



CHEMICAL GROUTING

FlexaTrac™



FlexaTrac can be used as a curing agent and formulated into liquid hardeners for chemical grouting and soil stabilization during drilling, tunneling and excavation. These silicate solutions contain water, sodium silicate and hardening agents that gel the solution together, analogous to natural sandstone.

TYPES OF SETTING/GELLING AGENTS

Organic curing agents

Organic curing agents such as FlexaTrac-DME-100 or FlexaTrac-AGS-100 should be used in a starting point formulation. Since these products have a longer setting time, the silicate and setting agent can be pre-mixed and pumped as one system.

Inorganic curing agents

Inorganic curing agents such as calcium chloride form strong bonds, but settling times are hard to manage due to a fast reaction time.

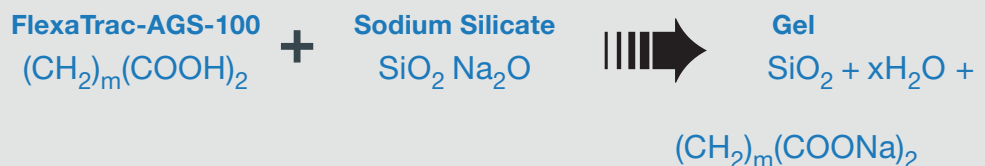
FLEXATRAC BLENDING GUIDELINES FOR CHEMICAL GROUTING

Please consider the following when using FlexaTrac* as a curing agent for chemical grouting:

- The best starting point for a silicate solution is 5-15 cp, which is 20-40% sodium silicate in water. When using FlexaTrac for grouting, be mindful of the type of silicate used. Silicates vary by percentage of solid or water, the type of Cation – Na/K and the initial viscosity.
- The pH of the solution should be between 5-10 to form a gel with FlexaTrac as a hardening agent.
- All gelling or setting times are impacted with temperature. The rate of acid formation in the solution is controlled by the quantity of hardener added rather than the dilution of the sodium silicate solution.
- Allow 40-60 minutes for an ideal gel time. The viscosity of the solution should remain under 100 cp until three minutes before the ideal gel time is reached. Please follow these guidelines to ensure the mechanical strength of the grout.
- A 1:1 molar ratio is typically needed, but the ratio ultimately depends on the amount of polymerized silica present in the solution. If 75 mol% sodium silicate is already in polymerized form, for instance, only 25 mol% of hardener is needed to then polymerize the remaining 25 mol% of sodium silicate.

*Loading varies depending upon geological composition.

Avg. Molar mass (g/mol)	
FlexaTrac-DME-100	161
FlexaTrac-AGS-100	133



KEY ATTRIBUTES

- Mild to no odor – colorless liquid
- Excellent HSE profile and no labeling concerns
- Readily biodegradable

KEY APPLICATIONS

- Reduces construction cost and time
- Allows for building on previously unstable soil
- Provides controlled gelation rates
- Water miscible
- Penetrates most soil structures
- High ease of use – no special handling required



CHEMICAL PROPERTIES

	FlexaTrac-DME-100	FlexaTrac-DME-200	FlexaTrac-DMS-400	FlexaTrac-DMG-500	FlexaTrac-DMA-600
Dimethyl Succinate (wt. %)	15-25	1.0 max.	98.5 min.	1.0 max.	1.0 max.
Dimethyl Glutarate (wt. %)	59-73	72-76	1.0 max.	99.0 min.	1.0 max.
Dimethyl Adipate (wt. %)	10-20	23-27	1.0 max.	1.0 max.	99.0 min.
Acid content max. (mg KOH/g)	0.3	0.1	0.1	0.1	0.1
Water content max. (wt. %)	0.1	0.1	0.1	0.1	0.1
Methanol content max. (wt. %)	0.2	0.1	0.1	0.1	0.1
Color max. (APHA)	15	15	15	15	15

PHYSICAL PROPERTIES

Molecular weight	159	163	146	160	174
Distillation range (°C)	211-214	203-220	192-201	203-214	216-230
Density at 25°C (#/gal)	9.07	8.98	9.28	9.03	8.82
Specific gravity at 25°C	1.09	1.076	1.112	1.082	1.057
Viscosity at 25°C (cps)	2.64	3.31	3.91	3.66	4.33
Solubility in water (wt. %)	5.6	4.3	10.3	5.1	2.1
Water solubility in DMEs (wt. %)	3.3	3.2	4.0	2.9	2.9
Freezing point (°C)	-38	-42.4	16.8	-37.5	9.4
Flash point (°C)	98	108	94	107	124
Surface tension (dynes/cm)	35.3	35	34.6	35.6	35.1
Vapor pressure at 25°C (torr)	0.06	0.04	0.12	0.05	0.01
Boiling point (°C)	211-214	203-220	192-201	203-214	216-230
KB values	38.6	44.4	28.1	41.6	56.6

*NOTE: Product specifications are subject to change without notice. Please write or call us for our current product specifications.

About Ascend

Ascend Performance Materials is a global leader in the production of high-quality plastics, chemicals, and fibers. As the world's largest fully integrated manufacturer of nylon 6,6 resin, our manufacturing processes are vertically integrated, ensuring the highest level of quality and economies of scale. Ascend's specialty chemicals and blends of acids, amines and esters are used in a variety of applications and industries. We offer customized solutions through formulated products and superior technical support.

North America

1010 Travis Street, Suite 900
Houston, TX 77002
United States

+1 713 315 5700

Europe

Watson and Crick Hill Park
11, rue Granbonpré - Bâtiment H
B-1435 Mont-St-Guibert
Belgium

+32 10 60 8600

Asia

Unit 3602, Raffles City
No. 268, Xizang Road (M)
Shanghai, 200001
China

+86 21 6340 3300

inspiring everyday

ascendmaterials.com/specialtychemicals

Disclaimer of Warranty and Liability

NOTICE: Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Ascend Performance Materials Operations LLC makes no representations or warranties as to the completeness or accuracy thereof.

Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Ascend Performance Materials Operations LLC be responsible for damages of a nature whatsoever resulting from the use of or reliance upon information or the products to which information refers. Nothing contained herein is to be construed as a recommendation to use any product, equipment or formulation in conflict with any patent, and Ascend Performance Materials Operations LLC makes no representation of warranty, express or implied, that use thereof will not infringe any patent. No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to the information or the product to which the information refers.

©2019 Ascend Performance Materials Operations LLC. The Ascend Performance Materials mark and logos are trademarks or registered trademarks of Ascend Performance Materials Operations LLC.
Rev. 07/2019