

# ISO 24394:2023-09 (E)

## Welding for aerospace applications - Qualification test for welders and welding operators - Fusion welding of metallic components

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>1</b>
<b>4</b>	<b>Qualification test requirements .....</b>	<b>3</b>
4.1	General .....	3
4.1.1	Specific to the welder qualification test .....	3
4.1.2	Specific to the welding operator qualification test .....	3
4.2	Welding processes .....	4
4.3	Welding positions .....	5
4.4	Product types or semi-finished products applicable to welder qualification tests .....	5
4.5	Material groups .....	9
4.6	Material thickness .....	10
4.6.1	Butt weld material thickness .....	10
4.6.2	Fillet weld material thickness .....	10
4.6.3	Casting repair material thickness .....	10
4.7	Special qualification tests .....	10
4.7.1	General requirements .....	10
4.7.2	Special qualification tests for welders .....	10
4.7.3	Special qualification tests for welding operators .....	11
4.8	Designation for qualification test .....	11
4.8.1	Welder qualification test .....	11
4.8.2	Welding operator qualification test .....	12
<b>5</b>	<b>Conditions required for welder and welding operator qualification tests .....</b>	<b>12</b>
5.1	Physical requirements for welder and welding operator .....	12
5.2	Person responsible for welder and welding operator qualification tests .....	13
<b>6</b>	<b>Performing the welder and welding operator qualification test .....</b>	<b>13</b>
6.1	Practical qualification test .....	13
6.1.1	General requirements .....	13
6.1.2	Specific requirements for the welder qualification test .....	13
6.2	Theory test .....	14
<b>7</b>	<b>Test pieces .....</b>	<b>14</b>
<b>8</b>	<b>Examination and testing .....</b>	<b>18</b>
8.1	General .....	18
8.2	Visual inspection and dimensional examination .....	19
8.3	Surface imperfection detection .....	19
8.4	Radiographic examination .....	19
8.5	Metallographic examinations .....	19
8.6	Bend test .....	20
8.7	Fracture surface examination .....	20

<b>9</b>	<b>Acceptance criteria .....</b>	<b>20</b>
<b>10</b>	<b>Qualification test certificate and documentation .....</b>	<b>20</b>
<b>11</b>	<b>Period of validity of the qualification .....</b>	<b>21</b>
<b>12</b>	<b>Requalification test .....</b>	<b>21</b>
	<b>Annex A (normative) Test piece acceptance criteria .....</b>	<b>22</b>
	<b>Annex B (normative) Welder or welding operator qualification test record .....</b>	<b>27</b>
	<b>Annex C (informative) Welder qualification test certificate .....</b>	<b>28</b>
	<b>Annex D (informative) Welding operator qualification test certificate .....</b>	<b>29</b>
	<b>Annex E (informative) Guidelines for the theory test .....</b>	<b>31</b>
	<b>Bibliography .....</b>	<b>34</b>