

TECHNICAL INFORMATION

ACRYLATES & ACRYLICS

PRODUCT NAME

AC-400[®] Acrylate Chemical Grout
Acrylate resin

MANUFACTURER

De Neef Construction Chemicals, Inc.
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DESCRIPTION

AC-400[®] Acrylate Chemical Grout is a patented, new monomer system sealant designed for controlling infiltration in sewer joints, for water control during tunneling operations and for curtain grouting. **AC-400 Grout** contains no acrylamide monomer.

APPROPRIATE APPLICATIONS

- Mainline and lateral sewer grouting
- Curtain grouting
- Water control in tunneling operations

ADVANTAGES

- Contains only 1/100 the toxic exposure of acrylamide grout and 1/50 the toxic exposure of NMA .
- Operates in existing chemical grout equipment currently used to place acrylamide grout with no modification requirements.
- Provides low viscosity grout (1-3 cps) that penetrates the sewer joint and the soil around the joint.
- Exhibits very low permeability (5×10^{-9} cm/sec) for long term infiltration control. Available in liquid form (40% solids) and presents no dust toxicity hazard.
- Not flammable or explosive.
- Because of the low toxicity level of AC-400 Grout, no certification program is required to use this grouting system.

PACKAGING

Available in 15 gallon drums

PHYSICAL PROPERTIES

UNCURED

AC-400 [®] CHEMICAL GROUT	(added strength)
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 [®] GROUTING SOLUTION	(all data for 12% solids solution)
Viscosity	1-3 cps
Density	8.6 lbs/gal (1.04 mg/ml)
PH	6.5 - 7.5
Stability	3 days catalyzed
SP 200 (SODIUM PERSULFATE (SP))	
Specific Gravity	2.6
Solubility in water	43% by wt. @ 25° C
PH	6.0-8.0
TE 300 (TRIETHANOLAMINE (TEA))	Concentration 85% Packaging 5 gal / 55 gal steel drum
KF 500 (Potassium Ferricyanide (KFe))	10% Solution, retarder

CURED

Appearance	White, flexible gel
Solubility	Insoluble in water, kerosene, gasoline, Gel swells slightly in presence of water
Permeability	Substantially impermeable to water (5×10^{-9} cm/sec) Stable in 100% humidity Can dehydrate in dry conditions
Chemical Resistance	Resistant against bacteria, fungi, and chemicals found in sewer systems

The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown above may

LIMITATIONS

This product is not intended to fill large void spaces

SURFACE PREPARATION

Refer to De Neef Surface Preparation Guidelines for more details.

INSTALLATION PROCEDURES

CHEMICAL GROUT SPECIFICATION

A chemical grout shall result on mixing the following components:

1. Chemical Grout monomer, Triethanolamine (TEA) catalyst & water
2. Sodium Persulfate (SP) initiator & water

When these components are properly mixed and brought together at a sewer joint, the resulting chemical grout shall seal the joint and form an impermeable, durable gel in the soil around the joint.

The chemical grout shall have a variable gel time from 5 seconds to 1 hour to handle all sealing conditions. The viscosity of a 12 percent solution of the chemical grout shall not be more than 1 - 3 cps (water equals 1 cps) depending on temperature. Anyone handling these chemicals must wear rubber gloves, goggles and waterproof shoes.

TYPICAL FORMULATIONS:

For Sewer Sealing Applications

The following typical formulations may be used in the field at 15°C (59°F) to give approximately 60 seconds gel time:

Grout Tank	Gallons 3 vol. Water	Gallon 1 vol. water
Water	15.0 gal	
AC-400 (40% solution)	15.0 gal	30.0 gal
TE 300 Triethanolamine (85%)	.5 gal	.5 gal
SP TANK		
Water	30.0 gal	30.0 gal
SP 200 Sodium Persulfate	5.0 lbs	5.0 lbs
	60.0 gal *	60.0 gal *

- The ½ gallon of TE300 and the 5 lbs of SP200 offset each other in volume and were not figured in the total gallons.

The following typical formulation may be used in the field at 15°C (59°F) to give approximately 20 seconds gel time:

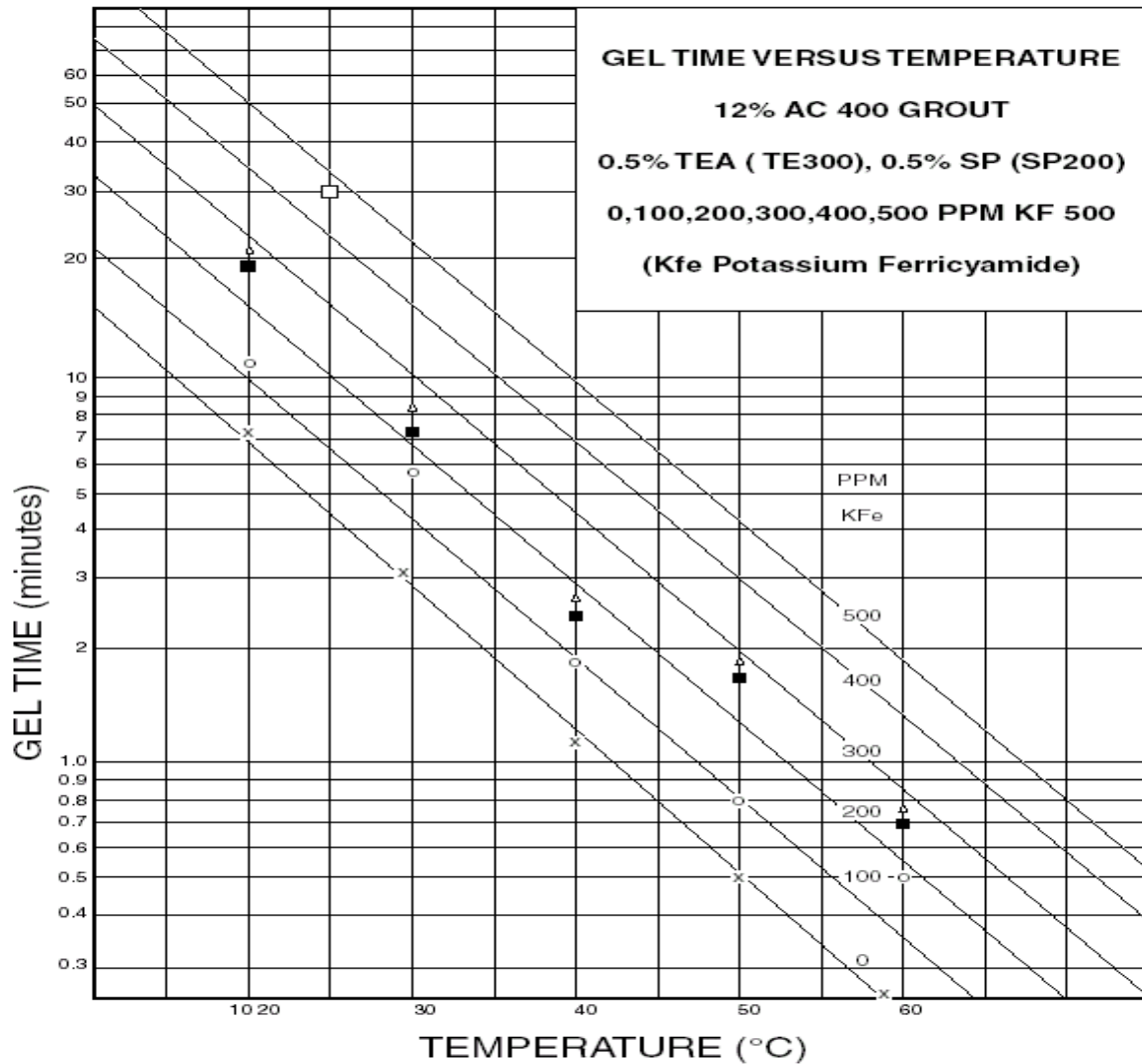
Grout Tank	Pounds	Gallons
Water	125	15
AC-400 (40% solution)	150	15
TE 300 Triethanolamine (85%)	10	1
SP TANK		
Water	250	30
SP 200 Sodium Persulfate	10	10 lbs
	545 lbs	60 gallons*

* The one gallon of TE300 and 10 lbs of SP200 offset each other in volume and were not figured in the total gallons.

The GROUT and SP tanks should first be half filled with water, then 15 gallons of **AC-400® Grout** should be pumped into the grout tank and one gallon of TE 300 added, stirred and filled to within 9" of the top with water. SP 200 and TE 300 should be added in equal amounts to decrease gel time. NASSCO specifications should be followed to pressure test and seal sewer joints with **AC-400® Grout**.

The chemical grout shall be **AC-400® Acrylate Chemical Grout** or approved equal with LD₅₀ at 5000 mg per kilograms of body weight of rats. Municipalities and contractors using **AC-400® Grout** shall be instructed in the safe handling of the grout, TEA, SP and other grouting chemicals.

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.



TYPICAL FORMULATIONS (Curtain Grouting): For Civil Engineering Applications

For civil engineering applications that require 5 to 30 minutes gel time, the above chart may be referenced to determine the amount of KF 500 required. For 30 minute gel time at 15°C (60°F), 500 ppm of KF 500 is used with 0.5% TE 500 and 0.5% SP 200 as defined in the following formulation:

STORAGE & HANDLING

WARNING: PROLONGED EXPOSURE TO U.V., SUNLIGHT AND ELEVATED TEMPERATURES ABOVE 85°F, WILL CAUSE SOLIDIFICATION OF THE PRODUCT.

<u>Grout Tank</u>	<u>Weight %</u>	<u>Pounds</u>	<u>Gallons</u>
Water	19.0%	95	11.40
AC-400 (40% solution)	30.0%	150	15.00
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%	247.5	2.50
SP 200 Sodium Persulfate	0.5%	2.5	2.5 (lbs)
	100.0%	500.0	57.0 gal.

PRECAUTIONS

Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest. Refer to Material Safety Data Sheet for detailed safety precautions. **AC-400[®] Grout** consists of a mixture of low toxicity acrylate monomers with a small amount of methylenbisacrylamide (MBA) cross linker which is not neurotoxic. Since **AC-400[®] Acrylate Grout** is not neurotoxic and does not present a dust toxicity hazard, the new chemical grout is considered to have 1/100 the toxic exposure of acrylamide grout as follows:

Toxicity Exposure Factor

- 1/5 amount of low toxicity acrylate monomers in **AC-400[®] Acrylate Chemical Grout**.
- 1/2 Monomer toxicity (MBA has an LD₅₀ of 390 mg/kg; acrylamide monomer has LD₅₀ of 200 mg/kg).
- 1/5 MBA is not neurotoxic..."did not display neurotoxicity at dose schedule and conditions employed ." (MRI Project No. 4308-N for OTS May, 1979, page 287).
- **AC-400[®] Acrylate Chemical Grout** is a liquid, therefore, any dust toxicity is eliminated.

SAFETY INFORMATION

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 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.

**In the event of an EMERGENCY call:
CHEM-TREC 800-424-9300.**

WARRANTY INFORMATION

De Neef Construction Chemicals, Inc. products are warranted under the policy set forth under the WARRANTY section of the De Neef Construction Chemicals Inc., product catalog. Warranty information can also be obtained via the De Neef Construction Chemicals Inc. website at www.deneef.com, by calling 713-896-0123 or toll free at 1-800-732-0166.

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