

**Masinaid tööstuslike detailide pindade
puhastamiseks ja eeltöötlemiseks vedelike või
aurude abil. Osa 4: Halogeenitud vedelikke
kasutavate masinate ohutus KONSOLIDEERITUD
TEKST**

Machines for surface cleaning and pretreatment of
industrial items using liquids and vapours - Part 4:
Safety of machines using halogenated solvents
CONSOLIDATED TEXT

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12921-4:2005+A1:2009 sisaldab Euroopa standardi EN 12921-4:2005+A1:2008 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 29.01.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 26.11.2008.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12921-4:2005+A1:2009 consists of the English text of the European standard EN 12921-4:2005+A1:2008.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 29.01.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 26.11.2008.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

ICS 97.080

Võtmesõnad:

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

English Version

**Machines for surface cleaning and pretreatment of industrial
items using liquids and vapours - Part 4: Safety of machines
using halogenated solvents**

Machines de nettoyage et de prétraitement de pièces
industrielles utilisant des liquides ou des vapeurs - Partie 4:
Sécurité des machines utilisant des solvants halogénés

Maschinen zur Oberflächenreinigung und -vorbehandlung
von industriellen Produkten mittels Flüssigkeiten oder
Dampfphasen - Teil 4: Sicherheit von Maschinen, in denen
halogenierte Lösemittel verwendet werden

This European Standard was approved by CEN on 19 May 2005 and includes Amendment 1 approved by CEN on 23 October 2008.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.







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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Page

Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 List of significant hazards	8
5 Safety requirements and/or measures	10
5.1 General.....	10
5.2 Mechanical hazards	10
5.3 Safety requirements and measures against electrical hazards	11
5.4 Safety requirements and measures against thermal hazards	11
5.5 Safety requirements and measures against noise.....	12
5.6 Safety requirements and measures against hazards generated by materials and substances processed, used or emitted by the cleaning machine	12
5.7 Safety requirements and measures against hazard combinations	17
5.8 Safety requirements and measures against failure of energy supply	17
5.9 Safety requirements and measures against failure of control systems	18
6 Verification of the safety requirements and/or measures	18
6.1 General.....	18
6.2 Mechanical.....	18
6.3 Electrical	18
6.4 Thermal	18
6.5 Noise	18
6.6 Material and substances processed, used or emitted by the cleaning machines	18
6.7 Hazard combinations	22
6.8 Failure of energy supply	22
6.9 Control systems.....	22
7 Information for use	22
7.1 General.....	22
7.2 Instruction handbook	22
7.3 Minimum marking	24
Annex A (informative) Examples and description of types of cleaning machines using halogenated solvents and design parameters	25
A.1 Examples and description of types of cleaning machines using halogenated solvents	25
A.2 Characteristics for halogenated solvents	30
Annex B (informative) A-deviations	31
Annex ZA (informative)  Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC, amended by 98/79/EC 	32
Annex ZB (informative)  Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC 	33
Bibliography	34

Figures

Figure A.1 — Collection chamber cleaning machine using halogenated solvents – type Ia.....	25
Figure A.2 — Single chamber cleaning machine using halogenated solvents – type Ib.....	26
Figure A.3 — Enclosed open cleaning machine using halogenated solvents – type II-a	27
Figure A.4 — Open top tank.....	28
Figure A.5a — Freeboard zones	29
Figure A.5b — Cooling zone and safety zone.....	29
Figure A.5c — Refrigerated zone	29

Foreword

This document (EN 12921-4:2005+A1:2008) has been prepared by the Technical Committee CEN/TC 271 "Surface treatment equipment — Safety", 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 December 2009.

This document includes Amendment 1, approved by CEN on 2008-10-23.

This document supersedes EN 12921-4:2005.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

A1 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 EC Directive(s).

For relationship with EC Directives, see informative Annexes ZA and ZB, which are integral parts of this document. **A1**

This European Standard is part of a series of standards in the area of safety for development and construction of machines for surface cleaning and pre-treatment of industrial items using liquids or vapours.

The EN 12921 series includes the following parts:

- Part 1: Common safety requirements;
- Part 2: Safety of machines using water based cleaning liquids;
- Part 3: Safety of machines using flammable cleaning liquids;
- Part 4: Safety of machines using halogenated solvents.

NOTE Although a machine for surface cleaning and pre-treatment of industrial items, as an integral whole, formally does not fall under the scope of the ATEX Directive 94/9/EC, the standard is based upon a fundamental risk analysis according to this directive.

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

Introduction

This European Standard is a type C standard as stated in EN 12100.

This European Standard contains additional safety requirements to and/or deviations from EN 12921-1:2005.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this European Standard.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for cleaning machines that have been designed and built according to the provisions of this type C standard.

1 Scope

This European Standard specifies the significant hazards of machines for surface cleaning and pre-treatment – in the following called "cleaning machines" – of industrial items using halogenated solvents, either pure or as a mixture.

This European Standard applies together with EN 12921-1:2005. Both parts together cover all significant hazards relevant for cleaning machines of industrial items using liquids or vapours, when they are used as intended and under the conditions foreseen by the manufacturer (see Clause 4). The specific requirements specified in Part 4 take precedence over the respective requirements in EN 12921-1:2005.

This European Standard applies together with EN 12921-3 in case of release of flammable vapours from the cleaning liquids.

This European Standard does not apply to machinery and related equipment excluded from the scope of EN 12921-1:2005.

This European Standard is not applicable to cleaning machines which are manufactured before the publication of this European Standard by CEN.

2 Normative references

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

EN 1093-3, *Safety of machinery — Evaluation of the emission of airborne hazardous substances — Part 3: Emission rate of a specified pollutant — Bench test method using the real pollutant*

EN 12921-1:2005, *Machines for surface cleaning and pretreatment of industrial items using liquids or vapours — Part 1: Common safety requirements*

EN 12921-3, *Machines for surface cleaning and pretreatment of industrial items using liquids or vapours — Part 3: Safety of machines using flammable cleaning liquids*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principle (ISO 12100-2:2003)*

3 Terms and definitions

For the purpose of this European Standard, the terms and definitions given in EN ISO 12100-1:2003, EN 12921-1:2005 and the following apply.

3.1

halogenated solvent

organic solvent containing at least one halogen atom per molecule and not having a flash point as obtained by standard methods

NOTE Examples for halogenated solvents are:

- dichloromethane (methylene chloride);
- HCFC 123, HCFC 141B and HCFC 225;