*Standard Specifications for*

# CELLULAR ASBESTOS PAPER THERMAL INSULATION FOR PIPES[1]

**ASTM Designation: C 298 – 56**

ADOPTED, 1956.[2]

This Standard of the American Society for Testing Materials is issued under the fixed designation C 298; the final number indicates the year of original adoption as standard or, in the case of revision, the year of last revision.

NOTE.—An editorial change in Section 10 (*b*) was made in March, 1957.

## Scope

1. These specifications cover preformed thermal insulation constructed of alternate layers of corrugated and flat asbestos paper, plied together in pipe-covering form, for use on pipes and tubing at temperatures up to 300 F.

## Composition and Construction

2. Each unit or section shall be constructed of a number of plies, each ply consisting of a flat sheet of asbestos paper to which is cemented a corrugated sheet of asbestos paper. The plies shall be formed into hollow cylinders and bonded together with heat-resisting cement. Inner and outer surfaces of each unit shall be smooth, not corrugated, paper. Each cylinder shall be split longitudinally down one side and partially, or completely, cut through on the opposite side, as may be required for proper application. The ends of each section shall be cut square.

## Types

3. Cellular asbestos paper thermal insulation for pipes shall be furnished in the following types:

| Type | Plies per Inch of Thickness |
|---|---|
| A | 4 |
| B | 6 |
| C | 8 |

## Physical Requirements

4. The insulation shall conform to the following physical requirements:

| | |
|---|---|
| Density, max, lb per cu ft: | |
| Type A | 13 |
| Type B | 17 |
| Type C | 21 |
| Thermal conductivity (all types), max, Btu in. per hr sq ft deg Fahr: | |
| At mean temperature of 100 F | 0.60 |
| At mean temperature of 150 F | 0.65 |
| At mean temperature of 200 F | 0.70 |

## Standard Sizes and Thicknesses

5. (*a*) Cellular asbestos paper insulation for pipes shall be furnished in the form of hollow cylinders, usually 36 in. in length, in sizes to fit standard pipe and tubing diameters.

[1] Under the standardization procedure of the Society, these specifications are under the jurisdiction of the ASTM Committee C-16 on Thermal Insulating Materials.

[2] Prior to adoption as standard, these specifications were published as tentative from 1952 to 1956.

(*b*) The insulation shall be furnished in the following thicknesses:

| Type | Thickness Range |
|---|---|
| A | 1 to 2 in., in increments of 1 in. |
| B | 1 to 2 in., in increments of 1 in. |
| C | 1 to 2 in., in increments of 1 in. |

## Dimensional Tolerances

6. The insulation shall conform to the following dimensional tolerances:

| Dimension | Tolerance, plus or minus |
|---|---|
| Length | 1 in. |
| Thickness: | |
| 1 in. and under | 1/16 in. |
| Over 1 in. | 1/16 in. per inch of thickness |

## Finish

7. Cotton jackets shall be furnished on all orders, unless another finish is specified by the purchaser.

## Accessories

8. Metal bands, at least two per section of insulation, shall be furnished with each order.

## Sampling

9. (*a*) From each shipment of the insulation, samples shall be taken at random. The following table gives the number of samples to be selected from shipments of various sizes:

| Number of Sections in Shipment | Number of Samples to be Selected |
|---|---|
| 5 000 and under | 3 |
| 5 001 to 8 000 | 5 |
| 8 001 to 27 000 | 15 |
| 27 001 to 64 000 | 20 |

NOTE.—For larger shipments, a number of pieces shall be selected equal to the multiple of five that is next higher than one half the cube root of the total number of pieces included in the lot.

(*b*) When shipment contains material of more than one size, a representative choice of sizes shall be included among the samples.

## Methods of Test

10. The physical properties of the insulation shall be determined in accordance with the following methods:

(*a*) *Density.*—Method of Test for Density of Preformed Pipe-Covering-Type Thermal Insulation (ASTM Designation: C 302).[3]

(*b*) *Thermal Conductivity.*—Method of Test for Thermal Conductivity of Pipe Insulation (ASTM Designation: C 335).[3]

## Packaging and Marking

11. (*a*) The pipe insulation sections shall be packaged in standard commercial containers, so constructed as to ensure acceptance and safe delivery by common carrier.

(*b*) Each container shall be marked with the name of the manufacturer, and the name, type, size, and quantity of the material in the container.

## Inspection

12. Inspection of the material shall be made either at the point of shipment or at the point of delivery, as agreed upon by the purchaser and the seller. The inspector representing the purchaser shall have free access to the carrier being loaded for shipment to the purchaser. He shall be afforded all reasonable facilities at the point of shipment of the material for sampling and inspection, which shall be so conducted as not to interfere unnecessarily with the loading of the carrier.

## Rejection

13. (*a*) If the sample fails to conform to any of the specification requirements, a second sample shall be selected from the same lot and tested. The results of the

[3] Appears in this publication, see Contents in Numeric Sequence of ASTM Designations at front of book.