

# ISO 19882:2025-02 (E)

## Gaseous hydrogen - Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers

---

<b>Contents</b>		<b>Page</b>
Foreword .....		vi
Introduction .....		vii
<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>2</b>
<b>4</b>	<b>Service conditions .....</b>	<b>3</b>
4.1	General .....	3
4.2	Design service life .....	3
4.3	Nominal working pressure .....	4
4.4	Durability test cycles .....	4
4.5	Temperature range .....	4
<b>5</b>	<b>Quality assurance .....</b>	<b>4</b>
<b>6</b>	<b>General requirements .....</b>	<b>4</b>
6.1	Material requirements .....	4
6.1.1	General .....	4
6.1.2	Metallic materials .....	4
6.1.3	Non-metallic materials .....	5
6.2	Design requirements .....	5
6.3	Flow capacity .....	5
6.4	Failure modes and effects analysis (FMEA) .....	6
<b>7</b>	<b>Design qualification testing .....</b>	<b>6</b>
7.1	Test requirements .....	6
7.1.1	General .....	6
7.1.2	Test gases .....	8
7.2	Pressure cycling .....	8
7.2.1	Sampling .....	8
7.2.2	Procedure .....	8
7.2.3	Acceptable results .....	9
7.3	Accelerated life .....	9
7.3.1	Sampling .....	9
7.3.2	Procedure .....	9
7.3.3	Acceptable results .....	9
7.4	Thermal cycling .....	10
7.4.1	Sampling .....	10
7.4.2	Procedure .....	10
7.4.3	Acceptable results .....	10
7.5	Accelerated cyclic corrosion .....	10
7.5.1	Sampling .....	10
7.5.2	Procedure .....	10
7.5.3	Acceptable results .....	12
7.6	Automotive fluids exposure .....	12
7.6.1	Sampling .....	12
7.6.2	Procedure .....	12

7.6.3	Acceptable results .....	12
7.7	Atmospheric exposure .....	13
7.7.1	General .....	13
7.7.2	Oxygen aging .....	13
7.7.3	Ozone .....	13
7.8	Stress corrosion cracking resistance .....	13
7.8.1	Sampling .....	13
7.8.2	Procedure .....	13
7.8.3	Acceptable results .....	14
7.9	Impact due to drop and vibration .....	14
7.9.1	Impact due to drop .....	14
7.9.2	Vibration .....	14
7.10	Leakage .....	15
7.10.1	Sampling .....	15
7.10.2	Procedure .....	15
7.10.3	Acceptable results .....	15
7.11	Bench top activation .....	15
7.11.1	Direct-acting TPRD .....	15
7.11.2	Pilot-activated PRDs .....	16
7.12	Flow capacity .....	17
7.12.1	Sampling .....	17
7.12.2	Procedure .....	17
7.12.3	Acceptable results .....	17
7.13	High pressure activation and flow .....	18
7.13.1	Sampling .....	18
7.13.2	Procedure .....	18
7.13.3	Acceptable results .....	18
7.14	Excess torque resistance .....	18
7.14.1	Sampling .....	18
7.14.2	Procedure .....	18
7.14.3	Acceptable results .....	18
7.15	Hydrostatic strength .....	19
7.15.1	Sampling .....	19
7.15.2	Procedure .....	19
7.15.3	Acceptable results .....	19
7.16	Water jet protection .....	19
7.16.1	Sampling .....	19
7.16.2	Procedure .....	19
7.16.3	Acceptable results .....	20
8	Inspection and acceptance testing .....	20
8.1	Inspection and acceptance testing plan .....	20
8.2	Inspector's responsibilities .....	20
8.3	Inspection of system critical components .....	20
8.4	Leak testing .....	20
9	Production batch testing .....	20
9.1	General .....	20
9.2	Production batch sizes .....	21
9.2.1	General .....	21
9.2.2	Fusible materials .....	21
9.2.3	Pressure relief devices .....	21
9.3	Pressure relief device components .....	21
9.4	Pressure cycle verification .....	21
9.4.1	General .....	21
9.4.2	Procedure .....	21
9.4.3	Acceptable results .....	21
9.5	Bench top activation .....	21
9.5.1	General .....	21
9.5.2	Procedure .....	21
9.5.3	Acceptable results .....	22

<b>10</b>	<b>Marking .....</b>	<b>22</b>
<b>10.1</b>	<b>Required information .....</b>	<b>22</b>
<b>10.2</b>	<b>Marking methods .....</b>	<b>22</b>
<b>11</b>	<b>Component literature .....</b>	<b>22</b>
<b>11.1</b>	<b>General .....</b>	<b>22</b>
<b>11.2</b>	<b>Component literature recommendations for pilot-activated PRD valves .....</b>	<b>23</b>
<b>Annex A (informative) Subsystem and vehicle level considerations .....</b>		<b>24</b>
<b>Annex B (informative) Design qualification test rationale .....</b>		<b>28</b>
<b>Bibliography .....</b>		<b>31</b>