
Varnost obdelovalnih strojev - Majhne numerično krmiljene stružnice in stružni centri- Dopolnilo 1

Safety of machine tools - Small numerically controlled turning machines and turning centres

Sicherheit von Werkzeugmaschinen - Kleine numerisch gesteuerte Drehmaschinen und Drehzentren

Sécurité des machines-outils - Tours a commande numérique et centres de tournage de petites dimensions

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Ta slovenski standard je istoveten z: EN 12415:2000/A1:2002

ICS:

25.040.20 Številčno krmiljeni stroji Numerically controlled machines

25.080.10 Stružnice Lathes

SIST EN 12415:2001/A1:2003

en

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EUROPEAN STANDARD
NORME EUROPÉENNE
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English version

Safety of machine tools - Small numerically controlled turning machines and turning centres

Sécurité des machines-outils - Tours à commande numérique et centres de tournage de petites dimensions

Sicherheit von Werkzeugmaschinen - Kleine numerisch gesteuerte Drehmaschinen und Drehzentren

This amendment A1 modifies the European Standard EN 12415:2000; it was approved by CEN on 18 October 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.

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

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

EN 12415:2000/A1:2002 (E)**Foreword**

This document (EN 12415:2000/A1:2002) has been prepared by Technical CEN /TC 143 "Machine tools - Safety", the secretariat of which is held by SNV.

This Amendment to the European Standard EN 12415:2000 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2003, and conflicting national standards shall be withdrawn at the latest by May 2003.

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).

Annex E is informative.

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.

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Addition

NOTE This amendment takes account on recent research on ageing of machines tool vision panels.

5.2.2 Ejection

Where guards are fitted with vision panels which are also intended to contain ejected parts, special consideration shall be given to the selection of materials and method of fixing (see 5.2.2 of EN 953:1997). Material for vision panels (e.g. polycarbonate) which are liable to a reduction in impact resistance over time (ageing) due to contamination by lubricants, cleaning agents, solvents, metalworking fluids and abrasion shall be provided with additional protection (on both sides) e.g. sealed multi-layer or laminated construction to prevent these harmful effects during the anticipated service life of the machine.

See 6.2.

6.2 Information for use

To 2nd hyphen

In particular the frequency of visual inspections that are necessary to ensure the protective function of vision panels. The information shall include the details of:

a) inspection methods and a description of defects which make the vision panel unsuitable for continued use or indicate that replacement is required. This information may include descriptions of unacceptable vision panel condition e.g. plastic deformation (bulges, dents) due to previous impact events, cracks, damage to edge sealing, coolant penetration into composite, evidence of degrading such as tarnishing/discolouration, other damage to protective layers;

b) the manufacturer's recommendations for the exchange of vision panels that have been in service for prolonged periods e.g. over 10 years; [SIST EN 12415:2001/A1:2003](https://standards.iteh.ai/catalog/standards/sist/bae68215-ea01-488a-86cc-20579000077/sist-en-12415-2001-a1-2003)

c) the recommended methods of cleaning of vision panels and, where appropriate, the selection and use of suitable cleaning agents;

d) that when changing vision panels the assembly instructions of the machine manufacturer shall be followed.

B.2.3 Test procedure

2nd paragraph, 2nd sentence to be replaced by: For tests on material samples the impact of the projectile shall be on the centre of the surface. For tests on guards the impact shall be at the weakest place.

Table B 2 Resistance classes

Below Table B 2

NOTE For calculation of impact energy see annex E.

EN 12415:2000/A1:2002 (E)

Annex C Test equipment for impact test and examples of materials

C.2 examples of materials to replace Table C1 and the note by:

Materials	Thickness <i>d</i> mm	Tensile strength R_m N/mm ²	Elongation at rupture <i>A</i> %	Impact resistance classes									
				A ₁	A ₂	A ₃	B ₁	B ₂	B ₃	C ₁	C ₂	C ₃	
Steel sheet	2	370	28	+	+	-	-	-	-	-	-	-	-
	2,5	370	28	+	+	-	+	-	-	+	-	-	-
	3	400	28	+	+	-	+	+	-	+	-	-	-
	4	340	25	+	+	+	+	+	+	+	+	+	-
	5	300	40	+	+	+	+	+	+	+	+	+	-
	6	340	25	+	+	+	+	+	+	+	+	+	+
Al Mg 3	5	240	18	+	+	-	+	-	-	+	-	-	-
Polycarbonate	6	68	80	+	+	-	+	-	-	-	-	-	-
	8	68	80	+	+	-	+	+	-	+	-	-	-
	10	68	80	+	+	+	+	+	-	+	+	-	-
	12	68	80	+	+	+	+	+	-	+	+	-	-
Polycarbonate compound	2x8	68	80	+	+	+	+	+	+	+	+	+	-
	2x12	68	80	+	+	+	+	+	+	+	+	+	+
	19	68	80	+	+	+	+	+	+	+	+	+	+
Safety glass + polycarbonate compound	Glass + PC 6 + 18			+	+	+	+	+	+	+	+	+	+

+ requirements fulfilled, - requirements not fulfilled

NOTE The resistance of guards and/or vision panels is not only dependent on the dimensioning of steel sheets and plates but also on the mounting of the vision panels in the guard and the fixing of the guard on the machine.

Annex E (informative)

Calculation of direct impact energy

The impact energy is calculated from:

For machines equipped with chuck

$$J_c = \frac{m}{2} (\pi B n)^2 \text{ in Joule.} \quad 1)$$

with n = maximum workholding spindle speed in s^{-1}

B = maximum chuck outside diameter in m

m = mass of standard hard top jaw in kg

For machines equipped with collet

The formula 2) assumes direct impact at ejection of a bar section (with $d/l \leq 0,2$) breaking at 30° from the axis of rotation on a machine equipped with collet.

$$J_c = \frac{1}{24} \rho \pi^3 d^2 l^3 n^2 \text{ in Joule.} \quad 2)$$

with n = maximum workholding spindle speed in s^{-1}

d = maximum bar diameter in m

l = maximum length of the work piece in m

ρ = specific mass in kg/m^3