

CIVIL/MECHANICAL ENGINEERING



Steam Distribution Engineering  
Consolidated Edison Company of New York, Inc.  
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**Specification S-9051-6**

Gasket Material For Use on the Steam Distribution System

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## 1.0 Scope

This specification applies to compressed sheet packing, the gasket material used to fabricate gaskets for flanged joints on steam equipment operating up to 400 psig and 475° F.

## 2.0 Material Requirements

The gasket material shall:

- 2.1 Contain no asbestos;
- 2.2 Be composed of carbon fibers bound with synthetic rubber;
- 2.3 Be thoroughly and evenly mixed and compressed into a sheet having compact and uniform texture, either cross laminated or single ply;
- 2.4 Have a finished thickness of  $\pm 10\%$  of the thickness specified on the purchase order;
- 2.5 Have a minimum density of 105 lb/ft<sup>3</sup>;
- 2.6 Have blended into both surfaces of the sheet packing a non-graphite anti-stick releasing agent;
- 2.7 Be distinctively marked so that the manufacturer of pre-formed gaskets or gaskets cut from the standard sheet can be readily identified;
- 2.8 Each bundle of gaskets shall be tagged with the date of manufacture (Mo /Yr);
- 2.9 Manufacturer shall guarantee a shelf life of at least 3 years from date of manufacture.

## 3.0 Gasket Dimensions

Dimensions of all gaskets used by Steam Distribution Field Operations must be in compliance with the ASME B16.21, Nonmetallic Flat Gaskets for Pipe Flanges. See table below for sizes.<sup>1</sup>

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<sup>1</sup> Table was obtained from ASME B16.21, Table I-5, page 9

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**Flat Ring Gasket Dimensions for ASME  
B16.5 Pipe Flanges and Flange Fittings,  
Class 300. Dimensions in inches**

Nominal pipe size	Gasket I.D	Gasket O.D
1	$1\frac{5}{16}$	$2\frac{7}{8}$
2	$2\frac{3}{8}$	$4\frac{3}{8}$
3	$3\frac{1}{2}$	$5\frac{7}{8}$
4	$4\frac{1}{2}$	$7\frac{1}{8}$
6	$6\frac{5}{8}$	$9\frac{7}{8}$
8	$8\frac{5}{8}$	$12\frac{1}{8}$
10	$10\frac{3}{4}$	$14\frac{1}{4}$
12	$12\frac{3}{4}$	$16\frac{5}{8}$
16	16	$21\frac{1}{4}$
20	20	$25\frac{3}{4}$
24	24	$30\frac{1}{2}$

### 4.0 Material Testing

The gasket material shall have:

- 4.1 Seal ability properties, determined in accordance with Method B of ASTM F37-00, "Standard Test Methods for Sealability of Gasket Materials", as follows:
  - 4.1.1 A maximum leakage of 0.1 milliliters per hour when tested using ASTM Fuel A under a pressure of 9.8 psig as the test fluid and a flange load of 500 psi on the gasket specimen;
  - 4.1.2 A maximum of 0.1 milliliters per hour when tested with nitrogen under a pressure of 30 psig as the test fluid and a flange load of 3,000 psi on the gasket specimen;
- 4.2 An average compressibility not exceeding 17 percent and an average minimum recovery of 55 percent when tested in accordance with Procedure A of ASTM F36-99 (2003), "Standard Test Method for Compressibility and Recovery of Gasket Material".
- 4.3 An average minimum tensile strength of 1,500 pounds per square inch measured across the grain and 4,500 pounds per square inch measured with the grain when tested in accordance with Procedure A of ASTM F152-95 (2002), "Standard Test Methods of Tension Testing of Nonmetallic Gasket Materials;"

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- 4.4 An average maximum creep relaxation of 15 percent when tested with 3,000 pounds per square inch initial load in accordance with Method B of ASTM F38- 00, "Standard Test Methods for Creep Relaxation of a Gasket Material".
- 4.5 An average maximum adhesion force of 200 lb and not exhibit any tearing or pickoff of fibers after being tested in accordance with ASTM F607-03, "Standard Test Method for Adhesion of Gasket Material to Metal Surfaces".
- 4.6 The flexibility, both with and across the grain, to bend around a mandrel having a diameter of twelve times the sheet thickness without any visible cracks, breaks or surface separations after being tested in accordance with the "original" and "aged" test methods outlined in ASTM F147-87 (2003), "Standard Test Method for Flexibility of Non Metallic Gasket Materials".

### 5.0 Quality Assurance

Vendors shall comply with Con Edison specification CE-0701, Vendor Quality Assurance Requirements.

### 6.0 Requirements for Approval

Prior to approval, all compressed sheet packing vendors shall submit technical information which supports compliance with this specification. Exceptions to any part of this specification shall also be stated.

### 7.0 Approved Material

The sheet packing material listed below is approved under this specification.

<u>Manufacturer</u>	<u>Style</u>
Garlock	HTC-9800

#### Revision 5

Added Gasket Dimensions section to reflect the use of ASME standard size gaskets.

#### Revision 6

Added to Gasket Dimension section the use of ASME standard size gaskets 1" diameter and 10" through 24" diameter.

Next Scheduled Review: July 2014

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