

3M™ Scotchkote™ Pipe Renewal Liner 2400

Data Sheet and Application Guide

Product Description

3M™ Scotchkote™ Pipe Renewal Liner 2400 has been specifically developed for the rehabilitation of potable water pipe infrastructure to help extend service life, reduce leaks, and improve water quality by preventing the future build-up of tuberculation that can lead to color, taste, and odor issues.

Scotchkote Liner 2400 should be specified at an appropriate caliper thickness contingent upon pipe operating requirements, pipe condition, pipe diameter, bury depth, target design life, safety design factor and host pipe material substrate type. Consult the "3M Scotchkote™ Pipe Renewal Liner 2400 Potable Water Pipe Rehabilitation Design and Installation Guide" (Scotchkote 2400 Design and Installation Guide) for engineering design considerations. At prescribed caliper thickness, Scotchkote Liner 2400 projected to meet material properties of ASTM F1216-09 after 50 years. 3M used the following test methods to validate: ASTM D638-08, ASTM D790-07, ASTM D2990-08 and ASTM D1599-99.

General Attributes

Color	Gray
Ratio	1:1 By Volume 100:123.1 By Weight
Pipe Applications	Ductile Iron Pipe, Cast Iron Pipe, Cement Mortar Lined Ductile, Cast Iron Pipe, Steel Pipe, PVC, and Asbestos Cement Pipe. Asphaltic/bituman lined pipes may not be over-lined unless it can be completely removed. PVC and Asbestos Cement may only be lined at the specified structural calipers outlined in the Scotchkote Liner 2400 Design and Installation Guide.
Application	Spin cast trenchless process
Pipe Diameter Range	4 to 24 in (100 to 610 mm)
Service Connections	Service connections are not typically blocked
Return to Service Time	Same day (without bypass piping)
Potable Water Approvals	NSF/ANSI 61

Product Properties (Uncured Material)

Drying & Cure Times at 20°C (68°F)

Gel Time	60 seconds
Film Set Time	3 minutes
Cure Time (for CCTV Inspection)	10 minutes
Total Cure Time Required	60 minutes
Flush Time	30 minutes
Total Solids Content (Average) by volume	100%
Shelf Life	Use within 12 months of manufacture date. Store in original sealed containers at temperatures between 40°F (5°C) and 90°F (32°C)

Material Properties (Cured Lining)

Test	Standard	Result
V.O.C. (As Mixed)	EPA Method 24	0 g/L
Bisphenol A	EPA Method 1311	BPA Free
Tensile Strength at Break	ASTM D638-08*	39 MPa
Tensile Elongation	ASTM D638-08*	5%
Flexural Strength	ASTM D790-07*	58 MPa
Flexural Modulus	ASTM D790-07*	3620 MPa
Burst Pressure-6" Diameter Lining (Lining Thickness)	ASTM D1599-99	205 psi (3.5 mm)
Hardness	ASTM D2240-5	87 Shore D
Impact Resistance (Lining Thickness)	ASTM D2794-93	17 Joules (1.7 mm) 33 Joules (6 mm)
Abrasion Resistance	ASTM D4060-07	193 mg loss per 1000 cycles
Tg	ASTM D7028-07	205°F (96°C)
Water Absorption**	ASTM D570-98	1.31% (21 days)

*Cast and dried samples

** Meets AWWA C222-08 required 21 day value of <2%.

Application Overview Procedures for 3M™ Scotchkote™ Pipe Renewal Liner 2400

Important: Always refer to the Scotchkote 2400 Design and Installation Guide for detailed application procedures.

Pipe Cleaning & Surface Preparation

Unlined Ductile & Cast Iron, Cement Mortar Lined Pipe
Detailed cleaning procedures are recommended in 3M engineering technical bulletins. The pipe must be isolated and drained and bypass piping installed (if required). In all cases, the pipe is cleaned by gaining access through a section of the pipe that has been exposed with a 4 foot (1.2 m) length cut away. Up to 600 feet (180 m) down the pipe length, a second pit is dug and a second 4 foot (1.2 m) length is removed.

Cleaning Method	Suitable Pipe Diameter	Best Used For
Water Jet	All	Biofilms and relatively loose debris
Rack Feed Boring	4 to 10 inch (102 to 250 mm)	Heavy encrustation
Drag Scraping	4 to 24 inch (102 to 610 mm)	Heavy encrustation, exposed leaded joints
Plunging	4 inch (102 mm) and greater	Removal of sediment and standing water after cleaning
Forced Air Vortex Aggregate Cleaning (FAVAC)	4 inch (102 mm) to 10 inch (250 mm)	Heavy encrustation

IMPORTANT 1) If dry drag scraping is used, a subsequent high pressure water jetting operation must be undertaken to thoroughly remove all remaining pipe wall debris. **2) If the pipe substrate is asbestos cement (AC), recommended cleaning methods include forced air vortex cleaning with water instead of aggregate, water jetting at lower pressures, or non-abrasive swabbing.**

Cleaning Procedure

1. Review all drawings. Bends greater than 22.5° present a challenge to cleaning and application equipment. Access pits should be placed at pipe bend locations.
2. Identify and exercise valves to be used to isolate system
3. Abandoned open gate valves may be cleaned and lined in place
4. Identify source water to be used for flushing during cleaning, if necessary
5. Dig entry and exit points, isolate and drain line
6. Expose pipe sections to be cut out
7. Initiate water flow and begin cleaning process
8. Depending on method, repeat process
9. Capture all debris for proper disposal, as required by any local regulations
10. Use plunger and/or swab to remove last of sediment, dust, and standing water

Application

Application should only be performed by authorized 3M Authorized Applicators using certified 1:1 ratio polyurea application rigs which meet or exceed minimum 3M equipment standards.

General Application Steps

Important: Always refer to Scotchkote 2400 Design and Installation Guide for detailed application procedures.

1. Excavate a pit on either end of pipe section to be rehabilitated
2. Clean tuberculation, corrosion and debris from pipe using methods described at left
3. Inspect pipe using closed circuit television (CCTV)
4. Blow back through service connections if any lines are found to be blocked or plugged by debris
5. Line pipe per Scotchkote 2400 Design and Installation Guide procedures
6. Inspect lining using CCTV
7. Flush pipe per customer guidelines
IMPORTANT: All Asbestos Cement (AC) pipes require a minimum post-lining flush with at least 5,000 L of water. Flush water must be disposed of in accordance with all local, state, and federal regulations.
8. Return pipe to service upon customer approval

Handling and Safety Procedures

Read all Health Hazard, Precautionary and First Aid, Material Safety Data Sheet, and/or product label prior to handling or use.

Note: Material Data Safety Sheets are available at 3M.com/Water.

Packaging

Supplied separately in 12 liter or 170 liter units

Ordering Information/Customer Service

For ordering, technical or product information; or to request a copy of the Material Safety Data Sheet, phone: +1 (888) 745-4350

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CAUTION

Safety and Regulatory Compliance Authorized applicators will perform all of its obligations under the Scotchkote Liner 2400 Authorized Applicator Agreement in compliance with all local, state, national, and international statutes, rulings, regulations, ordinances and governmental directives, including, without limitation, those pertaining to environmental, hazardous waste disposal, transportation, employee safety and health (collectively referred to as “Laws”) that apply to authorized applicator and its business. Authorized applicator must at all times have the expertise and resources to perform its obligations under this Agreement safely and on time. Authorized applicator is solely responsible for the safe performance of all its obligations under this Agreement and for the safety of authorized applicator’s employees, sub-contractors, and invitees.

Asbestos Requirements There may be certain rules and regulations governing work related to asbestos containing materials at the local, state, and federal level. These regulations can be dependent on, but not limited to, criteria like geographic location, activity/task completed, asbestos containing material type, type of removal, etc. and usually are enacted anytime asbestos is disturbed (e.g., cutting, sanding, grinding, drilling into, etc.). It is the responsibility of the authorized applicator (or their subcontractor) to interpret and comply with local, state, and federal regulations for any activities considered to be covered under such regulations before any project is commenced. It is the responsibility of the authorized applicator (or their subcontractor) to obtain any required permits or complete any notifications to regulatory agencies. The authorized applicator will make sure it holds any required insurance needs related to asbestos projects.

Any authorized applicator or person employed by an authorized applicator that will be completing regulated asbestos activities (as defined under local, state, and federal regulations) on an asbestos project shall have appropriate asbestos handling certificate or required licenses, or equivalent. The authorized applicator shall have proof that its workers and subcontractors have been trained, certified and have work plans to address requirements related to, asbestos containment procedures, employee medical monitoring requirements, selection of appropriate personnel protective equipment (PPE) for asbestos related work, air sampling requirements, or any other asbestos requirements. It is the responsibility of the authorized applicator to meet all requirements prior to completing work on asbestos projects.

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3M Water Infrastructure

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