

# ISO 11296-4:2009-11 (E)

## Plastics piping systems for renovation of underground non-pressure drain age and sewerage networks - Part 4: Lining with cured-in-place pipes

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	2
3.1	General terms .....	2
3.2	Techniques .....	3
4	Symbols and abbreviated terms .....	4
4.1	Symbols .....	4
4.2	Abbreviated terms .....	5
5	Pipes at the "M" stage .....	5
5.1	Materials .....	6
5.2	General characteristics .....	7
5.3	Material characteristics .....	7
5.4	Geometric characteristics .....	8
5.5	Mechanical characteristics .....	8
5.6	Physical characteristics .....	8
5.7	Jointing .....	8
5.8	Marking .....	8
6	Fittings at the "M" stage .....	8
6.1	Materials .....	8
6.2	General characteristics .....	9
6.3	Material characteristics .....	9
6.4	Geometric characteristics .....	9
6.5	Mechanical characteristics .....	10
6.6	Physical characteristics .....	10
6.7	Jointing .....	10
6.8	Marking .....	10
7	Ancillary components .....	10
8	Fitness for purpose of the installed lining system at the "I" stage .....	10
8.1	Materials .....	10
8.2	General characteristics .....	10
8.3	Material characteristics .....	11
8.4	Geometric characteristics .....	11
8.5	Mechanical characteristics .....	11
8.6	Physical characteristics .....	13
8.7	Additional characteristics .....	13
8.8	Sampling .....	13
9	Installation practice .....	14
9.1	Preparatory work .....	14
9.2	Storage, handling and transport of pipe components .....	14

9.3	Equipment .....	14
9.4	Installation .....	15
9.5	Process-related inspection and testing .....	16
9.6	Lining termination .....	16
9.7	Reconnecting to existing manholes and laterals .....	16
9.8	Final inspection and testing .....	16
9.9	Documentation .....	16
Annex A (informative) CIPP components and their functions .....		17
Annex B (normative) Cured-in-place pipes -- Modifications to ISO 178 for flexural testing .....		18
Annex C (normative) Cured-in-place pipes -- Test method for the determination of long-term flexural modulus under wet conditions .....		25
Annex D (normative) Cured-in-place pipes -- Determination of the creep factor under dry conditions from a three-point flexural test .....		29
Bibliography .....		32