

ISO/TC 72/SC 8

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**Textile machinery — Safety
requirements —**

**Part 1:
Common requirements**

AMENDMENT 1

iTeh STANDARD PREVIEW

(standards.iteh.ai) *Matériel pour l'industrie textile — Exigences de sécurité —*

Partie 1: Exigences communes

AMENDEMENT 1

<https://standards.iteh.ai/catalog/standards/sist/567e2fee-3af6-453b-88cd-c309333d9684/iso-11111-1-2005-fdamd-1>

Please see the administrative notes on page iii

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Reference number
ISO 11111-1:2005/FDAM 1:2009(E)

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ISO/CEN PARALLEL PROCESSING

This final draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement. The final draft was established on the basis of comments received during a parallel enquiry on the draft.

This final draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel two-month approval vote in ISO and formal vote in CEN.

Positive votes shall not be accompanied by comments.

Negative votes shall be accompanied by the relevant technical reasons.

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Foreword

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

Amendment 1 to ISO 11111-1:2005 was prepared by Technical Committee ISO/TC 72, *Textile machinery and accessories*, Subcommittee SC 8, *Safety requirements for textile machinery*.

If this draft amendment is approved, it will be combined with ISO 11111-1:2005 and a new edition of ISO 11111-1 published.

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Textile machinery — Safety requirements —

Part 1: Common requirements

AMENDMENT 1

Page vi, Introduction

Replace “ISO 14121” in the fifth paragraph with “ISO 14121-1”.

Page 2, 1.3

Replace the first sentence with the following:

ISO 11111 (all parts) addresses hazards arising from the transport, assembly and commissioning of the machinery, its adjustment, use, maintenance, decommissioning, dismantling and disposal.

Page 2, Normative references

Add the following references.

[ISO 11111-1:2005/FDAmd 1](https://standards.iteh.ai/catalog/standards/sist/567e2fee-3aff-453b-88cd-c309333d9684/iso-11111-1-2005-fdamd-1)

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ISO 9902-1:2001/Amd.1:2009, *Textile machinery — Noise test code — Part 1: Common requirements*

ISO 9902-2:2001/Amd.1:2009, *Textile machinery — Noise test code — Part 2: Spinning preparatory and spinning machinery*

ISO 9902-3:2001/Amd.1:2009, *Textile machinery — Noise test code — Part 3: Nonwoven machinery*

ISO 9902-4:2001/Amd.1:2009, *Textile machinery — Noise test code — Part 4: Yarn processing, cordage and rope manufacturing machinery*

ISO 9902-5:2001/Amd.1:2009, *Textile machinery — Noise test code — Part 5: Weaving and knitting preparatory machinery*

ISO 9902-6:2001/Amd.1:2009, *Textile machinery — Noise test code — Part 6: Fabric manufacturing machinery*

ISO 9902-7:2001/Amd.1:2009, *Textile machinery — Noise test code — Part 7: Dyeing and finishing machinery*

ISO 11111-2:2005/Amd.1:—, *Textile machinery — Safety requirements — Part 2: Spinning preparatory and spinning machines*

ISO 11111-3:2005/Amd.1:—, *Textile machinery — Safety requirements — Part 3: Nonwoven machinery*

ISO 11111-4:2005/Amd.1:—, *Textile machinery — Safety requirements — Part 4: Yarn processing, cordage and rope manufacturing machinery*

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ISO 11111-5:2005/Amd.1:—, *Textile machinery — Safety requirements — Part 5: Preparatory machinery to weaving and knitting*

ISO 11111-6:2005/Amd.1:—, *Textile machinery — Safety requirements — Part 6: Fabric manufacturing machinery*

ISO 11111-7:2005/Amd.1:—, *Textile machinery — Safety requirements — Part 7: Dyeing and finishing machinery*

Replace the reference to ISO 10218:1992 with the following:

ISO 10218-1:2006, *Robots for industrial environments — Safety requirements — Part 1: Robot*

Page 3, Normative references

Add the following reference:

ISO 11161:2007, *Safety of machinery — Integrated manufacturing systems — Basic requirements*

Replace the reference to ISO 13849-1:1999 with the following:

ISO 13849-1:2006, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

Replace the reference to ISO 13850:1996 with the following:

ISO 13850:2006, *Safety of machinery — Emergency stop — Principles for design*

Replace the reference to ISO 13852:1996 and ISO 13853:1998 with the following:

ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

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Add the following reference: <https://standards.iteh.ai/catalog/standards/sist/567e2fee-3af6-453b-88cd-c309333d9684/iso-11111-1-2005-fdamd-1>

ISO 14119:1998/Amd.1:2007, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection — Amendment 1: Design to minimize defeat possibilities*

Replace the reference to ISO 14121:1999 with the following:

ISO 14121-1, *Safety of machinery — Risk assessment — Part 1: Principles*

ISO/TR 14121-2, *Safety of machinery — Risk assessment — Part 2: Practical guidance and examples of methods*

Replace the reference to IEC 60204-1:2000 with the following:

IEC 60204-1:2005, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

Replace the reference to IEC 60447:1993 with the following:

IEC 60447:2004, *Basic and safety principles for man-machine interface, marking and identification — Actuating principles*

Page 4, Normative references

Replace the reference to IEC 60947-1-5:2000 with the following:

IEC 60947-5-1:2003, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices*

Replace the reference to IEC 61310-1:1995 with the following:

IEC 61310-1:2007, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals*

Replace the reference to IEC 61496-1:1997 with the following:

IEC 61496-1:2004, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests*

Add the following reference:

IEC 61496-1:2004/Amd.1:2007, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests*

Replace the reference to IEC 61496-2:1997 with the following:

IEC 61496-2:2006, *Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)*

Replace the reference to IEC 61496-3:2001 with the following:

IEC 61496-3:2006, *Safety of machinery — Electro-sensitive protective equipment — Part 3: Particular requirements for Active Opto-electronic Protective Devices responsive to Diffuse Reflection (AOPDDR)*

Add the following reference:

IEC 62061:2005, *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems*, corrected by IEC 62061:2005 Corr.1:2005

Delete the reference to EN 563:1994.

Replace the reference to EN 953:1997 with the following:

EN 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

Replace the reference to EN 999:1998 with the following:

EN 999:1998+A1:2008, *Safety of machinery — The positioning of protective equipment in respect of approach speeds of parts of the human body*

Replace the reference to prEN 1005-2:2003 with the following:

EN 1005-2, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*

Replace the reference to prEN 1005-4:2002 with the following:

EN 1005-4, *Safety of machinery — Human physical performance — Part 4: Evaluation of working postures and movements in relation to machinery*

Replace the reference to EN 1760-1:1997 with the following:

EN 1760-1, *Safety of machinery — Pressure sensitive protective devices — Part 1: General principles for the design and testing of pressure sensitive mats and pressure sensitive floors*

ISO 11111-1:2005/FDAM 1:2009(E)

Replace the reference to EN 1760-2:2001 with the following:

EN 1760-2, *Safety of machinery — Pressure sensitive protective devices — Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars*

Add the following reference:

EN 1760-3, *Safety of machinery — Pressure sensitive protective devices — Part 3: General principles for the design and testing of pressure sensitive bumpers, plates, wires and similar devices*

Clauses 1 to 8 and Annexes

Throughout the text, replace all the dated references to the parts of ISO 11111 with “ISO 11111-x:2005, amended by ISO 11111-x:2005/Amd.1:—”; for example:

ISO 11111-2:2005, amended by ISO 11111-2:2005/Amd.1:—

Page 6, 5.3.1

Replace the title with the following:

5.3.1 Inherently safe design measures

Add the following paragraph at the end of the subclause, after the example:

For textile machinery, the technical guidelines on inherently safe design in accordance with ISO 12100-2:2003, Clause 4 shall apply.

Page 7, 5.3.2

Replace 5.3.2 with the following:

5.3.2 Consideration of geometrical factors and physical aspects

For risk reduction of textile machinery, the geometrical factors and physical aspects given in Table 1 and in accordance with ISO 12100-2:2003, 4.2 shall apply.

Table 1 — Risk reduction by design

Application	Reference
Making machines safe by virtue of	ISO 13854, ISO 13857
— the shape and the relative location of their mechanical component parts,	A.4
— the limitation of the actuating force,	A.1
— the limitation of the mass and/or velocity.	

Replace Table 2 with the following:

Table 2 — Safety requirements and/or measures for guards

Application	Reference
Guard selection, unless specified in Clause 6 and in ISO 11111-2, ISO 11111-3, ISO 11111-4, ISO 11111-5, ISO 11111-6 and ISO 11111-7	ISO 12100-2:2003, 5.2 EN 953
Guard design and construction	ISO 12100-2:2003, 5.3 EN 953
Guard fastening	EN 953
Guard arrangement, unless specified in Clause 6 and in ISO 11111-2, ISO 11111-3, ISO 11111-4, ISO 11111-5, ISO 11111-6 and ISO 11111-7 ^a	ISO 13857:2008, Tables 1, 4 and 7 and B.1
Guard interlocking, unless specified in Clause 6 and in ISO 11111-2, ISO 11111-3, ISO 11111-4, ISO 11111-5, ISO 11111-6 and ISO 11111-7	ISO 14119:1998/Amd.1:2007, Clauses 5, 6 and 7
Fence guard	A.3

^a The safety distances for guards shall apply to all positions for normal operation as well as for setting, adjustment, maintenance work and elimination of process faults.

Replace Table 3 with the following:

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ISO 11111-1:2005/FDAmD 1
Table 3 — Safety requirements and/or measures for safety devices

Application	Reference
Selection of safety devices, unless specified in Clause 6 and in ISO 11111-2, ISO 11111-3, ISO 11111-4, ISO 11111-5, ISO 11111-6 and ISO 11111-7	ISO 12100-2:2003, 5.2
Technical characteristics of safety devices	ISO 12100-2:2003, 5.3.3 IEC 61496-1
Positioning of safety devices, unless specified in Clause 6 and in ISO 11111-2, ISO 11111-3, ISO 11111-4, ISO 11111-5, ISO 11111-6 and ISO 11111-7 ^a	EN 999:1998+A1:2008, Clauses 5, 6 and 7
Interlocking (with and without guard locking): — selection — design	ISO 14119:1998/Amd.1:2007, Clause 7 ISO 14119:1998/Amd.1:2007, Clauses 5 and 6 IEC 61496-1
Electro-sensitive protective equipment: ^{b, d} — arrangement	IEC 61496-1 EN 999:1998+A1:2008, Clause 6
Active opto-electronic protective devices (AOPD): ^{b, d} — arrangement — safety distance (upper and lower limbs)	IEC 61496-2 EN 999:1998+A1:2008, Clause 6 ISO 13857

Table 3 (continued)

Application	Reference
Active opto-electronic protective devices responsive to diffuse reflection (AOPDDR): ^{b, d}	IEC 61496-3
— arrangement	EN 999:1998+A1:2008, Clause 6
— safety distance (upper and lower limbs)	ISO 13857
Pressure sensitive mats and floors ^d	EN 1760-1
Pressure sensitive edges and bars ^d	EN 1760-2
Pressure sensitive bumpers, plates, wires ^d	EN 1760-3
Two-hand controls:	ISO 12100-1:2003, 3.26.4 IEC 60204-1:2005, 9.2.6.2
— selection ^c	ISO 13851:2002, Clause 4 and Annex B
— arrangement	EN 999:1998+A1:2008, Clause 8
Hold-to-run control devices (touch control, biased-off switch)	ISO 12100-1:2003, 3.26.3 IEC 60204-1:2005, 9.2.6.1
Limited movement control device	ISO 12100-1:2003, 3.26.9
<p>^a The safety distances for safety devices shall apply to all positions for normal operation as well as for setting, adjustment, maintenance work and elimination of process faults.</p> <p>^b The type selected in accordance with IEC 61496-1 shall be consistent with the required performance level (PL) or safety integrity level (SIL) of the safety-related part of the control system, as defined in ISO 13849-1:2006, 4.2.2 (or IEC 62061:2005, 5.2.4.).</p> <p>^c The type selected in accordance with ISO 13851 shall be consistent with the required performance level (PL) or safety integrity level (SIL) of the safety-related part of the control system, as defined in ISO 13849-1:2006, 4.2.2 (or IEC 62061:2005, 5.2.4.).</p> <p>^d Sensitive protective equipment (SPE) in accordance with ISO 12100-1:2003, 3.26.5.</p>	

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Page 9, Table 4

Replace Table 4 with the following:

Table 4 — Safety requirements for electrical equipment of machines

Electrical hazards	Reference IEC 60204-1:2005
Electric shock	Clauses 6 and 8
Overcurrent, overspeed and overload	Clauses 7 and 8
Environmental influences	Clause 4
Restart after voltage drop or supply interruption	7.5
Accessibility, layout and identification of control equipment	Clauses 10, 11 and 16
Ergonomics for manual operation	Clauses 10 and 11
Cabling and wiring	Clauses 12 and 13
Accessories and lighting	Clause 15
Documentation and instruction handbook	Clause 17
Testing	Clause 18

Page 10, Table 5

Replace Table 5 with the following:

Table 5 — Safety requirements for control systems

Application	Reference
Design of control system	ISO 12100-2:2003, 4.11
Control circuits and functions	IEC 60204-1:2005, Clause 9
Control interfaces	IEC 60204-1:2005, Clause 10
Programmable electronic equipment	ISO 13849-1 or IEC 62061
Control gear	IEC 60204-1:2005, Clause 11
Fault exclusion/proven components	ISO 13849-2:2003, Clause 7
Required Performance Level (PL) or Safety Integrity Level (SIL)	ISO 13849-1 or IEC 62061
Categories of resistance to faults	ISO 13849-1:2006, Clause 6
Control devices	IEC 60204-1:2005, Clause 10
Safety signals, symbols and signs (visual, acoustic and tactile)	IEC 61310-1:1995, Clauses 5 to 8
Arrangement of control devices	ISO 12100-2:2003, 4.8.8 and 4.11.8
Actuating principles	IEC 60447:1993

Page 10, 5.4.2.3 <https://standards.iteh.ai/catalog/standards/sist/567e2fee-3af6-453b-88cd-c309333d9684/iso-11111-1-2005-fdamd-1>
 Replace the six paragraphs following Table 5 with the following:

If in Clause 6 or in ISO 11111-2, ISO 11111-3, ISO 11111-4, ISO 11111-5, ISO 11111-6 and ISO 11111-7, a performance level (PL) in accordance with ISO 13849-1:2006 or a safety integrity level (SIL) in accordance with IEC 62061:2005 has not been selected, a PL = c or SIL = 1 shall at least be used for the safety-related parts of control systems.

The adoption of a lower level than performance level PL = c or safety integrity level SIL = 1 shall be based on a risk assessment in accordance with ISO 13849-1:2006, Annex A or IEC 62061:2005, Annex A.

Fault exclusions for components used in systems required to comply with a specified performance level shall be in accordance with ISO 13849-2:2003.

Page 11, Figure 1

Delete Figure 1. Consequently, renumber the figures from Figure 2 onwards.

Replace Table 6 with the following:

Table 6 — Safety requirements for starting and stopping

Application	Reference
Starting	ISO 12100-2:2003, 4.11.2 and 4.11.3
Stopping ^a	IEC 60204-1:2005, 9.2.2
Unexpected start-up	ISO 14118:2000, Clauses 5 and 6
Isolation from energy sources	ISO 12100-2:2003, 5.5.4 IEC 60204-1:2005, Clause 5
Start-up by inadvertent actuation	5.4.2.4 a) 5.4.2.4 a) and ISO 12100-2:2003, 4.11.8
Observation of danger zones from main control position	5.4.2.4 b)
Start-up by unauthorized persons	5.4.2.4 b)
Automatic restart after process interruption	5.4.2.4 c)
Start-up after interruption of power supply	IEC 60204-1:2005, 7.5
Emergency stopping	5.4.2.4 d) ISO 12100-2:2003, 5.5.2 ISO 13850 IEC 60204-1:2005, 10.7 and 10.8
^a Each workstation of the machine shall be provided with a control device for generating a safe normal stop in accordance with IEC 60204-1:2005; stop category 0 or 1. If, additionally, a stop control is required to generate an operational stop (in accordance with EN 60204-1:2005; stop category 2), the stop condition shall be monitored to detect faults to prevent an unintended restart.	

Add the following sentence at the end of list item b):

In order to observe the danger zones from the control position, mirrors, camera screens and other viewing auxiliary means may be used or the control console may be provided in an elevated position.

Renumber the Note as Note 1 and add the following note:

NOTE 2 For interconnected machines (integrated manufacturing systems), the safety requirements given in ISO 11161 can be used.

Replace list item d) with the following:

- d) Where a warning signal is used to warn against the start of a machine and to allow persons in danger to reach a safeguarded place within sufficient time, the start/restart shall be in accordance with ISO 11161:2007, 8.8 unless otherwise indicated in ISO 11111-2, ISO 11111-3, ISO 11111-4, ISO 11111-5, ISO 11111-6 and ISO 11111-7.