



SOUTHWEST GAS CORPORATION

ENGINEERING STAFF

MATERIAL SPECIFICATION

Prepared By: Engineering Staff 

Approved By: Jerome T. Schmitz 

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| Section No: | MS L-15 |
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| Issue Date: | 09/27/16 |
| Superseded Date: | 03/01/16 |

CORROSION CONTROL MATERIALS

Insulated Joints, Weld End

1. SCOPE

This specification covers weld end insulating joints in sizes ¾" IPS and larger. All joints covered by this specification will have pressure ratings corresponding to ANSI Class 150, 300 and 600. Both ends of the weld end joints will be beveled for welding.

All insulating weld end joints, covered by this specification when installed as a single component, may be installed without a pressure test. When a pressure test is required during installation, the test pressure will not exceed the manufacturer's test pressure shown in Section 4.8 of this specification.

2. APPLICABLE DOCUMENTS

- 2.1 American National Standard Institute (ANSI) B-16.9, "Factory-Made Wrought Steel Buttwelding Fittings."
- 2.2 American National Standards Institute (ANSI) B-31.8, "Gas Transmission and Distribution Piping Systems."
- 2.3 ASTM International (ASTM) A-53, "Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless."
- 2.4 Southwest Gas Material Specification (MS) A-1, "Pipe, Line, API Specification 5L."
- 2.5 Southwest Gas Material Specification (MS) A-5, "Steel, ASTM A-53 (Black)."
- 2.6 Southwest Gas Material Specification (MS) A-9, "Pipe, Steel, ASTM A-106, Grade B."
- 2.7 United States Department of Transportation (DOT), Code of Federal Regulations, Title 49, Part 19, "Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards."

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



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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 SWG to determine if the product is suitable for use by SWG, unless specifically stated otherwise.

3.2 CWP will mean “Cold Working Pressure” and is the maximum service pressure permitted in the ambient temperature range of -20°F to 100°F (-29°C to 38° C). CWP is expressed in psig.

3.3 WOG will mean “Water, Oil and Gas” and is equivalent to CWP in Paragraph 3.2.

3.4 The following are ANSI Class rating which correspond to cold working pressures (CWP) as recognized by Southwest Gas:

| ANSI Class | CWP (psig) |
|------------|------------|
| 150 | 275 |
| 300 | 720 |
| 600 | 1440 |

Table 3.4



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4. MATERIALS AND MANUFACTURING

- 4.1 Pipe nipples will be made from steel pipe that meets the requirements of Southwest Gas' Material Specification MS A-1, MS A-4, MS A-9, or equivalent as approved by Southwest Gas.
- 4.2 The nipples of the insulator will have sufficient wall thickness to not exceed 50 percent of specified minimum yield strength (SMYS) of the steel when the nipples pressurized to the maximum rated working pressure in accordance with DOT 192.105 for a Class Location 3.
- 4.3 All materials used in the joint will be compatible with natural gas and other agents or debris commonly found in natural gas pipelines. The materials will also be resistant to oil, soil, atmosphere, etc.
- 4.4 The joint will be designed so that no harmful or hazardous substances will be released into the gas and/or the ground.
- 4.5 Ends will be beveled for welding in accordance with ANSI B-16.9 unless otherwise noted on the purchase order.
- 4.6 The joints will be designed to provide complete electrical isolation of the two steel end nipples.
- 4.7 Upon agreement between the supplier and Southwest Gas, the isolation joints will have a protective coating other than primer. This coating may be paint, epoxy or other corrosion and holiday inhibitors and will be specified on the purchase order. Coatings may be required to pass a holiday test outlined in Paragraph 5.6 of this specification.



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5. PERFORMANCE REQUIREMENTS

5.1 The joint will be capable of withstanding the tensile force shown in Table 5.1 for the corresponding pressure rating without damage, failure or leakage.

| TENSILE FORCE (Lb.) | | |
|----------------------------|---------------------|-----------------|
| Size (IPS) | ANSI 150/300 | ANSI 600 |
| 1/2 | 4400 | 5600 |
| 3/4 | 5800 | 7500 |
| 1 | 8600 | 11100 |
| 1 1/4 | 11700 | 15400 |
| 1 1/2 | 13900 | 18600 |
| 2 | 18500 | 25800 |
| 4 | 55000 | 77000 |
| 6 | 97600 | 147000 |
| 8 | 146900 | 223300 |
| 10 | 208400 | 281700 |
| 12 | 255100 | 336700 |

Table 5.1



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5. PERFORMANCE REQUIRMENTS (Cont'd)

5.2 The joint will not leak when pressurized to 100 psig and subjected to a bending moment, shown in Table 5.2, in accordance to ANSI B31.8, Section 833.3 is placed upon it.

| BENDING MOMENT (ft-lb) | | |
|--------------------------------|---------------------|-----------------|
| Size (IPS) | ANSI 150/300 | ANSI 600 |
| ½ | 85 | 100 |
| ¾ | 148 | 179 |
| 1 | 279 | 337 |
| 1 ¼ | 493 | 612 |
| 1 ½ | 685 | 865 |
| 2 | 1177 | 1535 |
| 4 | 6750 | 8970 |
| 6 | 17841 | 25670 |
| 8 | 35300 | 51480 |
| 10 | 62800 | 82800 |
| 12 | 92000 | 119000 |

TABLE 5.2

5.3 The joint will have a minimum resistance of 25 mega-ohms at 1000 volts of direct current (VDC) measured from end to end.

5.4 The insulating joint will have no current leakage at 25000 VDC.



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5. PERFORMANCE REQUIREMENTS (Cont'd)

- 5.5 The joint will be capable of withstanding a pressure test of 1.5 times the rated working pressure for at least 8 hours without leaking.
- 5.6 When specified by Southwest Gas, epoxy or other electrically insulating coatings will pass a holiday detection test applicable for the specified type of coating. The coating will not change the overall resistances as described in paragraph 5.3 and 5.4.
- 5.7 The insulating joint will be capable of being pressure tested with water or nitrogen.
- 5.8 All joints sold to Southwest will be hydrostatically pressure tested to at least 1.5 times their rated working pressure. Minimum durations for the hydrostatic tests are shown below:

| SIZE (In.) | DURATION (Min.) |
|---------------|-----------------|
| 2-4 | 2 |
| 6-10 | 5 |
| 12-18 | 15 |
| 20 and larger | 30 |

Table 5.8



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6. DIMENSIONS AND TOLERANCES

- 6.1 Weld end bevels will meet the tolerances in ANSI B 16.9.
- 6.2 Outside dimensions and tolerances will conform to ANSI B 16.9.

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 manufacturing 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 Southwest 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 Southwest. 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

All insulation joints sold to Southwest will be marked with the following:

- Manufacturer's name or trade mark
- Manufacturer's part number
- Material identification (ASTM grade symbol)
- Nominal pipe size
- Schedule or nominal wall thickness
- ANSI Class rating

Southwest retains the right to require the joint to be marked with Southwest's purchase order number.

11. PACKAGING AND PACKAGE MARKING

All weld ends will be free of paint and protective coatings for a minimum of one inch measured from the ends. The ends will have a suitable protector to prevent damage to the weld bevels and to prevent contamination of the joint.

All products covered in this specification will be packaged in a manner to prevent damage during transportation and storage.



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12. STOCK CLASSIFICATION DESCRIPTION

INSULATING JOINT, _____ INCH WITH WELD ENDS; ANSI CLASS
_____.