SLOVENSKI STANDARD
SIST EN 328:1999/A1:2004

01-januar-2004

Prenosniki toplote ï Postopki preskuġanja za ugotavljanje tehniļ nih karakteristik hladilnikov zraka s prisilno konvekcijo - Dopolnilo A1

Heat exchangers - Test procedure for establishing the performance of forced convection unit air coolers for refrigeration

Wärmeaustauscher - Prüfverfahren zur Bestimmung der Leistungskriterien von Ventilatorkühlern

Echangeurs thermiques - Procédures d'essai pour la détermination de la performance des convections forcées

Ta slovenski standard je istoveten z: EN 328:1999/A1:2002

ICS:

23.120	Zraļ niki. Vetrniki. Klimatske naprave	Ventilators. Fans. Air-conditioners
27.060.30	Grelniki vode in prenosniki toplote	Boilers and heat exchangers

SIST EN 328:1999/A1:2004 en,fr,de

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 328:1999/A1

October 2002

ICS 23.120; 27.060.30

English version

Heat exchangers - Test procedure for establishing the performance of forced convection unit air coolers for refrigeration

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This amendment A1 modifies the European Standard EN 328:1999; it was approved by CEN on 14 September 2002.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 328:1999/A1:2002 E

Contents

Foreword

This document (EN 328:1999/A1:2002) has been prepared by Technical Committee CEN /TC 110 "Heat exchangers", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2003, and conflicting national standards shall be withdrawn at the latest by April 2003.

This amendment is introduced to accommodate newly available refrigerants such as R404A, R407C and R410A.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

3 Definitions

Term in 3.6.1.2 to read 'air dew point temperature' as follows:

3.6.1.2 ***air dew point temperature***: Dew point temperature of the air within the calorimeter room.

Insert the following definition after 3.6.2.3:

3.6.2.4 ***bubble point temperature:*** Temperature corresponding to the absolute pressure of the refrigerant at the outlet connection of the unit cooler.

Insert the following definition after 3.7.2.2:

3.8 high glide: Refrigerant where the difference between the condensing and bubble point temperatures at a condensing temperature of 40 °C is greater than 3K.

Amend the sub-clause numbers as follows [the content of these clauses is to be retained]:

3.9 operation with refrigerants

3.9.1 ***direct expansion operation***:

3.9.2 ***operation with liquid overfeed by pump circulation***:

3.10 refrigerant enthalpies

3.10.1 ***refrigerant inlet specific enthalpy***:

3.10.2 ***refrigerant outlet specific enthalpy***:

3.10.3 ***specific vaporisation enthalpy***:

3.11 nominal air flow:

3.12 oil content:

3.13 refrigerant recirculation rate:

Table 1 - Standard conditions for refrigerants

Third column of heading to read t_{dp} as follows:

Standard condition	t_{A1} °C	t_{dp} °C	t_e °C	Δt_{sup} / Dt_1 --	t_{R1} °C

Table 2 - Standard conditions for liquids

Third column of heading to read t_{dp} as follows:

Standard condition	t_{A1} °C	t_{dp} °C	t_{L1} °C	t_{L2} °C	Intended for	Comments

Table 3 - Uncertainty of measurements

Add to table:

Measurements	Uncertainty of measurements
Refrigerant mixture	± 1 % by mass for each refrigerant component

7 Measurements

7.2 Measurement criteria

Add further sub-clause 7.2.6:

7.2.6 *Non-azeotropic refrigerant*

For high glide refrigerants the refrigerant mixture shall be measured unless it can be guaranteed that the mass fraction varies by less than 2 % from the refrigerant manufacturer's data.

8 Testing methods and equipment

8.1 Testing methods

Add note to 8.1.1.1 as follows:

8.1.1.1 *General*

NOTE These test methods are not suitable for high glide refrigerants used with liquid feed by gravity or liquid overfeed by pump circulation.

Add further sub-clause 8.2.6:

8.2.6 *Liquid receiver*

For high glide refrigerants the internal volume of the liquid receiver shall be less than 4 % of the total system volume.