

NovaForm™ Expand-in-Place Styrene-Free PVC Liner

Sample Specification

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This specification covers requirements and test methods for materials, dimensions, workmanship, flattening resistance, impact resistance, pipe stiffness, extrusion quality, marking and packaging.

Material Specification

Basic Materials

The pipe shall be made from PVC compound meeting all the requirements for cell classification 12334 as defined in specification ASTM D1784 and with minimum flexural modulus properties, tested as per ASTM Method D790, of 320,000psi (2,200MPa).

Other Requirements

Flattening

There shall be no evidence of splitting, cracking or breaking when the rounded pipe is tested according to Section 11.3 of ASTM F1504.

Impact Strength

The impact strength of rounded pipe shall not be less than the values in Table 1 when tested in accordance with ASTM D2444 as referenced in ASTM F1504.

Table 1: Minimum Impact Strength at 73°F (23°C)

Pipe Size in. (mm)	Impact Strength ft-lbf (J)
6 (150)	210 (284)
8 (200)	210 (284)
10 (250)	220 (299)
12 (300)	220 (299)
15 (375)	220 (299)
18 (450)	220 (299)
24 (600)	220 (299)
30 (750)	220 (299)

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Stiffness

Values for pipe stiffness for the rounded pipe shall comply with Table 2 when tested in accordance with ASTM D2412 as referenced in ASTM F1504.

Table 2: Minimum Pipe Stiffness at 5% Deflection

Pipe Size, in. (mm)	Wall Thickness, in. (mm)	Pipe Stiffness, psi (kPa)
6 (150)	0.17 (4.3)	36 (250)
8 (200)	0.23 (5.8)	36 (250)
10 (250)	0.28 (7.3)	36 (250)
12 (300)	0.34 (8.7)	36 (250)
12 (300)	0.29 (7.4)	22 (153)
15 (375)	0.30 (7.6)	12 (83)
18 (450)	0.27 (6.9)	6 (41)
24 (600)	0.36 (9.2)	6 (41)
30 (750)	0.45 (11.5)	6 (41)

Extrusion Quality

The extrusion quality of the pipe shall be evaluated by both of the following test methods:

Acetone Immersion: The pipe shall not flake or disintegrate when tested in accordance with ASTM D2152 as referenced in ASTM F1504.

Heat Reversion: The extrusion quality of the pipe shall be estimated by heat reversion method in accordance with ASTM F1057 as referenced in ASTM F1504.

Flexural Properties: The flexural strength and modulus of the pipe shall be tested in accordance with ASTM D790 as referenced in ASTM F1504.

Dimensions

Rounded Pipe Diameter: The average outside diameter of the formed pipe shall meet requirements in Table 3, +/- 1.0% when tested in accordance with ASTM D2122 as referenced in ASTM F1504.

Rounded Pipe Wall Thickness: The wall thickness of the formed pipe shall not be less than the values specified in Table 3 when tested in accordance with ASTM D2122 as referenced in ASTM F1504.

Table 3 Rounded Pipe Dimensions

Nominal Outside Diameter In. (mm)	Minimum Wall Thickness In. (mm)
6 (150)	0.17 (4.3)
8 (200)	0.23 (5.8)
10 (250)	0.28 (7.3)
12 (300)	0.34 (8.7)
12 (300)	0.29 (7.4)
15 (375)	0.30 (7.6)
18 (450)	0.27 (6.9)
24 (600)	0.36 (9.2)
30 (750)	0.45 (11.5)

Note: As per the ASTM F1504 standard, some sizes are available in multiple thicknesses, as shown in the table above.

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Workmanship, Finish, and Appearance

The rounded and folded pipes shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other defects. The pipe shall be as uniform as commercially possible in colour, opacity, density and other physical properties.

Product Marking

Pipe shall be clearly marked as follows at intervals of 5ft. (1.5m) or less:

- Manufacturer's name or trademark and code
- Nominal outside diameter
- The PVC cell classification, for example "12334"
- The legend "DR XX FOLDED PVC PIPE"
- The designation "Specification ASTM F1504"
- Length marker and liner distance label, for example "100ft" ("30.5m")

Packaging

The full length of the PVC pipe is coiled onto a reel in a continuous length for storage and shipment. The minimum diameter of the reel drum or core shall be 48in (1,219mm).

Quality Assurance

When the product is marked with ASTM F1504 designation, the manufacturer affirms that the product was manufactured, inspected, sampled and tested in accordance with the specification and has been found to meet the requirement of it.

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