



ENGINEERING STAFF
MATERIAL SPECIFICATION

Prepared By: Engineering Staff 
Approved By: Jerome T. Schmitz 

Section No:	MS O-6
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Issue Date:	03/01/16
Superseded Date:	02/25/15

MISCELLANEOUS
Odorant

1. SCOPE

This specification covers odorant for the detection of natural gas at a minimum level of 1/5 the lower explosive limit.

2. APPLICABLE DOCUMENTS

- 2.1 ASTM International (ASTM) D-86, "Distillation of Petroleum Products."
- 2.2 ASTM International (ASTM) D-92, "Flash and Fire Points by Cleveland Open Cup Method."
- 2.3 Hazardous Communications Standards, Code of Federal Regulations, Title 29, Part 1910.1200 (29 CFR 1910.1200).
- 2.4 United States Department of Transportation (DOT), Code of Federal Regulations (CFR), Title 49, Part 192, "Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards."

NOTE: Unless otherwise specified, the editions of the above documents incorporated by DOT 40 CFR 192 are applicable. Documents not incorporated by DOT 49 CFR 192 will be the most recent edition.

3. TERMINOLOGY

3.1 General

- 3.1.1 "Southwest Gas," "Southwest" or "SWG" wherever used in this specification and other related documents will refer exclusively to Southwest Gas Corporation.
- 3.1.2 The terms "approved," "as approved," "satisfactory," "as directed," "or equal" or other similar terms wherever used in this specification and other related documents will mean "as determined by Southwest Gas," unless specifically stated otherwise.
- 3.1.3 "Product Information Package" or "PIP" wherever used in this specification and other related documents will mean the required information that a manufacturer must submit to Southwest Gas to determine if the product is suitable for use by Southwest Gas, unless specifically stated otherwise.

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4. MATERIALS AND MANUFACTURING

4.1 The physical properties of the solution will conform to the requirements specified in the table listed below:

PROPERTY	MIN.	MAX.	COMMENTS
Cloud Point (°F)		-25	
Flash Point (°F)		0	ASTM D-92
Freezing Point (°F)		-40	
Initial Boiling Point (°F)	125		At 760mm H ² O
Reid Vapor Pressure (PSIG)		10	At 100°F

4.2 The approved odorant mixtures are listed in Appendix A.

5. PERFORMANCE REQUIREMENTS

- 5.1 The odorant will not be deleterious to persons, materials or pipe in normal operating concentrations.
- 5.2 The products of combustion of the odorant in the concentrations in which it is used will not be toxic when breathed or harmful to materials in which products of combustion will be exposed.
- 5.3 The odorant will be easily detected by a person with normal sense of smell at a level of 0.8% natural gas in air by volume or less (1/5 the lower explosion limit) when the odorant is injected into an odorless natural gas stream at a rate of between 0.25 and 0.75 pounds of odorant for each (1) million cubic feet (MMCF) of natural gas.



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6. DIMENSIONS AND TOLERANCES

APPENDIX A

APPROVED ODORANT BLENDS						
	DMS	MES	IPM	TBM	NPM	THT
Scentinel S-20 RP Captan (V)		20		80		
Scentinel O-10 Captan	10		70	10	10	
Scentinel T-50 Captan				50		50
Scentinel T-70 Captan 21				30		70

NOTE: Amounts are in approximate percentages by weight.

- DMS**-Dimethyl Sulfide
- MES**-Methyl Ethyl Sulfide
- IPM**-Isopropyl Mercaptan
- TBM**-Tertiary Butyl Mercaptan
- NPM**-Normal Propyl Mercaptan
- THT**-Tetrahydrothiophene (Thiophene) 01/07/93



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7. INSPECTION

- 7.1 Successful review of the Product Information Package (PIP), as well as any future reference by SWG to the Seller's part number or internal code number in any future contract or purchase, will mean only that no conflict with the specification was found, and will not relieve the Seller from meeting all the requirements of this specification.
- 7.2 SWG retains the option to inspect the manufacture and testing of any and all materials, products or systems referenced in this specification that are sold to SWG.
- 7.3 SWG will make appropriate inspections and tests of any and all materials, products or systems supplied to this specification. SWG will have the right, at their option, to reject any material which fails to conform to this specification. Any such rejection may take place at the manufacturer's facility; the supplier's warehouse or any subsequent delivery location, before or after SWG assumes possession. Notice of the rejection will be made promptly to the supplier by SWG. The defective product will be replaced or returned for credit at the manufacturer's expense.
- 7.4 Any changes in the manufacturing of previously approved materials, products or systems described in this material specification for sale to SWG, must be approved by SWG's Engineering Staff. **Failure to obtain SWG's approval may be cause for rejection and disqualification as an approved supplier.**

8. CERTIFICATION

The manufacturer's or supplier's certification will be furnished to SWG. This certification will state that samples representing each lot have been manufactured, tested, and inspected in accordance with this specification and that all requirements have been met. When requested or specified in the purchase order or contract, a report of test results will be provided.

Upon the request of Southwest, the certification of an independent third party indicating conformance to the specification may be considered at Southwest's expense.



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9. SAFETY DATA SHEETS

In accordance with law, the Seller will supply Safety Data Sheets for all applicable items supplied under this specification to the following:

- 1) The Receiving Location
- 2) Engineering Staff
- 3) Southwest Gas Corporation
Corporate Safety
Mail Station LVA-120
P. O. Box 98510
Las Vegas, NV 89193-8510

10. PRODUCT MARKING

The containers in which the odorant is kept will be marked in accordance with the Hazardous Communications Standard (29 CFR 1910.1200).

11. PACKAGING AND MARKING

- 11.1 Odorant not delivered in bulk amounts will be supplied in containers suitable for storage.
- 11.2 Southwest may request the odorant to be supplied in returnable containers and will be specified on the purchase order. All odorant containers and packages will be marked as outlined in Section 9 of this document.
- 11.3 Southwest may also request delivery in bulk amounts to be delivered by tanker truck. Tanker trucks will be equipped with closed piping systems designed for no release of odorant to the atmosphere. Southwest will provide piping to fill the storage tank, return vapor to the tanker truck, necessary relief devices on the storage tank, and a supply of natural gas to aid in the transfer. Any pumps, hoses or connecting fittings will be available on the tanker truck.



SOUTHWEST GAS CORPORATION

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12. STOCK CLASSIFICATION DESCRIPTION

ODORANT, _____ (The percentage of each odorant component from Appendix A), _____ gallons, _____ (bulk deliver, reusable cylinder, non-reusable drum).