

ISO 15590-2:2021 (E)

Petroleum and natural gas industries — Factory bends, fittings and flanges for pipeline transportation systems — Part 2: Fittings

Contents

| | |
|---------|---|
| | Foreword |
| | Introduction |
| 1 | Scope |
| 2 | Normative references |
| 3 | Terms and definitions |
| 4 | Symbols and abbreviated terms |
| 4.1 | Symbols |
| 4.2 | Abbreviated terms |
| 5 | Designation of fittings |
| 6 | Pressure rating and design |
| 6.1 | General |
| 6.2 | Tees |
| 7 | Information to be supplied by the purchaser |
| 7.1 | General information |
| 7.2 | Additional information |
| 8 | Manufacturing |
| 8.1 | Manufacturing procedure specification |
| 8.2 | Starting material |
| 8.3 | Fitting manufacture |
| 8.3.1 | Forming |
| 8.3.2 | Welding |
| 8.3.3 | Heat treatment |
| 8.3.4 | End preparation |
| 9 | Testing and inspection |
| 9.1 | General requirements |
| 9.2 | Extent of testing and inspection |
| 9.3 | Chemical composition |
| 9.4 | Mechanical testing |
| 9.4.1 | Preparation of test pieces |
| 9.4.2 | Tensile testing |
| 9.4.2.1 | Test pieces |
| 9.4.2.2 | Test method |
| 9.4.2.3 | Requirements |
| 9.4.3 | Charpy V-notch impact testing |
| 9.4.3.1 | Test pieces |
| 9.4.3.2 | Test method |
| 9.4.3.3 | Requirements |
| 9.4.4 | Through-thickness hardness testing |
| 9.4.4.1 | Test method |
| 9.4.4.2 | Acceptance criteria |
| 9.4.5 | Surface hardness testing |
| 9.4.6 | Metallographic examination |
| 9.4.6.1 | Test method |

| | |
|--|--|
| 9.4.6.2 | Acceptance criteria |
| 9.4.7 | HIC testing |
| 9.4.8 | SSC testing |
| 9.4.9 | CTOD testing |
| 9.4.10 | Guided weld bend testing |
| 9.4.10.1 | Test pieces |
| 9.4.10.2 | Test method |
| 9.4.10.3 | Acceptance criteria |
| 9.5 | Non-destructive testing |
| 9.5.1 | NDT procedures and personnel |
| 9.5.2 | Condition of fittings |
| 9.5.3 | Treatment of imperfections |
| 9.5.3.1 | Defects |
| 9.5.3.2 | Treatment of surface imperfections |
| 9.5.3.3 | Treatment of dressable surface defects |
| 9.5.3.4 | Treatment of non-dressable surface defects |
| 9.5.3.5 | Repair of defects by welding |
| 9.5.4 | Fitting ends |
| 9.5.5 | Weld seams |
| 9.5.6 | Guide bar attachment welds |
| 9.5.7 | Fitting body |
| 9.5.8 | Residual magnetism |
| 9.6 | Dimensions |
| 9.7 | Gauging |
| 9.8 | Hydrostatic testing |
| 10 | Inspection document |
| 11 | Marking |
| Annex A (normative) Design calculations | |
| A.1 | Elbows |
| A.2 | Caps |
| A.3 | Reducers (eccentric or concentric) |
| A.3.1 | Reducers with tangents |
| A.3.2 | Conical reducers |
| A.4 | Tees (full outlet and reducing) |
| A.5 | Additional design calculations |
| Annex B (normative) Proof test | |
| B.1 | Preparation for testing |
| B.2 | Test pressure |
| B.3 | Test method and equipment |
| B.4 | Establishment of the equivalent wall or schedule |
| B.5 | Applicability of results |
| B.6 | Test report |
| B.7 | Maintenance of results |