SLOVENSKI STANDARD
SIST EN 1736:2009

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Hladilni sistemi in toplotne ļ rpalke - Gibki cevni elementi, blaģilniki vibracij, raztezni spoji in nekovinske cevi - Zahteve, naļ rtovanje in vgradnja

Refrigerating systems and heat pumps - Flexible pipe elements, vibration isolators, expansion joints and non-metallic tubes - Requirements, design and installation

Kälteanlagen und Wärmepumpen - Flexible Rohrleitungsteile, Schwingungsabsorber, Kompensatoren und Nichtmetall-Schläuche - Anforderungen, Konstruktion und Einbau

Systèmes de réfrigération et pompes à chaleur - Eléments flexibles de tuyauterie, isolateurs de vibration, joints de dilatation et tubes non métalliques - Exigences, conception et installation

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27.080	Toplotne ļ rpalke	Heat pumps
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Refrigerating systems and heat pumps - Flexible pipe elements, vibration isolators, expansion joints and non-metallic tubes - Requirements, design and installation

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Foreword

This document (EN 1736:2008) has been prepared by Technical Committee CEN/TC 182 “Refrigerating systems, safety and environmental requirements”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by May 2009, and conflicting national standards shall be withdrawn at the latest by May 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Introduction

The use of flexible pipe elements is required where impermissible stresses are to be eliminated from refrigerating circuits and pipe expansion or relative movements of components are to be absorbed.

The use of flexible pipe elements should not be specified unless it is necessary in the design of refrigerant circuits. If necessary, they should be designed and installed in accordance with this standard.

Flexible pipe elements are often the weakest part of a refrigerating system and the part most likely to suffer from fatigue or stress corrosion cracking.

1 Scope

This document describes requirements, design and installation of flexible pipe elements (e. g. metallic flexible pipe, metallic flexible tube, vibration isolator, expansion joint) and non-metallic tube used in the refrigerant circuits of refrigerating systems and heat pumps.

It also describes the requirements to qualify the tightness of non-metallic tubes (e.g. plastic) used in evaporating and/or condensing sides of refrigerating systems and heat pumps.

It does not apply to flexible pipes that are only occasionally stressed beyond the elastic limit, e. g. during repair work, or to joints which are free to rotate or hinge.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 378-1:2008, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 1: Basic requirements, definitions, classification and selection criteria*

EN 378-2:2008, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 2: Design, construction, testing, marking and documentation*

EN ISO 175, *Plastics - Methods of test for the determination of the effects of immersion in liquid chemicals (ISO 175:1999)*

ISO 6605:2002, *Hydraulic fluid power — Hoses and hose assemblies — Test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 378-1:2008 and the following apply.

3.1
flexible pipe element
any form of pipe or tube connecting two points which may move relative to each other

NOTE 1 This generic term includes all types, as defined in 3.2 to 3.6.

NOTE 2 Flexible pipe elements may include a plastic barrier in the construction, either as a liner on the inner surface or as a sandwich in the pipe wall. The main purpose of such a barrier is to reduce the permeation of refrigerant gas.

3.2
metallic flexible pipe
readily flexible, small bore pipe, e. g. capillary tube which is capable of movement within its elastic limit during operation of the refrigerating system (see Figure 1)

NOTE This type of pipe is flexible by virtue of the shape into which the tube is bent, e. g. coiled capillary tube.

3.3
metallic flexible tube
tubular flexible element designed to bend within defined limits and containing a corrugated metal bellows, the corrugations of which may be annular or spiral (see Figure 1)

NOTE 1 Metallic flexible tubes may be reinforced by metallic braiding which may be covered by rubber or plastic but the whole element should be designed so that, when bent within pre-determined limits, it is not stressed beyond the elastic limit.

NOTE 2 This type of pipe is flexible by virtue of its design and construction, e. g. bellows.

3.4
non-metallic flexible tube
tubular flexible element designed to bend within defined limits (see Figure 1)

NOTE 1 Non-metallic flexible tubes may have smooth bore or corrugated bore and they may be reinforced to withstand pressure, vacuum or external impact.

NOTE 2 This type of pipe is flexible by virtue of its material, e. g. elastomer.

NOTE 3 For non-metallic flexible tube are to be intended all the pipes made of plastic or rubber: mono-layer, multi-layer, reinforced and non-reinforced ones.

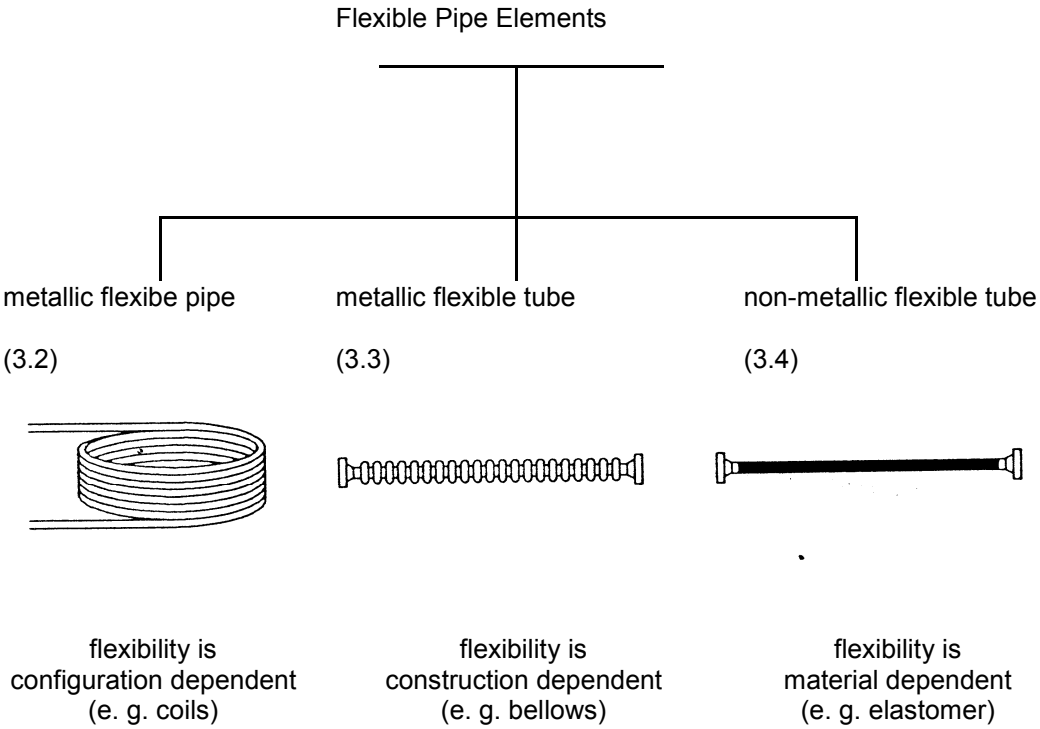

Figure 1 — Types of flexible pipe elements

3.5
expansion joint
tubular pipe element shaped in such a way that it provides limited movement to accommodate thermal expansion without reaching its elastic limit

3.6
vibration isolator
short flexible tube usually of metallic construction which is intended to reduce the effects of vibration from the compressor to other parts of the refrigerating system or vice versa

3.7
maximum allowable pressure *PS*
maximum pressure for which the equipment is designed, as specified by the manufacturer

3.8
maximum/minimum allowable temperature *TS*
maximum/minimum temperature for which the equipment is designed, as specified by the manufacturer

4 Applications

4.1 General

4.1.1 The refrigerating system shall be so designed and constructed that the components being connected by the flexible pipe elements and non-metallic tubes cannot move in such a way as to stress the pipe element beyond its elastic limit.

4.1.2 Flexible pipe elements and non-metallic tubes shall be installed in accordance with the manufacturer's instructions.

4.1.3 Flexible pipe elements, vibration isolators, expansion joints and non-metallic tubes shall be used only if necessary.