

GAS/SPEC CS-2000 Specialty Amine

GAS/SPEC* CS-2000 is a methyldiethanolamine (MDEA)-based solvent formulated to provide deep removal of carbon dioxide (CO₂) from gas streams. GAS/SPEC CS-2000 provides enhanced formulation stability over previous product alternatives in the market. By eliminating the preferential component loss that leads up to a build up of impurities, it retains maximum CO₂ removal capacity with lower energy requirements, lower corrosion, and longer product life even under extreme conditions. This translates into lower operating costs and less maintenance.

* GAS/SPEC is a trademark and service mark of INEOS LLC.

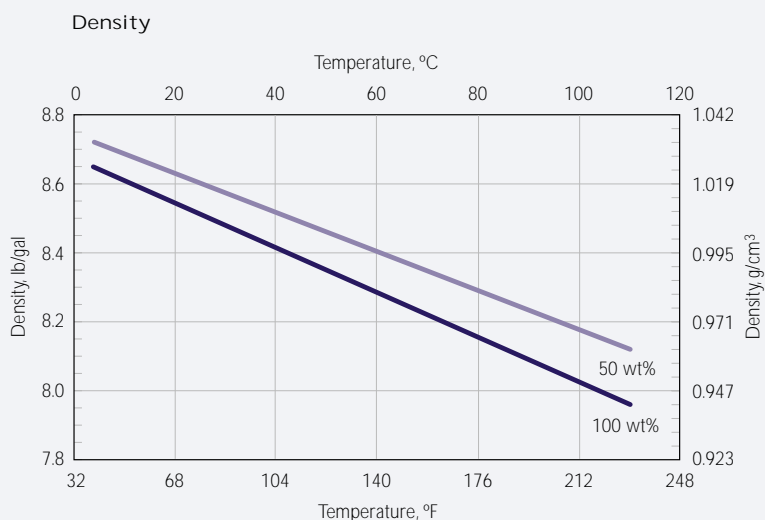
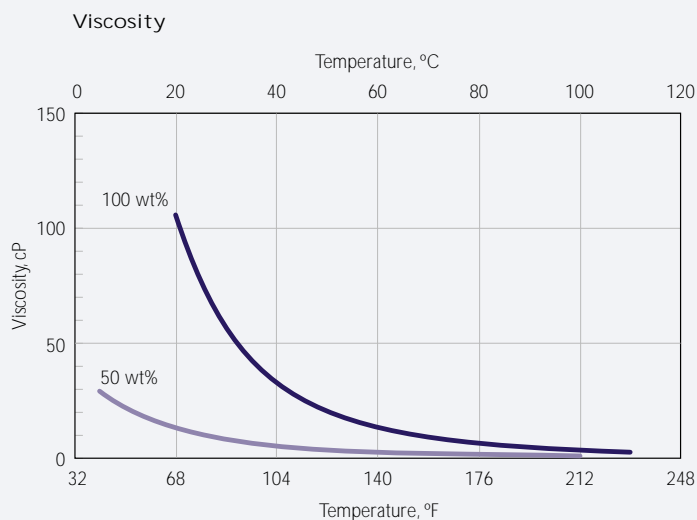
APPLICATIONS

- Ammonia Plants
- Bulk CO₂ Removal from Natural Gas
- Cryogenic Systems
- Hydrogen Plants
- Coal Seam Gas

PHYSICAL PROPERTIES ¹

Specific Gravity @ 25/25° C	_____	1.023
Boiling Point @ 760 mmHg	_____	156 °C
	_____	312 °F
Freezing Point (50 Wt%)	_____	< -6.7 °C
	_____	< 20 °F
Freezing Point (100 Wt%)	_____	-32.6 °C
	_____	-26.7 °F
Latent Heat of Vaporization @ normal boiling point	_____	182.8 Btu/lb
	_____	101.6 Cal/g
Flash Point (PMCC)	_____	None to boiling

¹GAS/SPEC CS-2000 concentrate. Typical properties, not to be construed as specifications



PRODUCT SERVICES

INEOS offers a broad line of services to our specialty amine customers, including:

- superior simulation capabilities
- troubleshooting consultations
- on-site start-up and optimization
- solvent analysis and interpretation
- local stocking & suppl.

MATERIALS OF CONSTRUCTION

The preferred material for storage of GAS/SPEC CS-2000 is 304L or 316L stainless steel. Carbon steel tanks are also satisfactory, although discoloration and iron in the amine may occur. Nitrogen padding of the tanks is recommended to prevent oxidation and discoloration of the amine during extended storage. The amine can also be stored in high-density polyethylene (HDPE) or polypropylene (HDPP).

Materials to avoid include:

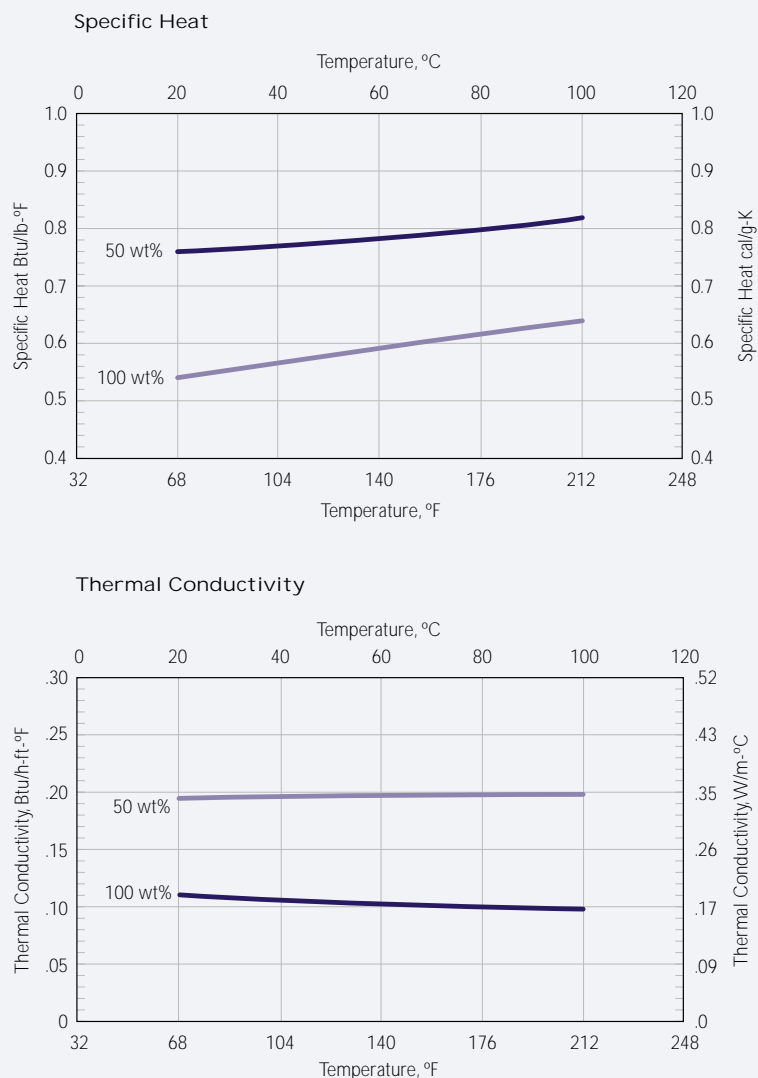
- Aluminum
- Copper
- Brass
- Copper alloy

STORAGE TEMPERATURE

- The recommended minimum temperature for storing and pumping 100% GAS/SPEC CS-2000 is 20 °F (-7 °C).
- Steam tracing and insulation may be required in cold weather.

HANDLING AND SAFETY

- GAS/SPEC CS-2000 can cause serious injury to the eyes and may result in permanent eye injury. If accidental contact with the eyes occurs, flush them thoroughly with water and seek medical attention.
- Single-dose oral toxicity of GAS/SPEC CS-2000 is low.
- Swallowing large amounts of GAS/SPEC CS-2000 may cause severe burns to the mouth, throat, and digestive tract. If accidental ingestion occurs seek medical attention.
- Accidental ingestion of small amounts of GAS/SPEC CS-2000 is not expected to cause injury.
- May cause irritation to the skin. Occasional brief contact with the skin should be washed off immediately and should have few adverse effects.
- If GAS/SPEC CS-2000 is heated or a mist produced, concentrations may be sufficient to cause irritation to the upper respiratory tract.
- Consult product Material Safety Data Sheet for more details.



The following precautions should be observed when the possibility of exposure exists:

- A safety shower and eyewash facility located nearby
- Chemical goggles
- Protective clothing, including chemically resistant gloves
- A well-ventilated work area

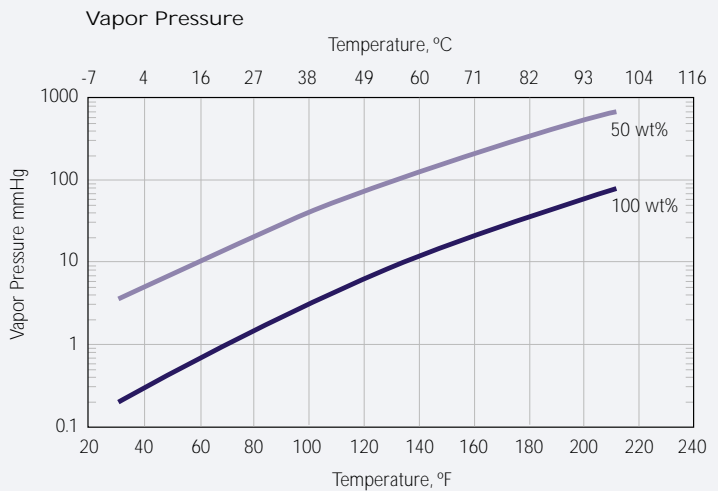
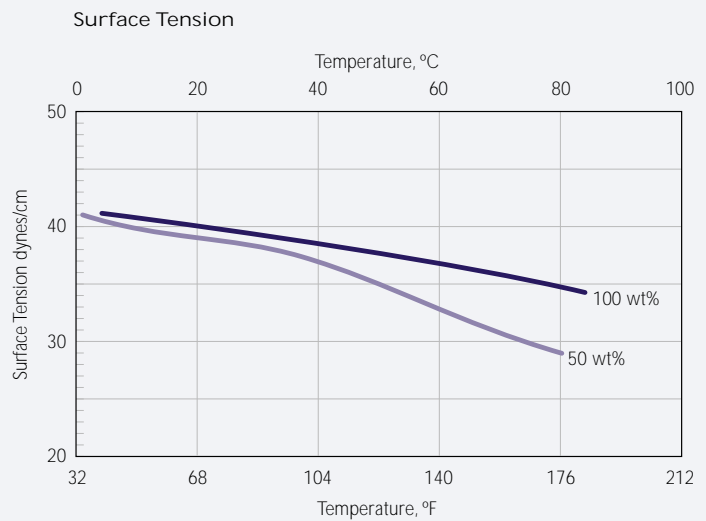
Accidental Release

- Clear non emergency personnel from area.
- PROTECT THE ENVIRONMENT: Keep out of sewers, storm drains, surface waters and soil.
- Contain spill if possible. Clean up with a non-combustible absorbent. Do not use sawdust.

REGULATORY

Regulatory requirements may vary for different locations. Contact your INEOS representative for more information.

- GAS/SPEC CS-2000 is not considered hazardous according to the guidelines of the U.S. Department of Transportation (DOT).
- GAS/SPEC CS-2000, as sold, contains no chemical subject to SARA Title III Section 313 supplier notification requirements.
- The export of this product is regulated under the provisions of the Chemical Weapons Convention.



GAS/SPEC

Since 1982, the GAS/SPEC name has represented a special focus on the products, technology and service to chemically remove acid gases from process streams. The GAS/SPEC business unit has been continuously headquartered in Houston, Texas, with its major technical facility in Freeport, Texas.

The family of specialty amines offered by the GAS/SPEC Technology Group, all based on MDEA technology, provides custom H₂S and CO₂ removal in amine treating operations. The GAS/SPEC products and technology are exclusively offered by INEOS LLC and its specialized distributors.

The GAS/SPEC Technology Group is dedicated to achieving the highest degree of customer satisfaction globally through the application of the best available technology through the supply of cost-effective products and services. Other companies offer MDEA based products, some even attempting to emulate GAS/SPEC with similar sounding names... But only products with the GAS/SPEC name bring you the formulations, technology and service you are used to.

INEOS

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