

GAS/SPEC

CS-1000

Specialty Amine

GAS/SPEC® CS-1000 is a methyldiethanolamine (MDEA) based solvent formulated to provide deep removal of carbon dioxide (CO₂) from gas processing applications. GAS/SPEC CS-1000 allows for greater CO₂ removal capacity with superior chemical stability, lower corrosion and longer product life under extreme conditions than MEA (monoethanolamine) or DEA (diethanolamine). GAS/SPEC CS-1000 solvent should be considered mainly for applications in which the treated gas CO₂ specification is less than 1000 ppmv. GAS/SPEC CS-1000 can be used to replace MDEA - Piperazine blends in all applications.

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

APPLICATIONS

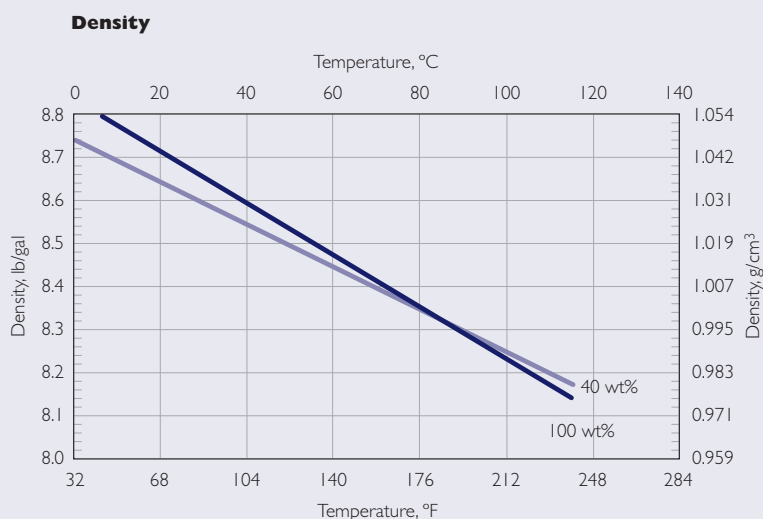
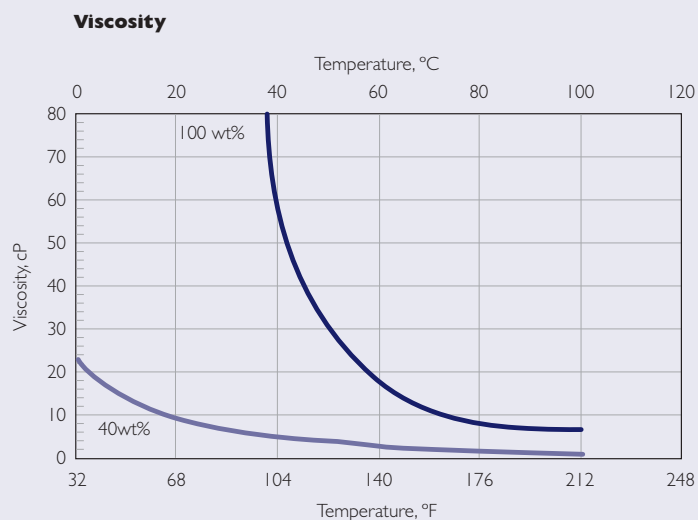
- Hydrogen Plants
- Ammonia Plants
- Cryogenic Systems
- Ethane Treating

PHYSICAL PROPERTIES ^{1,2}

Specific Gravity @ 25/25° C	_____	1.04
Boiling Point @ 760 mmHg	_____	102.9-169.2 °C
	_____	217.2-336.2 °F
Freezing Point (100 Wt%)	_____	< -25 °C
	_____	< -13 °F
Latent Heat of Vaporization @ normal boiling point	_____	445.0 Btu/lb
	_____	247.2 Cal/g
Flash Point (PMCC)	_____	None to boiling

¹GAS/SPEC CS-1000 concentrate. Typical properties, not to be construed as specifications

²100 wt% indicate solvent concentrate as sold, and not a water-free solvent



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 and supply

MATERIALS OF CONSTRUCTION

The preferred material for storage of GAS/SPEC CS-1000 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

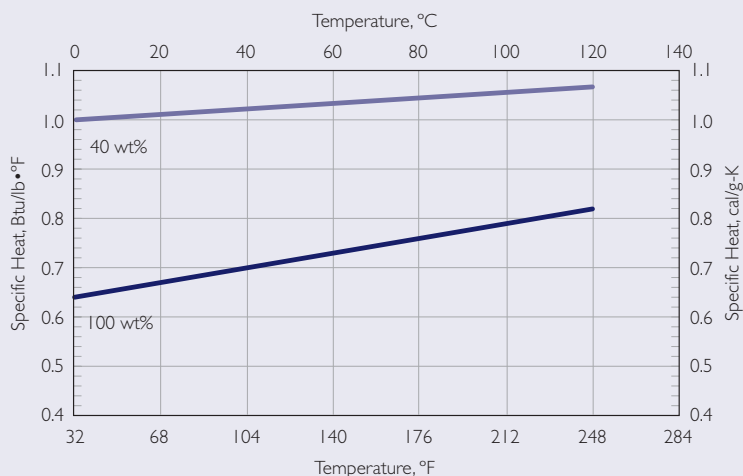
STORAGE TEMPERATURE

- The recommended minimum temperature for storing and pumping 100% GAS/SPEC CS-1000 is 20 °F (-7 °C).
- Steam tracing and insulation may be required in cold weather.

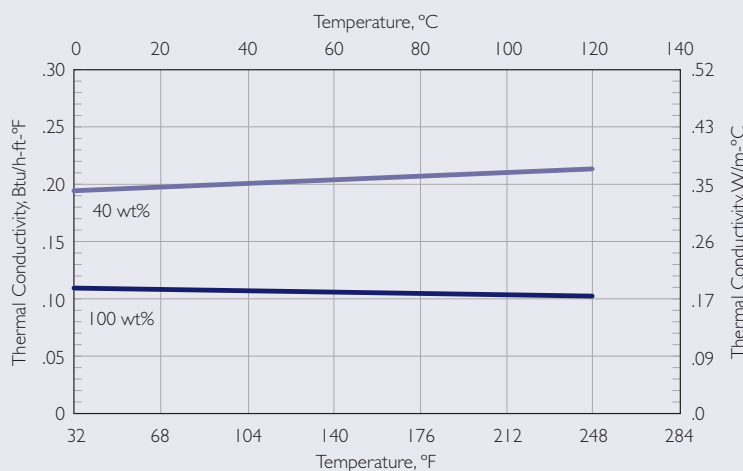
HANDLING AND SAFETY

- GAS/SPEC CS-1000 can cause serious injury to the eyes and may result in permanent eye damage. If accidental contact with the eyes occurs, flush eyes thoroughly for as long as possible with plenty of water and seek medical attention.
- Swallowing of GAS/SPEC CS-1000 may cause severe burns to the mouth, throat and digestive tract. May cause allergic respiratory reaction. People with asthma or other long-standing respiratory conditions should be protected from exposure to this product. In case of accidental ingestion, seek medical attention immediately.
- Brief contact may cause slight irritation to the skin. Occasional brief contact with the skin should be washed off immediately and should have little adverse effects. May cause allergic reaction in some individuals. Prolonged contact may result in severe irritation. Prolonged contact may also result in absorption in harmful amounts.

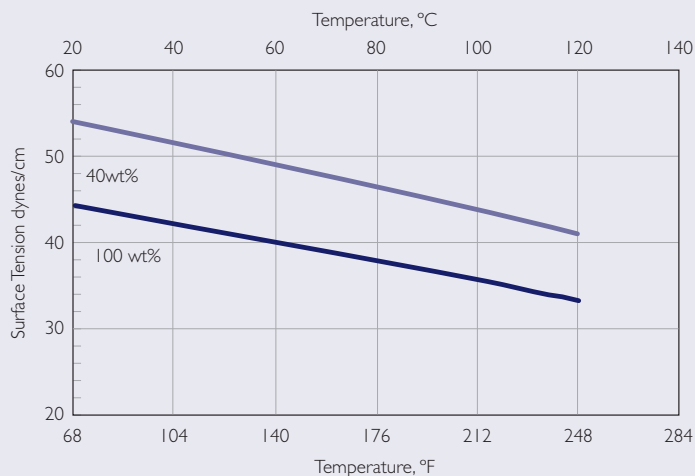
Specific Heat



Thermal Conductivity



Surface Tension



- 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

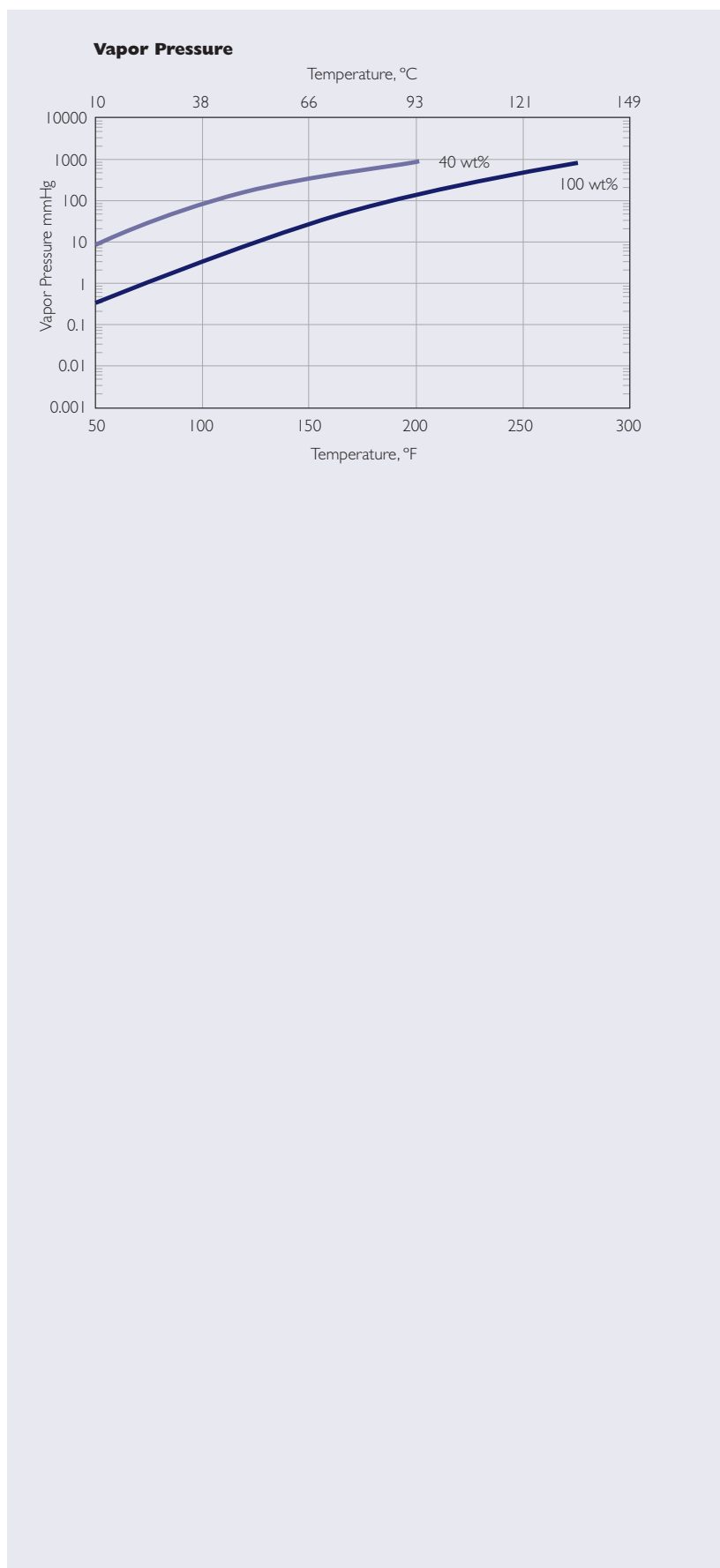
Accidental Release

- 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-1000 is corrosive to skin and is considered hazardous according to the guidelines of the US Department of Transportation (DOT).
- GAS/SPEC CS-1000, 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 LLC is a part of INEOS Oxide.

INEOS Oxide manufactures a full range of products based on its production of ethylene oxide.

INEOS Oxide

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