



**Designation: C 443M – 98
METRIC**

Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets [Metric]¹

This standard is issued under the fixed designation C 443M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers flexible watertight joints for circular concrete sewer and culvert pipe and precast manhole sections, using rubber gaskets for sealing the joints, where infiltration or exfiltration is a factor in the design. The specification covers the design of joints and the requirements for rubber gaskets to be used therewith, for pipe conforming in all other respects to Specification C 14M or Specification C 76M, and precast manhole section conforming in all other respects to Specification C 478M, provided that if there is conflict in permissible variations in dimensions the requirements of this specification for joints shall govern.

1.2 This specification is the metric counterpart of Specification C 443.

NOTE 1—This specification covers the design, material, and performance of the rubber gasket joint only. Joints covered by this specification are normally adequate for hydrostatic pressures up to 90 kPa (9 m) without leakage, when tested per Section 10. Infiltration or exfiltration quantities for an installed pipeline are dependent upon many factors other than the joints, and allowable quantities must be covered by other specifications and suitable testing of the installed pipeline and system.

2. Referenced Documents

2.1 ASTM Standards:

- C 14M Specification for Concrete Sewer, Storm Drain, and Culvert Pipe [Metric]²
- C 76M Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe [Metric]²
- C 478M Specification for Precast Reinforced Concrete Manhole Sections [Metric]²
- C 822 Terminology Relating to Concrete Pipe and Related Products²
- D 395 Test Methods for Rubber Property—Compression Set³
- D 412 Test Methods for Vulcanized Rubber and Thermo-

- plastic Rubbers and Thermoplastic Elastomers—Tension³
- D 471 Test Method for Rubber Property—Effect of Liquids³
- D 573 Test Method for Rubber—Deterioration in an Air Oven³
- D 1149 Test Method for Rubber Deterioration—Surface Ozone Cracking in a Chamber³
- D 2240 Test Method for Rubber Property—Durometer Hardness³

3. Terminology

3.1 *Definitions:* For definitions of terms relating to concrete pipe, see Terminology C 822.

4. Basis of Acceptance

4.1 The acceptability of the pipe joints and gaskets shall be determined by the results of the physical tests prescribed in this specification, if and when required, and by inspection to determine whether the pipe joints and gaskets conform to this specification as to design and freedom from defects.

5. Materials and Manufacture for Gaskets

5.1 All rubber gaskets shall be extruded or molded and cured in such a manner that any cross section will be dense, homogeneous, and free of porosity, blisters, pitting, and other imperfections. The gaskets shall be extruded or molded to the specified size within a tolerance of $\pm 6\%$ on any dimension, measured at any cross section. The rubber gasket shall be fabricated from a high-grade rubber compound. The basic polymer shall be natural rubber, synthetic rubber, or a blend of both acceptable to the owner and meeting the physical requirements prescribed in Section 6.

6. Physical Requirements for Gaskets

6.1 *Standard Gasket Requirement*—The gaskets shall meet with the following physical requirements:

Tensile strength, min	8 MPa
Elongation at break, min, %	350
Shore durometer hardness:	
Min	35 ^A
Max	65 ^A
Compression set, max, % of original deflection	25

¹ This specification is under the jurisdiction of ASTM Committee C-13 on Concrete Pipe and is the direct responsibility of Subcommittee C13.08 on Rubber Gaskets.

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² *Annual Book of ASTM Standards*, Vol 04.05.

³ *Annual Book of ASTM Standards*, Vol 09.01.