SOUTHWEST GAS CORPORATION

ENGINEERING STAFF

MATERIAL SPECIFICATION

Section No:	MS L-11
Page No.:	1 of 5
Issue Date:	03/01/16
Superseded Date:	01/23/15

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CORROSION CONTROL MATERIALS

Seals, Casing End

1. SCOPE

This specification defines the minimum requirements for materials, application and inspection of pull-on (continuous) and split-type casing end seals used to provide a fluid tight seal between the carrier pipe and casing.

2. APPLICABLE DOCUMENTS

2.1 ASTM International (ASTM) A-167, "Corrosion-Resisting Chromium-Nickel Steel Plate, Sheet and Strip."

2.2 ASTM International (ASTM) D-2000, "Classification Systems for Materials for Automotive Applications."

2.3 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 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 The pull-on type end seal shall be designed to fit over coated carrier pipe and onto the end of the casing before the tie-in weld is made.

4.2 The split-type end seal shall be designed to wrap around the existing carrier pipe and casing and is to be sealed with self-sealing adhesive or a zipper to form a continuous sleeve.

4.3 The casing end seals shall conform to ASTM D-2000 and may be either a Type AA (natural rubber, SBR synthetic rubber, butyl synthetic rubber) or Type BC Elastomer (Neoprene).

4.4 The clamping bands to compress each end of the seal to the pipe or casing shall be designed to allow for minor offsets of the carrier pipe and casing.

4.5 The casing end seal shall be designed to accommodate a coating on the carrier pipe according to Table L-11.1.

Carrier Pipe Coating Thickness	
Nominal Pipe Size Inches	**Coating Thickness Inches**
3/4	0 to 0.11
1	0 to 0.11
1 1/2	0 to 0.11
2	0 to 0.14
3	0 to 0.15
>3	0 to 0.15

TABLE L-11.1

5. PERFORMANCE REQUIREMENTS

5.1 The casing end seal shall conform to the carrier pipe and casing and shall provide a fluid-tight seal between the carrier pipe and the casing.

5.2 The casing seals shall conform to ASTM D-2000 with Shore durometer hardness between 55 and 75 and a minimum tensile strength of 1200 psig.

5.3 The band and clamp shall conform to ASTM A-167 and shall be of austenitic stainless steel Type 302 or equivalent.

6. DIMENSIONS AND TOLERANCES

6.1 The minimum thickness of the seal material shall be 3/32 inch.

6.2 The band shall be at least 1/2 inch wide and at least 0.012 inch thick.

6.3 Screws shall be of martensitic 400 series stainless steel.

7. INSPECTION

7.1 Successful review of the 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 supplied to this specification at the manufacturer's facility.

7.3 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 manufacturing of previously approved products covered under this document for sale to SWG must be approved by SWG 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 shall supply Safety Data Sheets for all applicable items supplied under this specification to the following:

1) The Receiving Location
2) Southwest Gas Engineering Staff
3) Southwest Gas Corporation
   Corporate Safety
   Mail Station LVA-120
   P.O. Box 98510
   Las Vegas, NV 98193-8510

10. PRODUCT MARKING

The material shall be marked with the manufacturer's name or trademark.

11. PACKAGING AND PACKAGE MARKING

All products covered in this specification will be packaged to prevent damage during shipping.

12. STOCK CLASSIFICATION DESCRIPTION

Seal, Casing End, __ Inch Carrier X __ Inch Casing, Zipper Type

Seal, Casing End, __ Inch Carrier X __ Inch Casing, Flexible S-Shape