

ISO 10639:2017-10 (E)

Plastics piping systems for pressure and non-pressure water supply - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin

Contents

	Page
Foreword	v
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
4 General	12
4.1 Classification	12
4.1.1 Categories	12
4.1.2 Nominal size	12
4.1.3 Nominal stiffness	12
4.1.4 Nominal pressure	12
4.2 Materials	13
4.2.1 General	13
4.2.2 Reinforcement	13
4.2.3 Resin	14
4.2.4 Aggregates and fillers	14
4.2.5 Thermoplastics liners	14
4.2.6 Elastomers	14
4.2.7 Metals	14
4.3 Wall construction	14
4.3.1 Inner layer	14
4.3.2 Structural layer	14
4.3.3 Outer layer	14
4.4 Appearance	15
4.5 Reference conditions for testing	15
4.5.1 Temperature	15
4.5.2 Properties of water for testing	15
4.5.3 Loading conditions	15
4.5.4 Conditioning	15
4.5.5 Measurement of dimensions	15
4.6 Elapsed time, x, for determination of long-term properties	15
4.7 Joints	16
4.7.1 General	16
4.7.2 Types of joint	16
4.7.3 Flexibility of the joint	16
4.7.4 Sealing ring	16
4.7.5 Adhesives	16
4.8 Effect on water quality	17
4.9 Assessment of conformity	17
5 Pipes	17
5.1 Type of pipes	17
5.2 Geometrical characteristics	17
5.2.1 Diameter	17
5.2.2 Wall thickness	23
5.2.3 Length	23

5.3	Mechanical characteristics	23
5.3.1	Initial specific ring stiffness	23
5.3.2	Long-term specific ring stiffness under wet conditions	24
5.3.3	Initial resistance to failure in a deflected condition	25
5.3.4	Ultimate long-term resistance to failure in a deflected condition	27
5.3.5	Initial specific longitudinal tensile strength	28
5.3.6	Initial design and failure pressures for pressure pipes	30
5.3.7	Long-term failure pressure	32
5.4	Marking	32
6	Fittings	33
6.1	All types	33
6.1.1	General	33
6.1.2	Diameter series	33
6.1.3	Nominal pressure (PN)	33
6.1.4	Nominal stiffness (SN)	33
6.1.5	Fitting type	33
6.1.6	Mechanical characteristics of fittings	33
6.1.7	Installed leaktightness of fittings	34
6.1.8	Dimensions	34
6.2	Bends	34
6.2.1	Classification of bends	34
6.2.2	Dimensions and tolerances of bends	35
6.3	Branches	38
6.3.1	Classification of branches	38
6.3.2	Dimensions and tolerances of branches	38
6.4	Reducers	41
6.4.1	Classification of reducers	41
6.4.2	Dimensions and tolerances of reducers	41
6.5	Non pressure saddles	43
6.5.1	Classification of saddles	43
6.5.2	Dimensions of saddles and associated tolerances	44
6.6	Flanges	44
6.6.1	Classification of flanges	44
6.6.2	Dimensions and tolerances for adaptors	45
6.7	Marking	47
7	Joint performance	47
7.1	General	47
7.1.1	Interchangeability	47
7.1.2	Requirements	47
7.1.3	Test temperature	48
7.1.4	Non-pressure piping and joints	48
7.1.5	Dimensions	48
7.2	Flexible joints	48
7.2.1	General	48
7.2.2	Maximum allowable draw	48
7.2.3	Maximum allowable angular deflection	48
7.2.4	Flexible non-end-load-bearing joints with elastomeric sealing rings	48
7.2.5	Flexible end-load-bearing joints with elastomeric sealing rings	49
7.3	Rigid joints	49
7.3.1	Wrapped or cemented	49
7.3.2	Bolted flange joints	50
7.4	Marking	50
	Annex A (normative) Principles used to establish the design requirements based on regression testing and consideration of the variability of the product	52
	Bibliography	57