

# No.86 Applicable Standards for UR P4.7

## (Feb 2005) (Rev.1 June 2018) (Rev.2 Mar 2019)

### “Requirements for Type Approval of Plastic Pipes”

**Table 1: Typical requirements for all systems**

	Test	Typical Standard	Notes
1	Internal pressure <sup>(1)</sup>	P4.3.1.3(i), ASTM D1599, ASTM D2992, ISO 15493 or equivalent	Top, Middle, Bottom (of range) Tests are to be carried out on pipe spools made of different pipe sizes, fittings and pipe connections.
2	External pressure <sup>(1)</sup>	P4.3.1.3(ii), ISO 15493 or equivalent	As above, for straight pipes only.
3	Axial strength	P4.3.2	As above
4	Load deformation	ASTM D2412 or equivalent	Top, Middle, Bottom (of each pressure range)
5	Temperature limitations	ISO 75 Method A GRP piping system: HDT test on each type of resin acc. to ISO 75 method A  Thermoplastic piping systems: ISO 75 Method A ISO 306 Plastics - Thermoplastic materials - Determination of Vicat softening temperature (VST) VICAT test according to ISO 2507  Polyesters with an HDT below 80° C should not be used.	Each type of resin
6	Impact resistance	ISO 9854, ISO 9653, ISO 15493 ASTM D2444, or equivalent	Representative sample of each type of construction
7	Ageing	Manufacturer's standard ISO 9142	Each type of construction
8	Fatigue	Manufacturer's standard or service experience.	Each type of construction
9	Fluid absorption	ISO 8361	
10	Material compatibility <sup>(2)</sup>	ASTM C581 Manufacturer 's standard	

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Table 2: Typical additional requirements depending on service and/or locations of piping

	Test	Typical Standard	Notes
1	Fire endurance <sup>(1)(2)</sup>	IMO Res. A.753(18), <u>as amended</u> , Appendix 1, 2	Representative samples of each type of construction and type of pipe connection
2	Flame spread <sup>(1)(2)</sup>	UR P 4.4.2 IMO Res. A.753(18), <u>as amended</u> , Appendix 3	Representative samples of each type of construction.
3	Smoke generation <sup>(2)</sup>	IMO Fire Test Procedures Code IMO Res. A.753(18), <u>as amended</u> , Appendix 3	Representative samples of each type of construction.
4	Toxicity <sup>(2)</sup>	IMO Fire Test Procedures Code IMO Res. A.753(18), <u>as amended</u> , Appendix 3	Representative samples of each type of construction.
5	Electrical conductivity <sup>(1)(2)</sup>	ASTM F1173-95 or ASTM D257, NS 6126 para. 11.2 or equivalent	Representative samples of each type of construction

## Footnotes:

<sup>(1)</sup> Test to be witnessed by a Classification Society's Surveyor.

<sup>(2)</sup> If applicable.

Note: Tests of Table 2 are optional however, if not carried out, the range of approved applications for the pipes will be limited accordingly (see UR P4.4).

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