DE NEEF® AC-400®

Acrylate Chemical Grout Resin

Product Description

AC-400 Chemical Grout is an acrylamide free acrylate monomer system sealant designed, for water control during tunneling operations, for curtain grouting, and for excavatable soil consolidation in situations where low tensile and compressive strengths can be tolerated. AC-400 can also be used for controlling infiltration in mainline and lateral sewer joints.

Packaging & Handling

AC-400 is used with SP-200 (sodium persulfate) and TE-300 (triethanolamine). Available in 5 gallon drums (50 lbs) Sold as a kit of 3 x 5 gallon drums (150 lbs total) with 1gallon (10 lbs) TE-300 and 10 lbs SP-200.

WARNINGS:

- Do not let SP-200 and TE-300 come into contact with each other prior to field mixing. The reaction is exothermic (heat producing) and may cause fire.
- Store SP-200 and TE-300 separated from each other, at 40ºF-80ºF.
- TE-300 and SP-200 are incompatible with aluminum. Do not use aluminum equipment in the presence of TE-300 and SP-200.
- Prolonged exposure to U.V., sunlight and elevated temperatures above 85ºF, will cause solidification of the product.

Applications

- Water control in tunneling
- Curtain grouting
- Soil support for excavation
- Mainline and lateral sewer grouting

Product Advantages

- Acrylamide free
- Pumps without modification to existing grouting equipment
- Extremely low viscosity grout (1-3 cPs)
- Very low permeability (5x10-9 cm/sec)
- Provided in liquid form (40% solids)
- No dust toxicity hazard
- Not flammable or explosive

Properties

AC-400 RESIN	
Appearance	Straw yellow liquid
Density	9.8 lbs/gal
Percent solids	39-41%
Specific Gravity	1.2
Boiling Point	200°F (93°C)
Solubility in water	100%
Toxicity	Very low toxicity (no certification program required)
Acute Oral Toxicity	LD_{50} 5000 mg/kg

AC-400 SOLUTION	
Viscosity	1-3 cps
Density	8.6 lbs/gal (1.04 mg/ml)
pH	6.5-7.5
Stability	3 days catalyzed

AC-400 CURED
Appearance: White, flexible gel
Solubility: Insoluble in water, kerosene, gasoline, Gel swells slightly in presence of water
Permeability: Substantially impermeable to water ($5x10^{-9}$ cm/sec) Stable in 100% humidity. Can dehydrate in dry conditions
Chemical Resistance; Resistant against bacteria, fungi, and chemicals found in sewer systems

Note: The data shown above reflects typical results based on laboratory testing und controlled conditions. Reasonable variations from the data shown above may result.

Installation Guidelines

A chemical grout will result from mixing the following components:

GROUT TANK. AC-400, TE-300, and water

SP TANK SP-200 and water

When these components are properly mixed and brought together, the resulting chemical grout will form an impermeable, durable. The AC-400 chemical grout has a variable gel time from 5 seconds to 1 hour to handle most sealing conditions. The viscosity of a 12 percent solution of the chemical grout shall not be more than 1-3 cps depending on temperature.

Mixing Instructions

GROUT TANK should first be filled with 15 gallons water, then 15 gallons (3 drums) of AC-400 Grout should be added. Add 1 gal (one jug=1 gal= 10 lbs) of TE-300. Mix well.

SP TANK should be filled with 30 gallons water, then add 10 lbs. SP-200 (1 pail= 10 lbs). Mix well.

CAUTION: AC-400 Acrylate Chemical Grout, TE-300 (Triethanolamine) and SP-200 (Sodium Persulfate) are toxic. Workers handling these chemicals must wear rubber gloves, goggles and waterproof shoes.

For Curtain Grouting Applications

The following typical formulation may be used in the field at 15ºC (59ºF) to give APPROXIMATELY 30 MINUTES GEL TIME:

GROUT TANK	WT%	POUNDS	GALLONS
Water	19	95	11.5
AC-400 (40% solution)	30	147	15.0
TE-300 Triethanolamine (85%)	0.5	2.5	0.25
KF-500 Potassium Ferricyanide (10% Solution)	0.5	2.5	0.30
SP TANK			
Water	49.5	245.2	29.7

GROUT TANK	WT%	POUNDS	GALLONS
SP-200 Sodium Persulfate	0.5	2.5	
TOTAL	100.0	494.7	56.8

KF-500 is a retarder for AC-400 grouting applications. It is packaged as 4 oz. of Potassium Ferricyanide powder, which should be diluted with 36 ounces water to make a 10% solution. The solution as mixed provides 0.5% KF-500 as shown in the Curtain Grouting Application above.

Other formulations are available for extended gel times. Contact DE NEEF® Technical Services.

TYPICAL FORMULATIONS:

FOR SEWER SEALING APPLICATIONS

The following typical formulations may be used in the field at 15ºC (59ºF) to give APPROXIMATELY 60 SECONDS GEL TIME:

GROUT TANK	POUNDS	GALLONS
Water	125	15
AC-400 (40% solution)	150	15
TE-300 Triethanolamine (85%)	5	0.5
SP TANK		
Water	250	30
SP-200 Sodium Persulfate	5	
TOTAL	535	60*

*The 1/2 gallon of TE-300 and 5 lbs of SP-200 offset each other in volume and were not figured in the total gallons.

The following typical formulation may be used in the field at 15ºC (59ºF) to give APPROXIMATELY 20 SECONDS GEL TIME:

GROUT TANK	POUNDS	GALLONS
Water	125	15
AC-400 (40% solution)	150	15
TE-300 Triethanolamine (85%)	10	1

GROUT TANK	POUNDS	GALLONS
SP TANK		
Water	250	30
SP-200 Sodium Persulfate	10	
TOTAL	535	60*

*The 1/2 gallon of TE-300 and 5 lbs of SP-200 offset each other in volume and were not figured in the total gallons.

Set times will vary depending on temperature and humidity. Always preform a cup test to determine the actual gel time of each mixed batch. Additional SP-200 may be added to shorten the gel time. If grout is left in tank overnight, always perform a new cup test before beginning next days grouting.

Health and Safety

Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest. Refer to Safety Data Sheet for detailed safety precautions.

AC-400 Grout consists of a mixture of low toxicity acrylate monomers with a small amount of methylenebisacrylamide (MBA) cross linker which is not neurotoxic.

AC-400 ACRYLATE GROUT is not neurotoxic and does not present a dust toxicity hazard.

Limitations

This product is not intended to fill large void spaces.

AC-400 GROUT exhibits only 1/100 the toxic exposure of acrylamide grout; however, basic safety procedures must be used when handling the grout. Workers handling the grout must wear rubber gloves, goggles and waterproof shoes. If the grout comes in contact with the with the skin, it should be washed off immediately with water. The grouting truck must be ventilated when mixing AC-400 Grout. Avoid prolonged breathing of the grout vapor. Use a blower and flexible duct to ventilate the bottom of manholes being grouted. In case of contact with the eyes, flush with water for 15 minutes. If swallowed, call a physician immediately. AC-400 Acrylate Grout is not neurotoxic and does not present a dust toxicity hazard.

Read all SDS before using this product.

IN THE EVENT OF AN EMERGENCY CALL:

CHEMTREC 800-424-9300.

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