

DIN EN 14636-2:2010-04 (E)

Plastics piping systems for non-pressure drainage and sewerage - Polyester resin concrete (PR C) - Part 2: Manholes and inspection chambers

| Contents | | Page |
|-----------------|---|-------------|
| Foreword | | 5 |
| 1 | Scope | 6 |
| 2 | Normative references | 6 |
| 3 | Terms, definitions, symbols and abbreviations | 7 |
| 3.1 | Terms and definitions | 7 |
| 3.2 | Symbols and abbreviations | 10 |
| 4 | General requirements | 12 |
| 4.1 | Materials | 12 |
| 4.1.1 | General | 12 |
| 4.1.2 | Resin | 12 |
| 4.1.3 | Aggregates and fillers | 13 |
| 4.1.4 | Elastomers | 13 |
| 4.1.5 | Metals | 13 |
| 4.1.6 | Minimum resin content | 13 |
| 4.2 | Appearance | 13 |
| 4.3 | Reference conditions for testing | 13 |
| 4.3.1 | Temperature | 13 |
| 4.3.2 | Properties of water for testing | 13 |
| 4.3.3 | Loading conditions | 13 |
| 4.3.4 | Measurement of dimensions | 13 |
| 4.4 | Joints | 14 |
| 4.4.1 | General | 14 |
| 4.4.2 | Maximum angular deflection and/or maximum draw of flexible joints | 14 |
| 4.4.3 | Joint seals | 14 |
| 4.4.4 | Adhesives | 14 |
| 5 | Manholes and inspection chamber units | 14 |
| 5.1 | Classification | 14 |
| 5.1.1 | General | 14 |
| 5.1.2 | Intended use of structure | 14 |
| 5.1.3 | Type of unit | 14 |
| 5.2 | Designation | 15 |
| 5.3 | Geometrical characteristics | 15 |
| 5.3.1 | Chamber rings and shaft rings | 15 |
| 5.3.2 | Slabs and Tapers | 17 |
| 5.3.3 | Positioning of installed steps | 18 |
| 5.3.4 | Size of openings in manholes | 19 |
| 5.3.5 | Base units containing pipe connections | 19 |
| 5.4 | Mechanical characteristics | 19 |
| 5.4.1 | Crushing strength of chamber rings or shaft rings | 19 |
| 5.4.2 | Vertical crushing strength of slabs and tapers | 21 |
| 5.4.3 | Compressive strength of polyester resin concrete (PRC) | 21 |
| 5.4.4 | Leak-tightness of manholes and inspection chambers and their joints | 21 |
| 5.4.5 | Long-term crushing strength of chamber rings or shaft rings under media attack | 22 |
| 5.4.6 | Load bearing capacity of installed steps | 22 |
| 5.5 | Marking of manhole and inspection chamber units | 22 |

| | | |
|---|--|----|
| 6 | Dangerous substances | 23 |
| 7 | Manufacturer's installation recommendations | 23 |
| 8 | Evaluation of conformity | 23 |
| 8.1 | General | 23 |
| 8.2 | Initial type testing | 23 |
| 8.2.1 | General | 23 |
| 8.2.2 | Characteristics | 24 |
| 8.2.3 | Use of historical data | 24 |
| 8.2.4 | "Deemed to satisfy" provisions and use of reference tabulated data | 24 |
| 8.2.5 | Treatment of calculated values and design | 24 |
| 8.2.6 | Sampling, testing and conformity criteria | 25 |
| 8.3 | Factory production control (FPC) | 26 |
| 8.3.1 | General | 26 |
| 8.3.2 | FPC requirements for all manufacturers | 26 |
| 8.3.3 | Manufacturer-specific FPC system requirements | 27 |
| 8.4 | One-off products, pre-production products (e.g. prototypes) and products produced in very low quantities | 29 |
| 8.4.1 | General | 29 |
| 8.4.2 | For initial type assessment | 29 |
| | | |
| Annex A (normative) Determination of a chamber ring's or shaft ring's crushing strength and ring bending tensile strength using a ring test piece | | 30 |
| A.1 | Scope | 30 |
| A.2 | Principle | 30 |
| A.3 | Apparatus | 30 |
| A.4 | Test pieces | 32 |
| A.5 | Procedure | 32 |
| A.6 | Calculations | 32 |
| A.7 | Test report | 35 |
| | | |
| Annex B (normative) Test method for the determination of a chamber ring's or shaft ring's crushing strength or the ring bending tensile strength using test pieces sawn from a ring | | 36 |
| B.1 | Scope | 36 |
| B.2 | Principle | 36 |
| B.3 | Apparatus | 36 |
| B.4 | Test piece | 37 |
| B.5 | Test procedure | 38 |
| B.6 | Calculations | 39 |
| B.7 | Test report | 40 |
| | | |
| Annex C (normative) Test method for the determination of the vertical crushing strength of slabs or tapers | | 42 |
| C.1 | Scope | 42 |
| C.2 | Principle | 42 |
| C.3 | Apparatus | 42 |
| C.4 | Preparation | 42 |
| C.5 | Procedure | 45 |
| C.6 | Test report | 45 |
| | | |
| Annex D (normative) Test method for the determination of the compressive strength of polyester resin concrete (PRC) using test pieces which are cut from a unit | | 46 |
| D.1 | Scope | 46 |
| D.2 | Principle | 46 |
| D.3 | Apparatus | 46 |
| D.4 | Test pieces | 48 |

| | | |
|---|----------------------|-----------|
| D.5 | Procedure | 49 |
| D.6 | Calculations | 49 |
| D.7 | Test report | 49 |
| Annex E (normative) Test method for the determination of the resistance of installed steps to vertical and horizontal loading | | 50 |
| E.1 | Scope | 50 |
| E.2 | Principle | 50 |
| E.3 | Apparatus | 50 |
| E.4 | Preparation | 50 |
| E.5 | Procedure | 51 |
| E.6 | Test report | 51 |
| Annex F (normative) Method for the assessment of the leak-tightness of a manhole or inspection chamber and its joints under short term exposure to internal water pressure and negative pressure | | 53 |
| F.1 | Scope | 53 |
| F.2 | Principle | 53 |
| F.3 | Apparatus | 53 |
| F.4 | Test pieces | 54 |
| F.5 | Procedure | 54 |
| F.6 | Test report | 54 |
| Annex G (normative) Test method for the determination of the long-term crushing strength (50 years evaluation point) of a chamber ring or a shaft ring, including the effects of media attack | | 56 |
| G.1 | Scope | 56 |
| G.2 | Principle | 56 |
| G.3 | Apparatus | 56 |
| G.4 | Test pieces | 57 |
| G.5 | Test solutions | 58 |
| G.6 | Procedure | 58 |
| G.7 | Evaluation | 59 |
| G.8 | Test report | 59 |
| Bibliography | | 60 |