

Contents

| | |
|---------|---|
| | Foreword |
| | Introduction |
| 1 | Scope |
| 2 | Normative references |
| 3 | Terms and definitions |
| 4 | Requirements |
| 4.1 | Welding operator qualification |
| 4.2 | Essential variables and ranges of qualification |
| 4.2.1 | General |
| 4.2.2 | Friction stir welding methods |
| 4.2.3 | Welding equipment |
| 4.2.4 | Parent materials |
| 4.2.5 | Weld joint geometry |
| 4.2.6 | Quality acceptance levels |
| 4.3 | Qualification methods |
| 4.3.1 | Qualification based on standard welding test |
| 4.3.2 | Qualification based on welding procedure test |
| 4.3.3 | Qualification based on pre-production welding test |
| 4.3.4 | Qualification based on production sample welding test |
| 4.4 | Test welds |
| 4.4.1 | General |
| 4.4.2 | Testing and acceptance levels of test welds |
| 4.4.2.1 | General |
| 4.4.2.2 | Visual testing |
| 4.4.2.3 | Macroscopic examination |
| 4.4.2.4 | Bend test |
| 4.4.3 | Re-testing |
| 4.5 | Test report |
| 5 | Certificate |
| 5.1 | General |
| 5.2 | Period of validity |
| 5.2.1 | Initial qualification |
| 5.2.2 | Confirmation of the validity |
| 5.2.3 | Prolongation of qualification |
| Annex A | (normative) Knowledge of the welding unit and its operation |
| A.1 | General |
| A.2 | Requirements |
| Annex B | (normative) Knowledge of welding technology |
| B.1 | General |
| B.2 | Requirements |
| Annex C | (informative) Example of a qualification test certificate for FSW welding operators |