

- F. Liner minimum wall thickness shall be determined by strength and minimum stiffness requirements of Clause 1.1D.
- G. The liner shall be fabricated from materials which will be resistant to internal exposure to drainage flows and reagents listed in Table 1 above, when tested in accordance with the provisions of ASTM D543, to a temperature of 40°C.
- H. The HDPE material used in the production of the liner shall meet, or exceed, the physical properties given in Table 29-3 below.

Table 29-3:: Deformed and Reformed HDPE Liner Properties

Property	Test Method	Value
Density	ASTM D1505	>940kg/m ³
Flow rate	ASTM D1238	>8.0g/10min
Tensile strength @ yield	ASTM D638	>20N/mm ²
Ultimate elongation	ASTM D638	>600%
Flexural modulus	ASTM D790	>1000N/mm ²
Environmental stress crack resistance F ₀ , hours condition C Compressed ring ESCR F ₀	ASTM D1693 ASTM F1248	10,000hrs 10,000hrs
Brittleness temperature	ASTM D746	<-117°C
Vicat softening temperature	ASTM D1525	>125°C
Hardness, Shore D	ASTM D2240	>50
Volume resistivity	ASTM D991	>10 ¹⁵ Ohm-cm
Thermal expansion	-	<0.20mm/m/°C

- I. At the time of installation the liner shall be homogeneous throughout, uniform in colour, free of cracks, holes, foreign materials, blisters and deleterious faults.

29.2.3 Spiral Wound Pipe Liner with Stainless Steel Reinforcement

- A. The physical properties of the PVC-u material used in the production of the liner shall conform to the cell classifications 12344 or 13354 as defined by ASTM D1784.
- B. The PVC-u base material for the liner shall consist of a profile walled strip, extruded from a thermoplastic material or other material approved by the Engineer in accordance with ASTM F1697.
- C. Each liner shall be clearly marked by the manufacturer with the following information:
- Manufacturer's name.