




**SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

## **MATERIAL SPECIFICATION**

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<b>Issue Date:</b>	04/05/21
<b>Superseded Date:</b>	07/05/18

*Prepared By:* Engineering Staff 

*Approved By:* Jerome T. Schmitz 

### **PIPE FITTINGS**

Transition Fittings – Steel/PE

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#### **1. SCOPE**

This specification covers transition fittings for connecting steel pipe to polyethylene (PE) pipe. All transition fittings covered by this specification can be installed as a single component without an installation pressure test.

#### **2. APPLICABLE DOCUMENTS**


- 2.1 American Iron and Steel Institute (AISI) C-1020.
- 2.2 American Petroleum Institute (API) Specification 5L, "Specification for Line Pipe."
- 2.3 ASTM International (ASTM) A-53, "Standard Specification for Pipe, Steel, and Hot-Dipped, Zinc-Coated, Welded and Seamless."
- 2.4 ASTM International (ASTM) A-106, "Seamless Carbon Steel Pipe for High-Temperature Service."
- 2.5 ASTM International (ASTM) D-2000, "Classification System for Rubber Products in Automotive Applications."
- 2.6 ASTM International (ASTM) D-2513, "Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing and Fittings."
- 2.7 Southwest Gas Corporation's Material Specification MS A-7, "High Density Polyethylene Pipe and Tubing."
- 2.8 Title 49, Code of Federal Regulations, Title 49, Part 192, "Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards (49 CFR 192)."

**NOTE:** Unless otherwise specified, the editions of the document incorporated in whole or in part by 49 CFR 192 are applicable. The above documents, and parts of documents (including annexes), not incorporated by 49 CFR 192 are incorporated by this Material Specification and will be the most recent edition. If a conflict exists between the applicable documents and/or this Material Specification, the requirements of 49 CFR 192 shall govern, and in the event of all other conflicts, the more stringent requirement shall govern.



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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 The terms “pipe” or “tubing” will mean “pipe and tubing,” unless specifically stated otherwise.
- 3.1.4 “Product Information Package” or “PIP” wherever used in this specification and other related documents will mean the required technical product information that a manufacturer must submit to SWG to determine if the product is suitable for use by SWG, unless specifically stated otherwise.

**4. MATERIALS AND MANUFACTURING**

- 4.1 Transition fittings will be manufactured in accordance with DOT 192.281(e) and ASTM D-2513. This joint provides a seal and resistance to forces on the pipe end which will cause permanent deformation of the pipe or tubing. Elastomers used to provide the seal must be compatible with natural gas and approved by SWG. Buna-N per ASTM D-2000 is approved for use.
- 4.2 All plastic materials used in transition fittings will contain suitable ultraviolet inhibitors, so that their physical properties will not be adversely affected by exposure to natural ultraviolet light in locations throughout SWG’s service area for at least 1 year from the date of manufacture.
- 4.3 PE pipe components used in transitions will meet the requirements of SWG MS A-7.




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#### **4. MATERIALS AND MANUFACTURING** (Cont'd)

- 4.4 Carbon steel pipe components welded to the existing steel main will meet the requirements of API Specification 5L Grade B, ASTM A-53 Grade B or ASTM A-106. The welding end shall have a standard weld bevel. The exterior will be coated with a fusion bonded epoxy, except for a distance from the welding end as noted in the appendix.
- 4.5 The internal stiffeners shall be carbon steel per AISI C-1020 or equivalent.
- 4.6 The O-rings shall be made of an elastomer that meets the requirements of ASTM D-2000.
- 4.7 The PVC component shall be Schedule 40 or SDR 13.5 PVC pipe that meets the requirements of ASTM D2513 and D1785.
- 4.8 All polyethylene pipe extensions (pups) must have the pipe manufactured date visibly indicated on the pipe by print line, label or another acceptable method that is clearly and completely readable.
- 4.9 Upon delivery, the manufacture date of any PE components will not have exceeded 36 months.

#### **5. PERFORMANCE REQUIREMENTS**

- 5.1 Transition fittings will be designed for use in gas distribution systems in all class locations, at pressures up to 100 psig and at temperatures from -20°F (-34°C) to 140°F (60°C), either underground or in casing installations. All transition fittings must be capable of operating at 60 psig and 140°F (60°C) simultaneously. All product features must be acceptable to SWG.
- 5.2 Transition fittings will be designed so that no harmful or hazardous substances will be released from the fittings into the gas and/or ground.
- 5.3 Transition fittings will be designed so that oils and other agents and debris commonly found in natural gas pipelines will not adversely affect the product serviceability.
- 5.4 All transition fittings purchased by Southwest Gas will, at a minimum, meet the requirements of ASTM D2513, Category 1.



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#### **6. DIMENSIONS AND TOLERANCES**

Dimensions and tolerances should be in accordance with Appendices A through E of this specification.

#### **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 all materials, products or systems referenced in this specification that are sold to SWG.
- 7.3 SWG will make appropriate inspections and tests of 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.**




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**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.

**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**

10.1 Marking on plastic fittings will comply with the marking requirements of ASTM D-2513-87. The marking method will provide permanent identification of the fitting, enabling access to quality and manufacturing records at any time and will include manufacturer's name or trademark (or both), size, the ASTM standard designation "D-2513," material classification, serial number, manufacture date and temperature rating.



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#### 10. PRODUCT MARKING (Cont'd)

- 10.2 The temperature rating marking will be in accordance with ASTM D-2413-87, which consists of, at minimum, a two-letter coding (i.e., "CE"). The first code letter is to identify the high temperature rating and the second code letter is to identify the HDB rating at that high temperature rating. A third code letter may be included which signifies the melt index. The first code letter must have a minimum of a "C" rating which signifies a temperature rating of 140°F (60°C). **The second code letter pertaining to the HDB rating must be a minimum of an "E" rating which signifies an HDB rating of 1000 psig.**
- 10.3 All polyethylene pipe extensions (pups) must have the pipe manufactured date visibly indicated on the pipe by print line, label or another acceptable method that is clearly and completely readable.

#### 11. PACKAGING AND PACKAGE MARKING


- 11.1 Seller will adequately prepare all the goods for shipment. Seller will furnish and install necessary covers to protect the goods from sunlight, excessive heat, photochemical smog, rain, hail, wind, etc. Goods will be adequately sealed and protected during shipment to prevent entrance of foreign matter and possible damage from rough handling during transit. Packaging will facilitate its safe handling and its reshipment between the stocking and user locations. Each fitting and a set of installation instructions will be individually wrapped with transparent plastic.
- 11.2 Southwest Gas will store the transition fittings indoors until they are transferred to the various gas crew trucks.
- 11.3 Package sizes will be determined by Southwest's Corporate Purchasing Department.




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**12. STOCK CLASSIFICATION DESCRIPTION**

TRANSITION FITTING, STEEL, SCHEDULE 40, \_\_\_\_\_-INCH IPS, \_\_\_\_\_ W.T. X  
\_\_\_\_\_ -INCH IPS, \_\_\_\_\_ (W.T. OR SDR 11) PE (PIPE MATERIAL).