
Hladilni sistemi in toplotne črpalke - Varnostnotehnične in okoljevarstvene zahteve - 1. del: Osnovne zahteve, definicije, razvrstitev in kriteriji za izbiro - Dopolnilo A1

Refrigerating systems and heat pumps - Safety and environmental requirements - Part 1: Basic requirements, definitions, classification and selection criteria

Kälteanlagen und Wärmepumpen- Sicherheitstechnische und umweltrelevante Anforderungen - Teil 1: Grundlegende Anforderungen, Begriffe, Klassifikationen und Auswahlkriterien

Systèmes frigorifiques et pompes à chaleur - Exigences de sécurité et d'environnement - Partie 1: Exigences de base, définitions, classification et critères de choix

Ta slovenski standard je istoveten z: EN 378-1:2016/prA1:2019

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27.080	Toplotne črpalke	Heat pumps
27.200	Hladilna tehnologija	Refrigerating technology

SIST EN 378-1:2017/oprA1:2019 **en,fr,de**

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<https://standards.iteh.ai/catalog/standards/sist/5e46669a-3e68-4b76-ab5b-e870298f66f2/sist-en-378-1-2017-oprA1-2019>

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Refrigerating systems and heat pumps - Safety and environmental requirements - Part 1: Basic requirements, definitions, classification and selection criteria

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Kälteanlagen und Wärmepumpen-
Sicherheitstechnische und umweltrelevante
Anforderungen - Teil 1: Grundlegende Anforderungen,
Begriffe, Klassifikationen und Auswahlkriterien

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 182.

This draft amendment A1, if approved, will modify the European Standard EN 378-1:2016. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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Contents

Page

European foreword.....	3
1 Modification to Terms and definitions.....	4
2 Modification to Annex C, Subclause C.3.1 General.....	4
3 Modification to Annex E.....	5

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European foreword

This document (EN 378-1:2016/prA1:2019) has been prepared by Technical Committee CEN/TC 182 “Refrigerating systems, safety and environmental requirements”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

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EN 378-1:2016/prA1:2019 (E)**1 Modification to Terms and definitions**

Replace definition 3.1.16 with the following:

“

3.1.16**split system**

refrigerating system, comprising one or more factory-made indoor units in a space and one or more factory made units which are located outside the space and which are connected on site by refrigerant piping in accordance with the instructions of the manufacturers of the factory-made units”

2 Modification to Annex C, Subclause C.3.1 General

Replace the third dashed item of the second paragraph with the following:

“

- systems where all branches (e.g. headers or Tees) and all changes in diameter (e.g. reducers) in refrigerant-containing piping in the occupied space in question are manufactured from factory-made fittings or manifolds;
- systems where design, sizing, and selection of materials and of components of field installed refrigerant-containing piping in the occupied space in question are in accordance with the instructions of the manufacturers of the factory-made units;
- systems where no valves (e.g. expansion valves, switch-over valves, service valves) or service ports are installed in the in the occupied space in question, with the exception of valves or service ports which are part of the factory-made units;

“

3 Modification to Annex E

Replace Table E.1, Table E.2 and Table E.3 with the following tables:

“

Table E.1 — Refrigerant designations

Refrigerant number	Chemical name ^b	Chemical formula	Safety class	PED ^m fluid group	Practical limit ^d kg/m ³	ATEL/ODL ^g kg/m ³	LFL ^h kg/m ³	Vapour density 25 °C, 101,3 kPa ^a kg/m ³	Molecular mass ^a	Normal boiling point ^a °C	ODP ^{ae}	GWP ^l 100 yr ITH	GWP ^{af} (AR5) 100 yr ITH	Auto ignition temperature °C
Methane series														
11	Trichlorofluoromethane	CCl ₃ F	A1	2	0,3 ^v	0,0062 ^j	NF	5,62	137,4	24	1	4 750	4 660	ND
12	Dichlorodifluoromethane	CCl ₂ F ₂	A1	2	0,5 ⁱ	0,088 ^j	NF	4,94	120,9	-29	1	10 900	10 200	ND
12B1	Bromochlorodifluoromethane	CBrClF ₂	ND	ND	0,2	ND	NF	6,76	165,4	-4	3	1 890	1 750	N.D
13	Chlorotrifluoromethane	CClF ₃	A1	2	0,5 ⁱ	ND	NF	4,27	104,5	-81	1	14 400	13 900	ND
13B1	Bromotrifluoromethane	CBrF ₃	A1	2	0,6 ⁱ	ND	NF	6,09	148,9	-58	10	7 140	6 290	ND
14	Carbon tetrafluoride	CF ₄	A1	2	0,4	0,40 ^j	NF	3,60	88,0	-128	0	7 390	6 630	ND
22	Chlorodifluoromethane	CHClF ₂	A1	2	0,3 ⁱ	0,21 ^j	NF	3,54	86,5	-41	0,055	1 810	1 760	635
23	Trifluoromethane	CHF ₃	A1	2	0,68 ⁱ	0,15	NF	2,86	70,0	-82	0	14 800	12 400	765
30	Dichloromethane (methylene chloride)	CH ₂ Cl ₂	B2	2	0,017	ND	0,417	NA	84,9	40	ND	9	9	662
32	Difluoromethane (methylene fluoride)	CH ₂ F ₂	A2L	1	0,061	0,30 ^j	0,307	2,13	52,0	-52	0	675	677	648

EN 378-1:2016/prA1:2019 (E)

Refrigerant number	Chemical name ^b	Chemical formula	Safety class	PED ^m fluid group	Practical limit ^d kg/m ³	ATEL/ODL ^g kg/m ³	LFL ^h kg/m ³	Vapour density 25 °C, 101,3 kPa ^a kg/m ³	Molecular mass ^a	Normal boiling point ^a °C	ODP ^{ae}	GWP ^l 100 yr ITH	GWP ^{af} (AR5) 100 yr ITH	Auto ignition temperature °C
50	Methane	CH ₄	A3	1	0,006	ND	0,032	0,654	16,0	-161	0	25	30	645
Ethane series														
113	1,1,2-trichloro-1,2,2-trifluoroethane	CCl ₂ FCF ₂	A1	2	0,4 ⁱ	0,02 ^j	NF	NA	187,4	48	0,8	6 130	5 820	ND
114	1,2-dichloro-1,1,2,2-tetrafluoroethane	CClF ₂ CCF ₂	A1	2	0,7 ⁱ	0,14 ^j	NF	6,99	170,9	4	1	10 000	8 590	ND
115	Chloropentafluoroethane	CClF ₂ CF ₃	A1	2	0,76 ⁱ	0,76 ^j	NF	6,32	154,5	-39	0,6	7 370	7 670	ND
116	Hexafluoroethane	CF ₃ CF ₃	A1	2	0,68	0,68	NF	5,64	138,0	-78	0	12 200	11 100	ND
123	2,2-dichloro-1,1,1-trifluoroethane	CHCl ₂ CF ₃	B1	2	0,1 ⁱ	0,057 ^j	NF	NA	153,0	27	0,02	77	79	730
124	2-chloro-1,1,1,2-tetrafluoroethane	CHClFCF ₃	A1	2	0,11 ⁱ	0,056 ^j	NF	5,58	136,5	-12	0,022	609	527	ND
125	Pentafluoroethane	CHF ₂ CF ₃	A1	2	0,39 ⁱ	0,37 ^j	NF	4,91	120,0	-49	0	3 500	3 170	733
134a	1,1,1,2-tetrafluoroethane	CH ₂ FCF ₃	A1	2	0,25 ⁱ	0,21 ^j	NF	4,17	102,0	-26	0	1 430	1 300	743
141b	1,1-dichloro-1-fluoroethane	CH ₃ CCl ₂ F	ND	2	0,053	0,012 ^j	NA	NA	117,0	32	0,11	725	782	532
142b	1-chloro-1,1-difluoroethane	CH ₃ CClF ₂	A2	1	0,066	0,10 ^j	0,329	4,11	100,5	-10	0,065	2 310	1 980	750
143a	1,1,1-trifluoroethane	CH ₃ CF ₃	A2L	1	0,056	0,58 ^j	0,282	3,44	84,0	-47	0	4 470	4 800	750

Refrigerant number	Chemical name ^b	Chemical formula	Safety class	PED ^m fluid group	Practical limit ^d	ATEL/ODL ^g	LFL ^h	Vapour density 25 °C, 101,3 kPa ^a	Molecular mass ^a	Normal boiling point ^a	ODP ^{ae}	GWP ^l	GWP ^{af} (AR5)	Auto ignition temperature
					kg/m ³	kg/m ³	kg/m ³	kg/m ³	°C		100 yr ITH	100 yr ITH	°C	
152a	1,1-difluoroethane	CH ₃ CHF ₂	A2	1	0,027 ⁱ	0,14	0,130	2,70	66,0	-25	0	124	138	455
170	Ethane	CH ₃ CH ₃	A3	1	0,008 6	0,008 6 ^j	0,038	1,23	30,0	-89	0	6	6	515
1150	Ethene (ethylene)	CH ₂ = CH ₂	A3	1	0,006	ND	0,036	1,15	28,1	-104	0	4	4	ND
Propane series														
218	Octafluoropropane	CF ₃ CF ₂ CF ₃	A1	2	1,84	0,85 ⁱ	NF	7,69	188,0	-37	0	8 830	8 900	ND
227ea	1,1,1,2,3,3,3-heptafluoropropane	CF ₃ CHF ₂ CF ₃	A1	2	0,63	0,63 ^j	NF	6,95	170,0	-15	0	3 220	3 350	ND
236fa	1,1,1,3,3,3-hexafluoropropane	CF ₃ CH ₂ CF ₃	A1	2	0,59 ⁱ	0,34 ^j	NF	6,22	152,0	-1	0	9 810	8 060	ND
245fa	1,1,1,3,3-pentafluoropropane	CF ₃ CH ₂ CHF ₂	B1	2	0,19	0,19	NF	5,48	134,0	15	0	1 030	858	ND
290	Propane	CH ₃ CH ₂ CH ₃	A3	1	0,008	0,09	0,038	1,80	44,0	-42	0	3	3	470
1233zd(E)	Trans-1-chloro-3,3,3-trifluoroprop-1-ene	CF ₃ CH = CHCl	A1	2	0,086	0,086	NF	5,34	130,5	18,1	~0	4,5	1	ND
1234yf	2,3,3,3-tetrafluoroprop-1-ene	CF ₃ CF = CH ₂	A2L	1	0,058	0,47 ^j	0,289	4,66	114,0	-29,5	0	4	< 1	405
1234ze(E)	Trans-1,3,3,3-tetrafluoroprop-1-ene	CF ₃ CF = CHF	A2L	2 ⁿ	0,061	0,28	0,303	4,66	114,0	-19	0	7	< 1	368
1270	Propene (propylene)	CH ₃ CH = CH ₂	A3	1	0,008 ⁱ	0,001 7 ^{jk}	0,046	1,72	42,1	-48	0	2	2	455
Ethene series														

EN 378-1:2016/prA1:2019 (E)

Refrigerant number	Chemical name ^b	Chemical formula	Safety class	PED ^m fluid group	Practical limit ^d kg/m ³	ATEL/ODL ^g kg/m ³	LFL ^h kg/m ³	Vapour density 25 °C, 101,3 kPa ^a kg/m ³	Molecular mass ^a	Normal boiling point ^a °C	ODP ^{ae}	GWP ^l 100 yr ITH	GWP ^{af} (AR5) 100 yr ITH	Auto ignition temperature °C
1130 (E)	Trans-1,2-dichloroethene	CHCl = CHCl	B2	1	0,004	0,004	0,257	NA	96,9	47,7	~0	0	0	ND
Butene series														
1336mzz(Z)	cis-1,1,1,4,4,4-hexafluoro-2-butene	CF ₃ CH = CHCF ₃	A1	2	0,87	0,87	NF	NA	164,1	33,4	0	9	2	ND
Cyclic organic compounds														
C318	Octafluorocyclobutane	C ₄ F ₈	A1	2	0,81	0,65	NF	8,18	200,0	-6	0	10 300	9 540	ND
Hydrocarbons														
600	Butane	CH ₃ CH ₂ CH ₂ CH ₃	A3	1	0,008 ^{9 i}	0,002 ^{4jk}	0,038	2,38	58,1	0	0	4	4	365
600a	2-methyl propane (isobutane)	CH(CH ₃) ₃	A3	1	0,011 ⁱ	0,059	0,043	2,38	58,1	-12	0	3	3	460
601	Pentane	CH ₃ CH ₂ CH ₂ CH ₂ CH ₃	A3	1	0,008 ⁱ	0,002 ^{9jk}	0,035	NA	72,1	36	0	5	5	ND
601a	2methyl butane (isopentane)	(CH ₃) ₂ CHCH ₂ CH ₃	A3	1	0,008 ⁱ	0,002 ^{9jk}	0,038	NA	72,1	27	0	5	5	ND