SOUTHWEST GAS CORPORATION
ENGINEERING STAFF
MATERIAL SPECIFICATION

Section No:	MS E-10
Page No.:	1 of 29
Issue Date:	02/26/26
Superseded Date:	04/29/20

Prepared By: Engineering Staff LM

Approved By: Kevin Lang

SERVICE FITTINGS
Mechanical Fitting Systems

1. SCOPE

This specification covers mechanical fitting systems used to connect pipe and tubing with nominal diameters of ½" CTS, ¾" IPS, 1" CTS, 1 ¼" IPS and 2" IPS intended for use in natural gas distribution systems. Fittings included in this standard are straight couplings, "M" cap for repair, caps (deadends), ells, reducers, tees, reducing tees and deadends with stub out. All values indicated in this specification will be in English units and metric units.

Mechanical fittings may be installed as single components without pressure testing.

2. APPLICABLE DOCUMENTS

2.1 ASTM International (ASTM) D2513, "Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing and Fitting."

2.2 ASTM International (ASTM) F1924, "Standard Specification for Plastic Mechanical Fittings for Use on Outside Diameter Controlled Polyethylene Gas Distribution Pipe and Tubing."

2.3 ASTM International (ASTM) F2785, "Standard Specification for PA12 Gas Pressure Pipe, Tubing, and Fittings."

2.4 ASTM International (ASTM) F2945, "Standard Specification for PA11 Gas Pressure Pipe, Tubing, and Fittings."

2.5 ASTM International (ASTM) F2897, "Standard Specification for Tracking and Traceability Encoding System of Natural Gas Distribution Components (Pipe, Tubing, Fittings, Valves, and Appurtenances)"

2.6 Title 49, Code of Federal Regulations, 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 requirement of 49 CFR 192 shall govern, and in the event of all other conflicts, the more stringent requirements shall govern.

SERVICE FITTINGS
Mechanical Fitting Systems

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 technical product information that a manufacturer must submit to SWG to determine if the product is suitable for use unless specifically stated otherwise.

4. MATERIALS AND MANUFACTURING

4.1 Unless otherwise indicated, this specification covers the following fitting sizes:

Straight Couplings	Caps (Deadends)	Repair Cap	Deadends With Stub Out	Ells	Reducers	Tees	Reducing Tees
½" CTS	½" CTS	"M" Cap for Mueller ABS/PVC Tee	½" CTS	½" CTS	½" CTSx1" CTS	½" CTS	½" CTS x ½" CTS x 1" CTS
¾" IPS	¾" IPS				½" CTS x ¾" CTS		1" CTS x 1" CTS x ½" CTS
1" CTS	1" CTS		1" CTS	1" CTS	¾" CTS x 1" CTS	1" CTS	1" CTS x ½" CTS x 1" CTS
1 ¼" IPS	1 ¼" IPS				1 ¼" CTS x 1" CTS		½" CTS x 1" CTS x ½" CTS
2" IPS	2" IPS						

4. MATERIALS AND MANUFACTURING (Cont'd)

4.2 The resins from which the mechanical fittings are molded must be approved by SWG. The manufacturer will supply to SWG a Plastic Pipe Institute (PPI) listing number, for each resin used in the manufacture of the fittings.

4.3 All PE fittings will be made from virgin material, no rework material will be accepted.

4.4 The fittings will be uniform in physical and chemical properties, and free of cracks, holes, foreign inclusions, areas of unpigmented polymer ("windows") or other injurious defects.

4.5 The fittings will be clean and internally free of paint, dirt, sand and other debris.

4.6 The fittings will contain suitable ultraviolet inhibitors which are acceptable to SWG so that their physical properties will not be adversely affected by exposure to natural ultraviolet light in locations throughout SWG's service area.

4.7 The fittings will contain suitable antioxidants which protect against oxidation when required.

4.8 If gaskets are used in the fittings, they will be of a material which is compatible with polyethylene pipe and tubing and natural gas.

4.9 All fittings will utilize a rigid internal tubular stiffener, other than a split tubular stiffener, in conjunction with the fitting.

4.10 Any electrically isolated, metal alloy fittings used in plastic pipelines must comply with Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards, Subpart 1, Section 192.455(f)" so that catholic protection is not required on the fittings.

4.11 All fittings manufactured in accordance with this specification must meet the requirements of ASTM F1924 and:

4.11.1 ASTM D2513 for PE Fittings.

4.11.2 ASTM D2945 for PA11 Fittings

4.11.3 ASTM D2785 for PA12 Fittings

5. PERFORMANCE REQUIREMENTS

5.1 The fittings will be designed for use in gas distribution systems in all class locations, at pressures up to 100 psig, and at temperatures up to 140ºF (60ºC), either underground or in casing installations. All fittings designed must be capable of operating at 60 psig and 140ºF simultaneously. All product features must be acceptable to SWG.

5.2 The 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 The fittings will be designed so that oils and other agents commonly found in natural gas pipelines will not adversely affect the product serviceability.

5.4 Current detailed installation instructions must be provided to Southwest Gas for each fitting prior to final material approval.

5.5 All mechanical fittings purchased by Southwest Gas will, at a minimum, meet the requirements of ASTM D2513, Category 1.

6. DIMENSIONS AND TOLERANCES

6.1 The fittings will be designed to join coiled as well as straight lengths of polyethylene pipe which have the following dimensions:

Nominal Pipe Size (Inches)	O.D. (Inches)		Wall Thickness (Inches)		Nominal SDR
	Average Inches	Tolerance Inches	Minimum Inches	Tolerance Inches	
½ CTS	0.625	±0.004	0.091	+0.006	7
¾ IPS	1.050	±0.004	0.095	+0.011	11
1 CTS	1.126	±0.005	0.103	+0.007	11
1 ¼ IPS	1.660	±0.005	0.151	+0.018	11
2 IPS	2.375	±0.006	0.216	+0.026	11

6.2 Any PE 2406 parts used to fabricate service fittings must have a maximum SDR no greater than 8.8

7. INSPECTION

7.1 Successful reviews 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.**

8. CERTIFICATION

The manufacturer's or supplier's certification shall be furnished to Southwest. This certification shall state that samples representing each lot have been manufactured, tested and inspected in accordance with this specification and that 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

All materials, products or systems sold to Southwest will be marked with the following:

10.1 Marking on plastic fittings will comply with the marking requirements of ASTM D2513. 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 "D2513" and "F1924," material classification, serial number, manufacture date and temperature rating.

10.2 The temperature rating marking will be in accordance with ASTM D2417, which consists of at a 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 140ºF (60ºC). **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 (6895 kPa).**

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.

10. PRODUCT MARKING (Cont'd)

10.4 Fittings shall be marked with the 16- character gas distribution component tracking and traceability identifier in accordance with ASTM F2897. The 16- character code shall be expressed in alpha-numeric format and Code 128 bar code format with a minimum bar thickness value of 0.005 in. or an alternative 1D or 2D bar code symbology, as agreed upon between manufacturer and end user. All fittings shall have the 16-character codes marked or affixed to the product, product packaging, or any manner agreed upon between manufacturer and end user.

11. PACKAGING AND PACKAGE MARKING

11.1 Seller will adequately prepare all fitting for shipment. Seller will furnish and install necessary covers to protect the fittings from sunlight, excessive heat, photochemical, smog, rain, hail, wind, dust, etc. Fittings 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 user locations. Each fitting will be individually wrapped in transparent plastic.

11.2 Instructions for installing the fitting will be packaged with the fitting or printed on the package.

11.3 SWG will store the fittings indoors until they are transferred to the various gas crew trucks.

12. STOCK CLASSIFICATION DESCRIPTION

CAP, _____-INCH (CTS or IPS) X _____-INCH WT, _____ (PRODUCT NAME), _____ (MATERIAL).

COUPLING, _____-INCH (CTS or IPS) X _____-INCH WT, _____ (PRODUCT NAME), _____ (MATERIAL).

ELL, _____DEGREE, _____-INCH (CTS or IPS) X _____-INCH WT, _____ (MATERIAL).

TEE, _____-INCH (CTS or IPS) X _____-INCH WT, _____ (MATERIAL).

REDUCING TEE, _____-INCH (CTS or IPS) X _____-INCH WT x _____-INCH (CTS or IPS) BY _____- INCH WT, _____ (MATERIAL).

REDUCER, _____- INCH (CTS or IPS) X _____-INCH BY SDR OR WALL THICKNESS, _____ (MATERIAL).