



SLOVENSKI STANDARD
SIST EN 13136:2014/oprA1:2017
01-julij-2017

Hladilni sistemi in toplotne črpalke - Tlačne varnostne naprave in njihove napeljave - Metode za izračun

Refrigerating systems and heat pumps - Pressure relief devices and their associated piping - Methods for calculation

Kälteanlagen und Wärmepumpen - Druckentlastungseinrichtungen und zugehörige Leitungen - Berechnungsverfahren

Systèmes frigorifiques et pompes à chaleur - Dispositifs de limitation de pression et tuyauteries associées - Méthodes de calcul

Ta slovenski standard je istoveten z: EN 13136:2013/prA1:2017

ICS:

27.080	Toplotne črpalke	Heat pumps
27.200	Hladilna tehnologija	Refrigerating technology

SIST EN 13136:2014/oprA1:2017 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
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English Version

Refrigerating systems and heat pumps - Pressure relief devices and their associated piping - Methods for calculation

Systèmes frigorifiques et pompes à chaleur - Dispositifs de limitation de pression et tuyauteries associées - Méthodes de calcul

Kälteanlagen und Wärmepumpen - Druckentlastungseinrichtungen und zugehörige Leitungen - Berechnungsverfahren

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 13136:2013. 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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 13136:2013/prA1:2017) 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.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA of EN 13136:2013, which is an integral part of this document.

EN 13136:2013/prA1:2017 (E)

1 Modification to Annex A, "Values of functions, factors and properties of refrigerants"

Replace Table A.1 with the following table:

"Table A.1 — Properties of refrigerants"

Refrigerant number ^a	Description Composition = % weight	Formula	Isentropic exponent ^b K	Critical pressure ratio ^b (p_b/p_o)	Function of the isentropic exponent ^b C
R-11	Trichlorofluoromethane	CCl_3F	1,10	0,59	2,48
R-12	Dichlorodifluoromethane	CCl_2F_2	1,12	0,58	2,49
R-12B1	Bromochlorodifluoromethane	CBrClF_2	1,11	0,58	2,49
R-13	Chlorotrifluoromethane	CClF_3	1,14	0,58	2,51
R-13B1	Bromotrifluoromethane	CBrF_3	1,13	0,58	2,50
R-14	Carbon tetrafluoride	CF_4	1,16	0,57	2,53
R-22	Chlorodifluoromethane	CHClF_2	1,17	0,57	2,54
R-23	Trifluoromethane	CHF_3	1,19	0,57	2,55
R-30	Methylene chloride	CH_2Cl_2	1,15	0,57	2,52
R-32	Difluoromethane	CH_2F_2	1,24	0,56	2,59
R-50	Methane	CH_4	1,31	0,54	2,64
R-113	1,1,2-Trichloro-1,2,2-Trifluoroethane	$\text{CCl}_2\text{FCClF}_2$	1,06	0,59	2,45
R-114	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	$\text{CClF}_2\text{CClF}_2$	1,04	0,60	2,43
R-115	2-Chloro-1,1,1,2,2-Pentafluoroethane	CF_3CClF_2	1,09	0,59	2,47
R-116	Hexafluoroethane	CF_3CF_3	1,09	0,59	2,47
R-123	2,2-Dichloro-1,1,1-Trifluoroethane	CF_3CHCl_2	1,10	0,59	2,48
R-124	2-Chloro-1,1,1,2-Tetrafluoroethane	CF_3CHClF	1,10	0,58	2,48
R-125	Pentafluoroethane	CF_3CHF_2	1,10	0,58	2,48
R-134a	1,1,1,2-Tetrafluoroethane	$\text{CF}_3\text{CH}_2\text{F}$	1,12	0,58	2,50
R-141b	1,1-Dichloro-1-Fluoroethane	CCl_2FCH_3	1,10	0,58	2,48
R-142b	1-Chloro-1,1-Difluoroethane	CClF_2CH_3	1,12	0,58	2,50
R-143a	1,1,1-Trifluoroethane	CF_3CH_3	1,13	0,58	2,50
R-152a	1,1-Difluoroethane	CHF_2CH_3	1,15	0,57	2,52
R-170	Ethane	CH_3CH_3	1,20	0,56	2,56
R-218	Octafluoropropane	C_3F_8	1,07	0,59	2,45
R-227ea	1,1,1,2,3,3,3-heptafluoropropane	$\text{CF}_3\text{CHF}_2\text{CF}_3$	1,07	0,59	2,46
R-236fa	1,1,1,3,3,3-hexafluoropropane	$\text{CF}_3\text{CH}_2\text{CF}_3$	1,08	0,59	2,47
R-245fa	1,1,1,3,3-pentafluoropropane	$\text{CF}_3\text{CH}_2\text{CHF}_2$	1,10	0,58	2,48
R-290	Propane	$\text{CH}_3\text{CH}_2\text{CH}_3$	1,19	0,57	2,55

Refrigerant number ^a	Description	Formula	Isentropic exponent ^b	Critical pressure ratio ^b	Function of the isentropic exponent ^b
	Composition = % weight		<i>K</i>	(p_b/p_o)	<i>C</i>
R-401A	R-22/152a/124 (53/13/34)	CHClF ₂ + CHF ₂ CH ₃ + CF ₃ CHClF	1,15	0,57	2,52
R-401B	R-22/152a/124 (61/11/28)	CHClF ₂ + CHF ₂ CH ₃ + CF ₃ CHClF	1,16	0,57	2,53
R-401C	R-22/152a/124 (33/15/52)	CHClF ₂ + CHF ₂ CH ₃ + CF ₃ CHClF	1,14	0,58	2,51
R-402A	R-125/290/22	CF ₃ CHF ₂ + CH ₃ CH ₂ CH ₃ + CHClF ₂	1,13	0,58	2,51
R-402B	R-125/290/22 (38/2/60)	CF ₃ CHF ₂ + CH ₃ CH ₂ CH ₂ + CHClF ₂	1,15	0,57	2,52
R-403A	R-22/218/290 (75/29/5)	CHClF ₂ + C ₃ F ₈ +C ₃ H ₈	1,15	0,57	2,52
R-403B	R-22/218/290 (56/39/5)	CHClF ₂ + C ₃ F ₈ +C ₃ H ₈	1,13	0,58	2,50
R-404A	R-125/143a/134a (44/52/4)	CF ₃ CHF ₂ + CF ₃ CH ₃ + CF ₃ CH ₂ F	1,12	0,58	2,49
R-405A	R-22/152a/142b/C318 (45/7/5,5/42,5)	CHClF ₂ + CHF ₂ CH ₃ + CClF ₂ CH ₃ + C ₄ F ₈	1,12	0,58	2,50
R-406A	R-22/142b/600a (55/41/4)	CHClF ₂ + CClF ₂ CH ₃ + CH(CH ₃) ₃	1,10	0,58	2,48
R-407A	R-32/125/134a (20/40/40)	CH ₂ F ₂ + CF ₃ CHF ₂ + CF ₃ CH ₂ F	1,14	0,58	2,51
R-407B	R-32/125/134a (10/70/20)	CH ₂ F ₂ + CF ₃ CHF ₂ + CF ₃ CH ₂ F	1,12	0,58	2,50

EN 13136:2013/prA1:2017 (E)

Refrigerant number ^a	Description Composition = % weight	Formula	Isentropic exponent ^b <i>K</i>	Critical pressure ratio ^b (p_b/p_o)	Function of the isentropic exponent ^b <i>C</i>
R-407C	R-32/125/134a (23/25/52)	CH ₂ F ₂ + CF ₃ CHF ₂ + CF ₃ CH ₂ F	1,14	0,58	2,51
R-407D	R-32/125/134a (15/15/70)	CH ₂ F ₂ + CF ₃ CHF ₂ + CF ₃ CH ₂ F	1,14	0,58	2,51
R-407E	R-32/125/134a (25/15/60)	CH ₂ F ₂ + CF ₃ CHF ₂ + CF ₃ CH ₂ F	1,15	0,57	2,52
R-407F	R-32/125/134a (30/30/40)	CH ₂ F ₂ + CF ₃ CHF ₂ + CF ₃ CH ₂ F	1,15	0,57	2,52
R-408A	R-125/143a/22 (7/46/47)	CF ₃ CHF ₂ + CF ₃ CH ₃ + CHClF ₂	1,15	0,58	2,52
R-409A	R-22/124/142b (60/25/15)	CHClF ₂ + CF ₃ CHClF+ CH ₃ CClF ₂	1,15	0,57	2,52
R-409B	R-22/124/142b (65/25/10)	CHClF ₂ + CF ₃ CHClF+ CH ₃ CClF ₂	1,16	0,57	2,53
R-410A	R-32/125 (50/50)	CH ₂ F ₂ + CF ₃ CHF ₂	1,17	0,57	2,54
R-410B	R-32/125 (45/55)	CH ₂ F ₂ + CF ₃ CHF ₂	1,17	0,57	2,53
R-411A	R-1270/22/152a (1,5/87,5/11,0)	C ₃ H ₆ + CHClF ₂ + CHF ₂ CH ₃	1,18	0,57	2,54
R-412A	R-22/218/142b (70/5/25)	CHClF ₂ + C ₃ F ₈ + CClF ₂ CH ₃	1,16	0,57	2,53
R-413A	R-218/134a/600a (9/88/3)	C ₃ F ₈ + CF ₃ CH ₂ F+ CH(CH ₃) ₃	1,11	0,58	2,49
R-414A	R-22/124/600a/142b (51,0/28,5/4,0/16,5)	CHClF ₂ + CF ₃ CHClF+ CH(CH ₃) ₃ + CH ₃ CClF ₂	1,14	0,58	2,51

Refrigerant number ^a	Description	Formula	Isentropic exponent ^b	Critical pressure ratio ^b	Function of the isentropic exponent ^b
	Composition = % weight		K	(p_b/p_o)	C
R-414B	R-22/124/600a/142b (50,0/39,0/1,5/9,5)	CHClF ₂ + CF ₃ CHClF+ CH(CH ₃) ₃ + CH ₃ CClF ₂	1,14	0,58	2,51
R-415A	R-22/152a (82,0/18,0)	CHClF ₂ + CHF ₂ CH ₃	1,18	0,57	2,54
R-415B	R-22/152a (25,0/75,0)	CHClF ₂ + CHF ₂ CH ₃	1,16	0,57	2,53
R-416A	R-134a/124/600 (59,0/39,5/1,5)	CF ₃ CH ₂ F+ CF ₃ CHClF+ C ₄ H ₈	1,11	0,58	2,49
R-417A	R-125/134a/600 (46,6/50,0/3,4)	CF ₃ CHF ₂ + CF ₃ CH ₂ F+ C ₄ H ₈	1,11	0,58	2,49
R-417B	R-125/134a/600 (79,0/18,3/2,7)	CF ₃ CHF ₂ + CF ₃ CH ₂ F+ C ₄ H ₈	1,11	0,58	2,49
R-417C	R-125/134a/600 (19,5/78,8/1,7)	CF ₃ CHF ₂ + CF ₃ CH ₂ F+ C ₄ H ₈	1,12	0,58	2,49
R-418A	R-290/22/152a (1,5/96,0/2,5)	C ₃ H ₈ + CHClF ₂ + CHF ₂ CH ₃	1,18	0,57	2,55
R-419A	R-125/134a/E170 (77,0/19,0/4,0)	CF ₃ CHF ₂ + CF ₃ CH ₂ F+ CH ₃ CH ₃	1,11	0,58	2,49
R-419B	R-125/134a/E170 (48,5/48,0/3,5)	CF ₃ CHF ₂ + CF ₃ CH ₂ F+ CH ₃ CH ₃	1,11	0,58	2,49
R-420A	R-134a/142b (88,0/12,0)	CF ₃ CH ₂ F+ CClF ₂ CH ₃	1,12	0,58	2,50
R-421A	R-125/134a (58,0/42,0)	CF ₃ CHF ₂ + CF ₃ CH ₂ F+	1,11	0,58	2,49
R-421B	R-125/134a (85,0/15,0)	CF ₃ CHF ₂ + CF ₃ CH ₂ F+	1,11	0,58	2,49
R-422A	R-125/134a/600a (85,1/11,5/3,4)	CF ₃ CHF ₂ + CF ₃ CH ₂ F+ CH(CH ₃) ₃	1,11	0,58	2,49
R-422B	R-125/134a/600a (55,0/42,0/3,0)	CF ₃ CHF ₂ + CF ₃ CH ₂ F+ CH(CH ₃) ₃	1,11	0,58	2,49