chart as a guide, additional TEA and SP may be added to shorten the desired set time. If the set time is too fast then, use the chart as a guide. Note that equal dilutions are required on the AR 870 and water/ SP premix. We recommend only preparing the amount of premix that will be used immediately. However, the AR 870 premix is stable for 24 hours when kept cool, sealed and covered. The SP/water premix is stable for a few days when kept below 77°F (23°C).



Directions for use

Dispensing: AR 870 gel can be dispensed or injected using either a single-component pump or a dual-component fixed, all stainless steel ratio pump depending upon the application method of choice. In order to use a single-component pump the AR 870 and SP/water premixes must be thoroughly mixed at a 1:1 ratio. You should only mix as much material as you can use at the set time prepared. We suggest a longer set time be prepared when using a single component pump as this allows a greater working time. You must also allow time to flush out your pump before gelling or risk setting up your pump rendering it inoperable. DO NOT use pumps made of copper or aluminium. A two-component pump mixing system allows the use of shorter gel times. The AR 870 and Water/SP premixes are pumped separately through a mixer and then into the application area. The set time of the gel must allow complete penetration of the area, cleaning out of the mixing head/tube and possibly cleaning of the supply tube. An appropriate dual pump mixing machine must be selected which allows the pressure and flow rate for the application.

Directions For Use

Dispensing (cont.): The technical service personnel at Prime Resins can help you with the appropriate selection. Again, DO NOT use pumps made of copper or aluminium. Use all-stainless steel pumps with stainless fittings.

Accessory Products

Eco Flush, oakum, injection ports, Prime Plug, injection pumps.

Material Preparation: Store material overnight to precondition to 70-80°F (21-27°C) prior to use. Pre-mix B component prior to combining. Failure to properly pre-mix will result in uncured or improperly cured material.

Limitations: Cold temperatures will slow down reaction time and increase viscosity. Use at temperatures above 40°F (4°C). Material that is off ratio or not mixed thoroughly will not cure to full strength and may remain tacky.

Storage & Clean Up

Storage: Store in dry environment between 40 and 80°F (4-27°C). Shelf Life: 18 months from date of manufacture in unopened containers properly stored. Protect from moisture.

Clean Up: All equipment used should be thoroughly flushed with water prior to the gel time. This is of great importance for mixing equipment and pumps. Allowing the material to gel in a pump may result in the loss of the pump.

Handling

• Materials should be mixed or stored in stainless steel or plastic containers (polyethylene or polypropylene).
Warning: Prolonged exposure to UV, sunlight and elevated temperatures above 85°F will cause solidification of the product.
Warning: Do not let Primeset TEA and Primeset SP come into contact with one another prior to field mixing. A poisonous gas may result. Components should be stored separately from each other. We recommend shipping them separately to avoid inadvertent mixing in case of an accident.
Warning: Primeset TEA and Primeset SP are incompatible with aluminum. Do not use aluminum equipment, pump components, mixing containers or utensils.
Warning: Clean off of skin with soap and water immediately.

Environmental Protection

Cured material is environmentally safe. Dispose of in accordance to appropriate regulations. Clean up any spilled catalyzed liquid material and dispose of according to local, state and federal regulations.

Shipping

AR 870: Non hazardous / motor freight class 60
TEA (DOT): Not DOT regulated
SP (IMO): UN / NA#: UN-1505
Hazard class 5.1 (oxidizer). Packing group III

Health & Safety

Safety: TEA is an amine and SP is a strong oxidizer. They may cause severe burns upon skin contact for any length of time. Use OSHA-approved personal protective equipment (PPE), including safety glasses, gloves and confined space equipment/procedures if applicable. Avoid skin contact; do not ingest. See SDS for complete safety precautions. For professional use only.

First Aid

Eye Contact: Immediately flush with large amounts of water. Seek medical attention. **Inhalation:** Move to fresh air if symptoms occur. If breathing is difficult, seek medical attention. **Ingestion:** Seek medical attention immediately. **Skin Contact:** Wipe off contaminated area and wash with soap and water immediately.

Manufacturing

Products manufactured by Prime Resins, Inc. in U.S.A. under strict quality assurance practices at our Conyers, GA plant.

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