

# ISO 13535:2000-12 (E)

## Petroleum and natural gas industries - Drilling and production equipment - Hoisting equipment

---

<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>2</b>
<b>3</b>	<b>Terms, definitions and abbreviated terms .....</b>	<b>3</b>
3.1	Terms and definitions .....	3
3.2	Abbreviated terms .....	5
<b>4</b>	<b>Design .....</b>	<b>5</b>
4.1	General .....	5
4.2	Design conditions .....	5
4.3	Strength analysis .....	5
4.4	Size class .....	7
4.5	Contact surface radii .....	7
4.6	Rating .....	7
4.7	Design safety factor .....	7
4.8	Shear strength .....	8
4.9	Specific equipment .....	8
4.10	Design documentation .....	8
<b>5</b>	<b>Design verification test .....</b>	<b>8</b>
5.1	General .....	8
5.2	Sampling of test units .....	8
5.3	Test procedures .....	8
5.4	Determination of load rating .....	9
5.5	Alternative design verification test procedure and rating .....	9
5.6	Design verification test apparatus .....	10
5.7	Design changes .....	10
5.8	Records .....	10
<b>6</b>	<b>Materials requirements .....</b>	<b>10</b>
6.1	General .....	10
6.2	Written specifications .....	10
6.3	Mechanical properties .....	11
6.4	Material qualification .....	11
6.5	Manufacture .....	12
6.6	Chemical composition .....	12
<b>7</b>	<b>Welding requirements .....</b>	<b>15</b>
7.1	General .....	15
7.2	Welding qualifications .....	15
7.3	Written documentation .....	15
7.4	Control of consumables .....	15
7.5	Weld properties .....	15
7.6	Post-weld heat-treatment .....	16
7.7	Fabrication welds .....	16
7.8	Repair welds .....	16

8	Quality control .....	17
8.1	General .....	17
8.2	Quality control personnel qualifications .....	17
8.3	Measuring and test equipment .....	17
8.4	Quality control for specific equipment and components .....	17
8.5	Dimensional verification .....	22
8.6	Proof load test .....	22
8.7	Hydrostatic testing .....	23
8.8	Functional testing .....	23
9	Equipment .....	24
9.1	General .....	24
9.2	Hoisting sheaves .....	24
9.3	Travelling blocks .....	25
9.4	Block-to-hook adapters .....	26
9.5	Connectors, link-adapters and drill-pipe elevator-adapters .....	26
9.6	Drilling hooks .....	26
9.7	Elevator links .....	26
9.8	Elevators .....	26
9.9	Rotary swivels .....	29
9.10	Power swivels .....	36
9.11	Power subs .....	36
9.12	Wireline anchors .....	37
9.13	Drill-string motion compensators .....	37
9.14	Pressure vessels and piping .....	37
9.15	Anti-friction bearings .....	37
9.16	Safety clamps when capable of being used as hoisting equipment .....	37
10	Marking .....	38
10.1	Product marking .....	38
10.2	Rating marking .....	38
10.3	Composite equipment marking .....	38
10.4	Component traceability .....	38
10.5	Serialization .....	38
10.6	Marking method .....	38
11	Documentation .....	38
11.1	General .....	38
11.2	Documentation to be kept by the manufacturer .....	39
11.3	Documentation to be delivered with the equipment .....	39
Annex A (normative) Supplementary requirements .....		41
A.1	General .....	41
A.2	SR 1 Proof load test .....	41
A.3	SR 2 Low temperature test .....	41
A.4	SR 3 Data book .....	41
A.5	SR 4 Additional volumetric examination of castings .....	42
A.6	SR 5 Volumetric examination of wrought material .....	42
Annex B (normative) Guide dollies .....		43
B.1	General .....	43
B.2	Principal loading conditions and corresponding safety factors .....	43
B.3	Loads and load combinations .....	43
B.4	Fatigue considerations .....	44
B.5	Special safety precautions .....	44
Annex C (informative) Guidance for qualification of heat-treatment equipment .....		45
C.1	Temperature tolerance .....	45

<b>C.2</b>	<b>Furnace calibration .....</b>	<b>45</b>
<b>C.3</b>	<b>Instruments .....</b>	<b>46</b>
	<b>Bibliography .....</b>	<b>47</b>