

# GAS/SPEC CS-3 Specialty Amine

GAS/SPEC® CS-3 specialty amine is specifically designed for near complete removal of H<sub>2</sub>S and moderate removal of CO<sub>2</sub> from gas or liquid streams. This solvent is ideal for gas treating applications where some CO<sub>2</sub> in the treated gas is desired. By allowing a portion of the CO<sub>2</sub> to remain, GAS/SPEC CS-3 can increase the treating capacity or reduce the energy costs of the amine system with significantly less corrosion than diethanolamine (DEA) or monoethanolamine (MEA).

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

## APPLICATIONS

- Natural Gas Treating
- Enhanced Oil Recovery
- Flash Regeneration CO<sub>2</sub> Removal
- Bulk CO<sub>2</sub> Removal
- LPG & NGL Treating

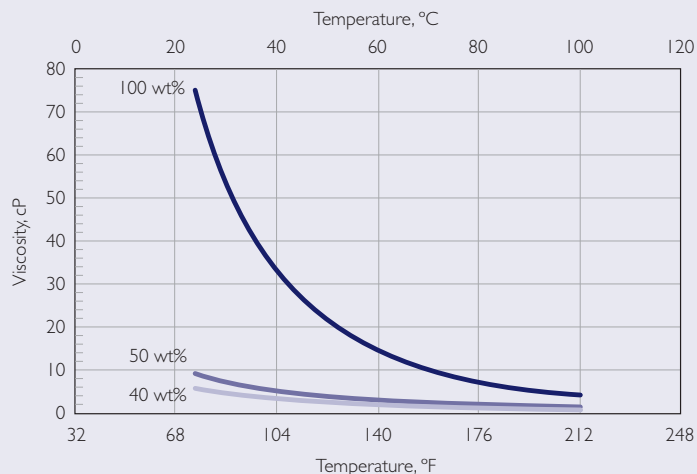
## PHYSICAL PROPERTIES <sup>1,2</sup>

|  |                            |
|--|----------------------------|
| Specific Gravity @ 25/25° C                        | 1.05                       |
| Boiling Point @ 760 mmHg                           | 200.1 °C<br>392.2 °F       |
| Freezing Point (50 Wt%)                            | -23.7 °C<br>-10.7 °F       |
| Freezing Point (100 Wt%)                           | -23.4 °C<br>-10.1 °F       |
| Latent Heat of Vaporization @ normal boiling point | 149.3 Btu/lb<br>82.9 Cal/g |
| Flash Point (PMCC)                                 | 162.8 °C<br>325.0 °F       |

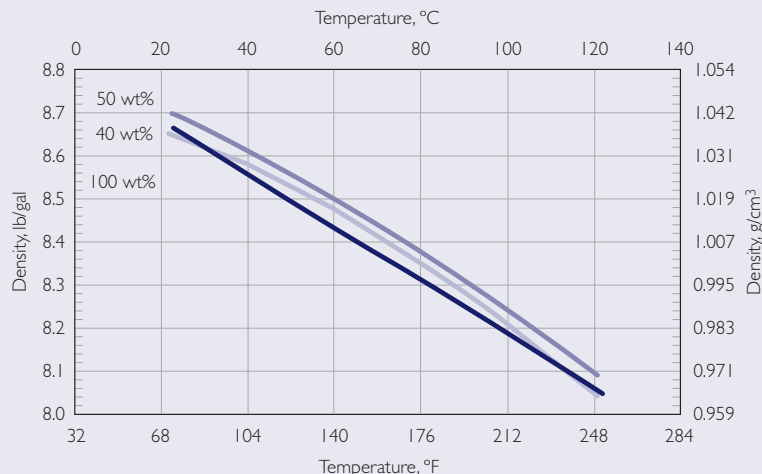
<sup>1</sup>GAS/SPEC CS-3 concentrate. Typical properties, not to be construed as specifications

<sup>2</sup>100 wt% indicate solvent concentrate as sold, and not a water-free solvent

### Viscosity



### Density



## 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-3 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

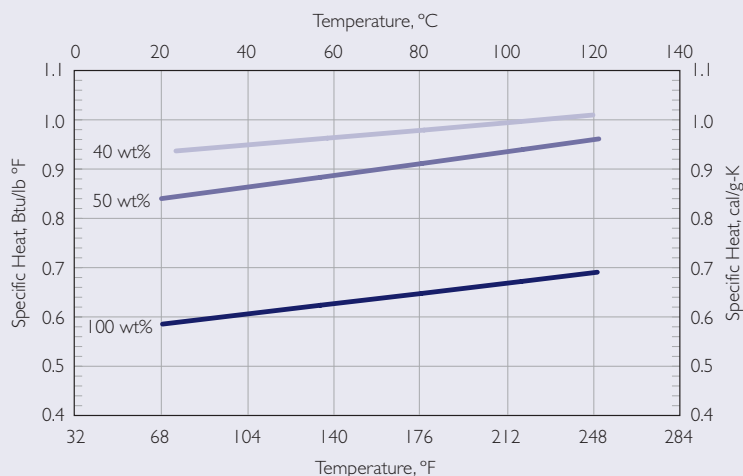
## STORAGE TEMPERATURE

- The recommended minimum temperature for storing and pumping 100% GAS/SPEC CS-3 is 20 °F (-7 °C).
- Dilution of GAS/SPEC CS-3 with a small amount of water will depress the freezing point and lower the viscosity for pumping.
- Steam tracing and insulation may be required in cold weather:

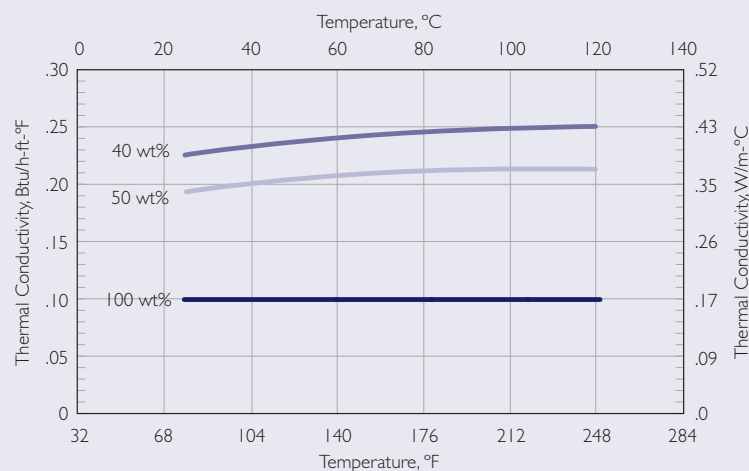
## HANDLING AND SAFETY

- GAS/SPEC CS-3 can cause serious injury to the eyes and may result in permanent eye damage. If accidental contact with the eyes occurs, flush them thoroughly with water and seek medical attention.
- Single dose oral toxicity of GAS/SPEC CS-3 is low.
- Swallowing large amounts of GAS/SPEC CS-3 may cause severe burns to the mouth, throat, and digestive tract. This product contains components that may affect the liver and kidneys.
- May cause irritation to the skin. Occasional brief contact with the skin should be washed off immediately.
- If GAS/SPEC CS-3 is heated or a mist produced, concentrations may be sufficient to cause irritation to upper respiratory tract.
- Consult product Material Safety Data Sheet for more details.

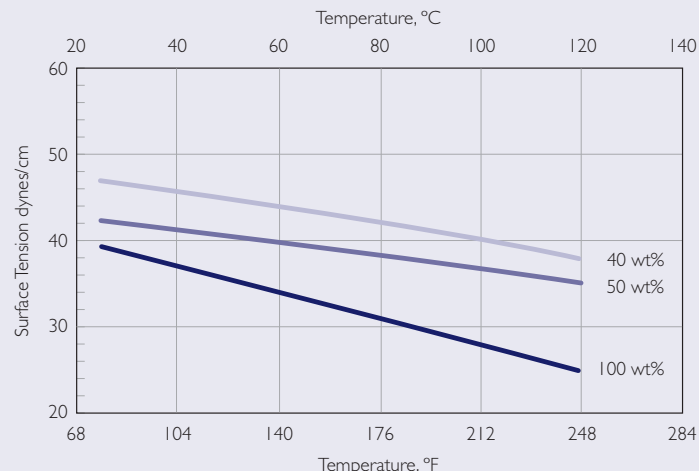
### Specific Heat



### Thermal Conductivity



### Surface Tension



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

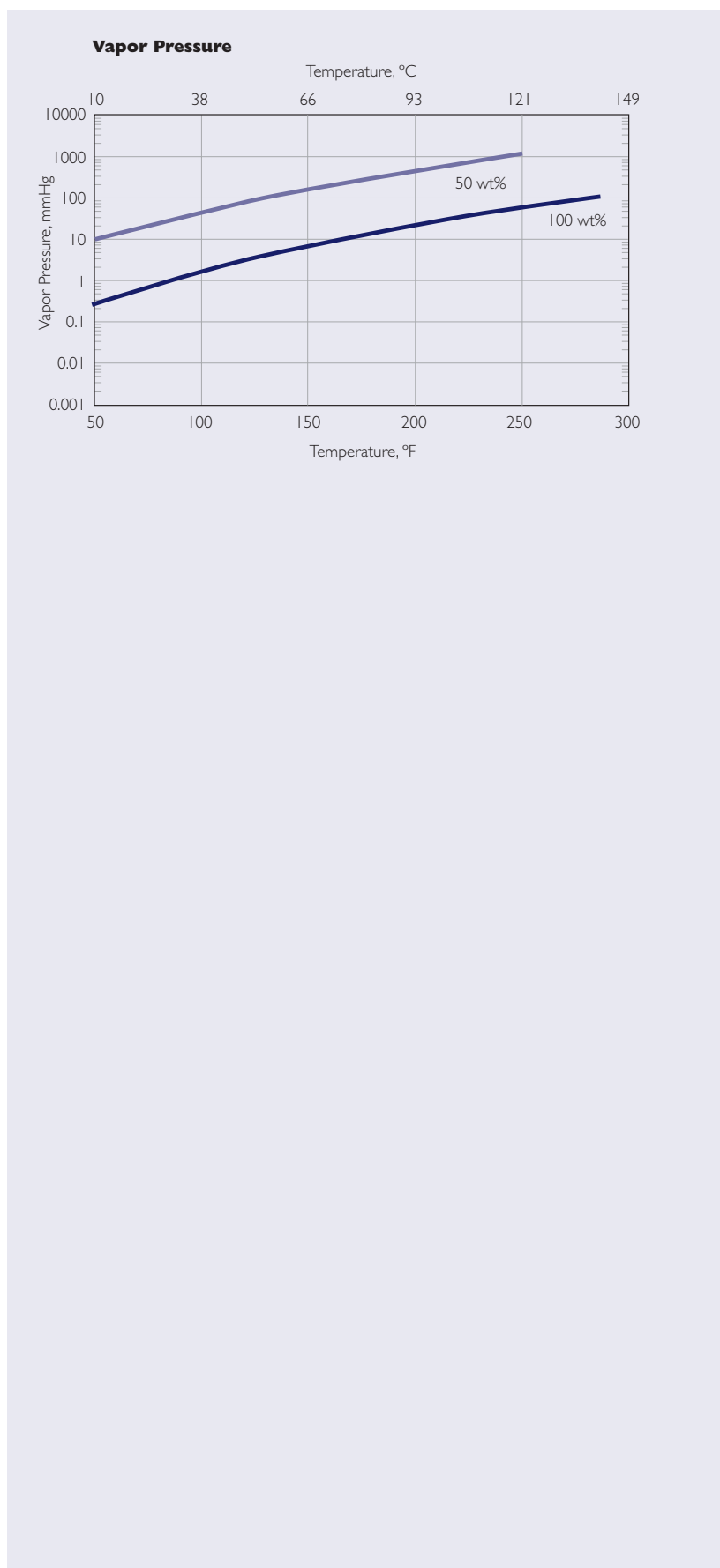
#### Accidental Release

- 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-3 is considered hazardous according to the guidelines of the U.S. Department of Transportation (DOT). This product is regulated for transportation in bulk quantities.
- GAS/SPEC CS-3, as sold, contains chemicals subject to the requirements of Section 313 Title III of the U.S. Superfund Amendments and Authorization Act (SARA).
- 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 H<sub>2</sub>S and CO<sub>2</sub> 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**

INEOS LLC  
Head Office

2925 Briarpark Drive, Suite 870 • Houston, TX 77042

For more information on INEOS LLC products and services:

Phone: 713-243-6200 • Fax: 713-243-6220

Email us at: [gastreating@ineos.com](mailto:gastreating@ineos.com)

[www.gasspec.com](http://www.gasspec.com)

[www.gastreating.com](http://www.gastreating.com)

Customer Service: 1-225-242-3005  
or 866-865-4767 (toll free in USA and Canada).

Email us at: [csr@ineos.com](mailto:csr@ineos.com)



**NOTICE:** No freedom from any patent owned by Seller or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Seller assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.