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AMENDMENT 1
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Cryogenic vessels — Pressure-relief accessories for cryogenic service —

Part 1: Reclosable pressure-relief valves

AMENDMENT 1

Récipients cryogéniques — Dispositifs de sécurité pour le service cryogénique —

Partie 1: Soupapes de sûreté pour service cryogénique

AMENDEMENT 1

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This document was prepared by Technical Committee ISO/TC 220, *Cryogenic vessels*.

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Cryogenic vessels — Pressure-relief accessories for cryogenic service —

Part 1:
Reclosable pressure-relief valves

AMENDMENT 1

4.3.1

Replace the first two sentences in the first paragraph with the following:

> Materials shall be either
>
> — in conformance with an internationally recognized standard (see Annex A), or
>
> — in conformance with this subclause.
>
> Materials shall be compatible with the process fluid. Materials and combination of materials shall be selected such that galling, frictional heating, and galvanic corrosion are avoided.

Replace the first sentence in the second paragraph with the following:

> For materials that are not in conformance with an internationally recognized standard (see Annex A), the materials shall be controlled by the manufacturer of the pressure-relief valve by a specification ensuring control of chemical content and physical properties and quality at least equivalent to an internationally recognized standard.

Annex

Add the following new Annex A:

Annex A
(normative)

Internationally recognized standards

Table A.1 — European materials

Specification number	Material grade	Material number	Material group ISO/TR 15608:2017
EN 10216-5	X5CrNi18-10	1.4301	8.1
EN 10216-5	X2CrNi19-11	1.4306	8.1
EN 10216-5	X2CrNi18-9	1.4307	8.1
EN 10216-5	X5CrNiMo17-12-2	1.4401	8.1
EN 10216-5	X2CrNiMo17-12-2	1.4404	8.1
EN 10216-5	X6CrNiTi18-10	1.4541	8.1
EN 10216-5	X6CrNiMoTi17-12-2	1.4571	8.1
EN 10217-7	X5CrNi18-10	1.4301	8.1
EN 10217-7	X2CrNi19-11	1.4306	8.1
EN 10217-7	X2CrNi18-9	1.4307	8.1
EN 10217-7	X5CrNiMo17-12-2	1.4401	8.1
EN 10217-7	X2CrNiMo17-12-2	1.4404	8.1
EN 10217-7	X6CrNiTi18-10	1.4541	8.1
EN 10217-7	X6CrNiMoTi17-12-2	1.4571	8.1
EN 10253-4	X5CrNi18-10	1.4301	8.1
EN 10253-4	X2CrNi19-11	1.4306	8.1
EN 10253-4	X2CrNi18-9	1.4307	8.1
EN 10253-4	X5CrNiMo17-12-2	1.4401	8.1
EN 10253-4	X2CrNiMo17-12-2	1.4404	8.1
EN 10253-4	X6CrNiTi18-10	1.4541	8.1
EN 10253-4	X6CrNiTi18-10	1.4571	8.1
EN 10272	X5CrNi18-10	1.4301	8.1
EN 10272	X2CrNi19-11	1.4306	8.1
EN 10272	X2CrNi18-9	1.4307	8.1
EN 10272	X5CrNiMo17-12-2	1.4401	8.1
EN 10272	X2CrNiMo17-12-2	1.4404	8.1
EN 10272	X6CrNiTi18-10	1.4541	8.1
EN 10272	X6CrNiTi18-10	1.4571	8.1
EN 10028-7	X5CrNi18-10	1.4301	8.1
EN 10028-7	X2CrNi19-11	1.4306	8.1
EN 10028-7	X2CrNi18-9	1.4307	8.1
EN 10028-7	X5CrNiMo17-12-2	1.4401	8.1
EN 10028-7	X2CrNiMo17-12-2	1.4404	8.1
EN 10028-7	X6CrNiTi18-10	1.4541	8.1
EN 10028-7	X6CrNiTi18-10	1.4571	8.1
EN 10088-1	X5CrNi18-10	1.4301	8.1

Table A.1 *(continued)*

Specification number	Material grade	Material number	Material group ISO/TR 15608:2017
EN 10088-1	X2CrNi19-11	1.4306	8.1
EN 10088-1	X2CrNi18-9	1.4307	8.1
EN 10088-1	X5CrNiMo17-12-2	1.4401	8.1
EN 10088-1	X2CrNiMo17-12-2	1.4404	8.1
EN 10088-1	X6CrNiTi18-10	1.4541	8.1
EN 10088-1	X6CrNiTi18-10	1.4571	8.1

Table A.2 — Non-European materials [a]

Specification number	Material grade	Material number	Material group ISO/TR 15608:2017
SA/A-312	TP 316L	S 31603	8.1
SA/A-358	TP 316L	S 31603	8.1
SA/A-249	TP 316L	S 31603	8.1
SA/A-409	TP 316L	S 31603	8.1
SA/A-688	TP 316L	S 31603	8.1
SA/A-813	TP 316L	S 31603	8.1
SA/A-814	TP 316L	S 31603	8.1
SA/A-249	TP 316	S 31600	8.1
SA/A-312	TP 316	S 31600	8.1
SA/A-358	TP 316	S 31600	8.1
SA/A-409	TP 316	S 31600	8.1
SA/A-688	TP 316	S 31600	8.1
SA/A-813	TP 316	S 31600	8.1
SA/A-814	TP 316	S 31600	8.1
SA/A-249	TP 316LN	S 31653	8.1
SA/A-312	TP 316LN	S 31653	8.1
SA/A-358	TP 316LN	S 31653	8.1
SA/A-688	TP 316LN	S 31653	8.1
SA/A-249	TP 316N	S 31651	8.1
SA/A-312	TP 316N	S 31651	8.1
SA/A-358	TP 316N	S 31651	8.1
SA/A-688	TP 316N	S 31651	8.1
SA/A-813	TP 316N	S 31651	8.1
SA/A-814	TP 316N	S 31651	8.1
SA/A-249	TPXM-29	S 24000	8.3
SA/A-312	TPXM-29	S 24000	8.3
SA/A-688	TPXM-29	S 24000	8.3
SA/A-249	TP 304L	S 30403	8.1
SA/A-312	TP 304L	S 30403	8.1
SA/A-358	TP 304L	S 30403	8.1

NOTE SA/SB prefix to specification number refers to ASME specifications. A/B prefix to specification number refers to ASTM specifications. When materials to ASME specifications are unavailable, materials to the same specification number with a prefix of A/B (ASTM) are used. All ASME/ASTM specification numbers listed are equally acceptable with a suffix M.

[a] Casting materials shall comply to ASTM A 990:2021, Table 6 Level 2 Shrinkage.

Table A.2 *(continued)*

Specification number	Material grade	Material number	Material group ISO/TR 15608:2017
SA/A-409	TP 304L	S 30403	8.1
SA/A-688	TP 304L	S 30403	8.1
SA/A-813	TP 304L	S 30403	8.1
SA/A-814	TP 304L	S 30403	8.1
SA/A-249	TP 304	S 30400	8.1
SA/A-334	8	K 81340	9.3
SA/A-333	8	K 81340	9.3
SA/A-312	TP 304	S 30400	8.1
SA/A-358	TP 304	S 30400	8.1
SA/A-409	TP 304	S 30400	8.1
SA/A-688	TP 304	S 30400	8.1
SA/A-813	TP 304	S 30400	8.1
SA/A-814	TP 304	S 30400	8.1
SA/A-249	TP 304LN	S 30453	8.1
SA/A-312	TP 304LN	S 30453	8.1
SA/A-358	TP 304LN	S 30453	8.1
SA/A-688	TP 304LN	S 30453	8.1
SA/A-813	TP 304LN	S 30453	8.1
SA/A-814	TP 304LN	S 30453	8.1
SA/A-249	TP 304N	S 30451	8.1
SA/A-312	TP 304N	S 30451	8.1
SA/A-358	TP 304N	S 30451	8.1
SA/A-688	TP 304N	S 30451	8.1
SA/A-813	TP 304N	S 30451	8.1
SA/A-814	TP 304N	S 30451	8.1
SA/A-312	TP 321	S 32100	8.1
SA/A-249	TP 321	S 32100	8.1
SA/A-358	TP 321	S 32100	8.1
SA/A-409	TP 321	S 32100	8.1
SA/A-813	TP 321	S 32100	8.1
SA/A-814	TP 321	S 32100	8.1
SA/A-213	TP 316L	S 31603	8.1
SA/A-312	TP 316L	S 31603	8.1
SA/A-430	FP 316	S 31600	8.1
SA/A-213	TP 316	S 31600	8.1
SA/A-312	TP 316	S 31600	8.1
SA/A-376	TP 316	S 31600	8.1
SA/A-213	TP 316LN	S 31653	8.1
SA/A-312	TP 316LN	S 31653	8.1
SA/A-376	TP 316LN	S 31653	8.1

NOTE SA/SB prefix to specification number refers to ASME specifications. A/B prefix to specification number refers to ASTM specifications. When materials to ASME specifications are unavailable, materials to the same specification number with a prefix of A/B (ASTM) are used. All ASME/ASTM specification numbers listed are equally acceptable with a suffix M.

[a] Casting materials shall comply to ASTM A 990:2021, Table 6 Level 2 Shrinkage.

Table A.2 *(continued)*

Specification number	Material grade	Material number	Material group ISO/TR 15608:2017
SA/A-430	FP 316N	S 31651	8.1
SA/A-213	TP 316N	S 31651	8.1
SA/A-312	TP 316N	S 31651	8.1
SA/A-376	TP 316N	S 31651	8.1
SA/A-182	F 316L	S 31603	8.1
SA/A-336	F 316L	S 31603	8.1
SA/A-403	316L	S 31603	8.1
SA/A-182	F 316	S 31600	8.1
SA/A-336	F 316L	S 31600	8.1
SA/A-403	316	S 31600	8.1
SA/A-182	F 316LN	S 31653	8.1
SA/A-336	F 316LN	S 31653	8.1
SA/A-403	316LN	S 31653	8.1
SA/A-182	F 316N	S 31651	8.1
SA/A-336	F 316N	S 31651	8.1
SA/A-403	316N	S 31651	8.1
SA/A-182	F 304L	S 30403	8.1
SA/A-336	F 304L	S 30403	8.1
SA/A-403	304L	S 30403	8.1
SA/A-182	F 304	S 30400	8.1
SA/A-336	F 304	S 30400	8.1
SA/A-403	304	S 30400	8.1
SA/A-182	F 304LN	S 30453	8.1
SA/A-336	F 304LN	S 30453	8.1
SA/A-403	304LN	S 30453	8.1
SA/A-182	F 304N	S 30451	8.1
SA/A-336	F 304N	S 30451	8.1
SA/A-403	304N	S 30451	8.1
SA/A-552	I	K 81340	9.3
SA/A-420	WPL8	K 81340	9.3
SA/A-213	TP 304L	S 30403	8.1
SA/A-213	TP 304	S 30400	8.1
SA/A-213	TP 304LN	S 30453	8.1
SA/A-213	TP 304N	S 30451	8.1
SA/A-430	FP 304	S 30400	8.1
SA/A-430	FP 304N	S 30451	8.1
SA/A-376	TP 304LN	S 30453	8.1
SA/A-376	TP 304	S 30400	8.1
SA/A-376	TP 304N	S 30451	8.1
SA/A-376	TP 316LN	S 31653	8.1

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[a] Casting materials shall comply to ASTM A 990:2021, Table 6 Level 2 Shrinkage.

Table A.2 *(continued)*

Specification number	Material grade	Material number	Material group ISO/TR 15608:2017
SA/A-376	TP 316	S 31600	8.1
SA/A-376	TP 316N	S 31651	8.1
SA/A-213	TP 321	S 32100	8.1
SA/A-333	1	K 03008	11.1
SA/A-333	2	—	-
SA/A-333	3	K 31918	9.2
SA/A-333	4	K 11267	4.1
SA/A-333	5	—	-
SA/A-333	6	K 03006	11.1
SA/A-333	7	K 21903	9.1
SA/A-333	8	K 81340	9.3
SA/A-333	9	K 22035	9.1
SA/A-333	10	—	1.3
SA/A-333	11	—	48
SA/A-105		K 03504	11.1
SA/A-350	LF-1	K 03504	11.1
SA/A-350	LF 2	K 03009	11.1
SA/A-350	LF 3	K 03011	9.2
SA/A-350	LF 5	K 13050	9.1
SA/A-350	LF 6	—	1.3
SA/A-350	LF 9	K 22036	9.1
SA/A-350	LF 787	—	9.1
SA/A-106	A	K 02501	1.1
SA/A-106	B	K 03006	11.1
SA/A-106	C	K 03501	11.1
A-511	TP 304	S 30400	8.1
A-511	TP 304L	S 30403	8.1
A-511	TP 316L	S 31603	8.1
A-511	TP 316	S 31600	8.1
A-511	TP 321	S 32100	8.1
SA/A-351	CF8	J92600	8.1
SA/A-351	CF8M	J92900	8.1
SA/A-351	CF3	J92500	8.1
SA/A-351	CF3M	J92800	8.1
A-269	TP 316L	S 31603	8.1
A-269	TP 316	S 31600	8.1
A-269	TP 316LN	S 31653	8.1
A-269	TP 316 N	S 31651	8.1
A-269	TP 304L	S 30403	8.1
A-269	TP 304	S 30400	8.1

NOTE SA/SB prefix to specification number refers to ASME specifications. A/B prefix to specification number refers to ASTM specifications. When materials to ASME specifications are unavailable, materials to the same specification number with a prefix of A/B (ASTM) are used. All ASME/ASTM specification numbers listed are equally acceptable with a suffix M.

[a] Casting materials shall comply to ASTM A 990:2021, Table 6 Level 2 Shrinkage.

Table A.2 *(continued)*

Specification number	Material grade	Material number	Material group ISO/TR 15608:2017
A-269	TP 304LN	S 30453	8.1
A-269	TP 304N	S 30451	8.1
A-269	TP 321	S 32100	8.1
A-269	TPXM 29	S 24000	8.3
A-632	TP 304L	S 30403	8.1
A-632	TP 304	S 30400	8.1
A-632	TP 316L	S 31603	8.1
A-632	TP 316	S 31600	8.1
A-632	TP 321	S 32100	8.1
A-733	TP 304L	S 30403	8.1
A-733	TP 304	S 30400	8.1
A-733	TP 316L	S 31603	8.1
A-733	TP 316	S 31600	8.1
SA/A-479 or equivalent	316L	S 31603	58.1
SA/A-479 or equivalent	316	S 31600	8.1
SA/A-479 or equivalent	316LN	S 31653	8.1
SA/A-479 or equivalent	316N	S 31651	8.1
SA/A-479 or equivalent	304L	S 30403	8.1
SA/A-479 or equivalent	304	S 30400	8.1
SA/A-479 or equivalent	304LN	S 30453	8.1
SA/A-479 or equivalent	304N	S 30451	8.1
SA/A-479 or equivalent	321	S 32100	8.1
SA/A-240	316L	S 31603	8.1
SA/A-240	316	S 31600	8.1
SA/A-240	316LN	S 31653	8.1
SA/A-240	316N	S 31651	8.1
SA/A-240	304L	S 30403	8.1
SA/A-240	304	S 30400	8.1
SA/A-240	304LN	S 30453	8.1
SA/A-240	304N	S 30451	8.1
SA/A-240	321	S 32100	8.1
A-580 or equivalent	316L	S 31603	8.1
A-580 or equivalent	316	S 31600	8.1
A-580 or equivalent	316LN	S 31653	8.1
A-580 or equivalent	316N	S 31651	8.1
A-580 or equivalent	304L	S 30403	8.1
A-580 or equivalent	304	S 30400	8.1
A-580 or equivalent	304LN	S 30453	8.1
A-580 or equivalent	304N	S 30451	8.1
A-580 or equivalent	321	S 32100	8.1

NOTE SA/SB prefix to specification number refers to ASME specifications. A/B prefix to specification number refers to ASTM specifications. When materials to ASME specifications are unavailable, materials to the same specification number with a prefix of A/B (ASTM) are used. All ASME/ASTM specification numbers listed are equally acceptable with a suffix M.

[a] Casting materials shall comply to ASTM A 990:2021, Table 6 Level 2 Shrinkage.