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Stroji za peskanje - Varnostne in okoljske zahteve (ISO/DIS 23779:2022)

Shot blasting machinery - safety and environmental requirements (ISO/DIS 23779:2022)

Strahlanlagen - Sicherheits- und Umweltanforderungen (ISO/DIS 23779:2022)

Équipements de grenaillage - Prescriptions de sécurité et de l'environnement (ISO/DIS 23779:2022)

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Shot blasting machinery — safety and environmental requirements

Équipements de grenaillage — Prescriptions de sécurité et de l'environnement

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT),see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 306, *Foundry machinery*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is a type C standard as stated in ISO 12100:2010 and also deals with aspects of environmental impact and energy efficiency.

The design, the construction and the actual operation of shot blasting machinery affects aspects of safety, energy usage and environmental impact. These may influence each other or may be in conflict to each other. The safety requirements defined in this standard override the requirements defined for minimizing energy usage and environmental impact.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this document. 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 machines that have been designed and built according to the provisions of this type C standard.

Where for clarity an example of a preventative measure is given in the text, this should not be considered as the only possible solution. Other solutions can be used as far as they fulfil correctly the criteria expressed in the requirement.

This document assumes, that the shot blasting machinery is operated and maintained by trained personnel.

Shot blasting machinery — safety and environmental requirements

1 Scope

This standard deals with shot blasting machinery.

This standard covers

— all significant hazards, hazardous situations and hazardous events relevant to shot blasting machinery, when used as intended and under the conditions foreseen by the manufacturer, including reasonably foreseeable misuse;

— measures for minimization of environmental impact and energy usage of shot blasting machinery.

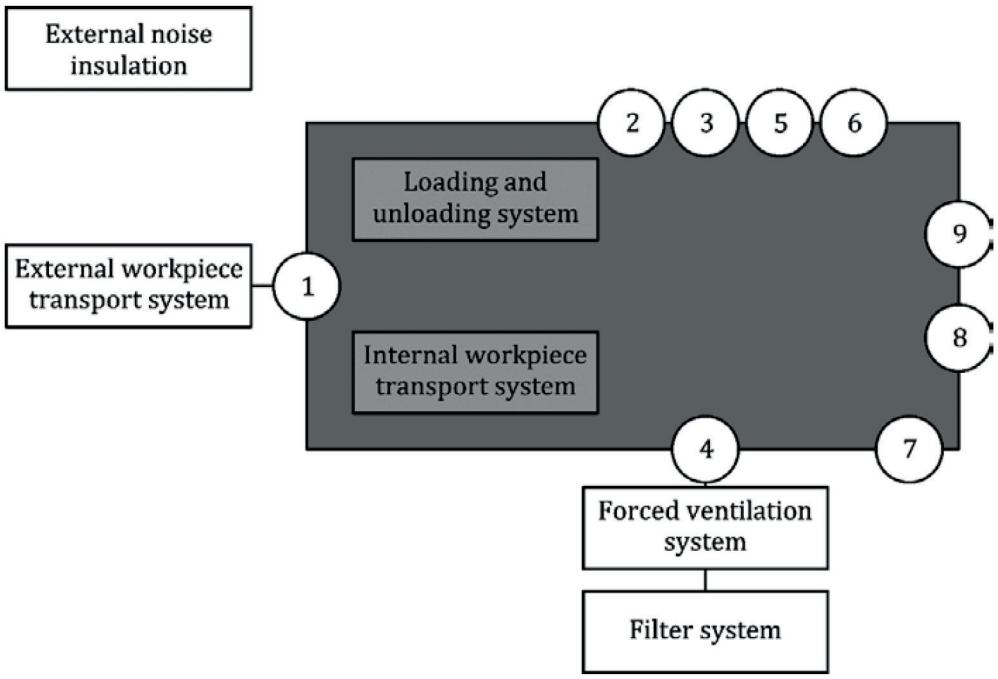
Shot blasting machinery covers

— wheel blasting machinery;

— air blasting machinery for dry and wet blasting;

— combined wheel and air blasting machinery.

Interfaces between shot blasting machinery and other equipment used in shot blasting but not in scope of this standard are given in Figure 1.



Key

▬	shot blasting machinery
▭	equipment out of scope
1	mechanical and electrical interface to external workpiece transport system
2	connector to electrical energy supply
3	connector to fresh air supply ducting
4	connector to exhaust air ducting
5	connector to pressurized air supply
6	connector to water supply
7	connector to waste water system
8	interface for safe exchange of control signals
9	connector for fresh air supply for respiratory protection device (in blast rooms)

Figure 1 — Interfaces of shot blast machinery to ancillary machinery

The specific significant risks related to mobile and movable shot blasting machinery (e. g. shot blasting machines designed for operation at changing locations) are not dealt with in this standard.

This standard does not apply to

— high pressure water jet machinery;

— dry-ice blasting machinery.

This standard is not applicable to shot blasting machines manufactured before the date of its publication as ISO standard.

NOTE The requirements defined in this standard may serve as a guideline for a risk assessment of shot blasting machines manufactured before the date of its publication as ISO standard.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*

ISO 3746:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane*

ISO 3864-1:2011, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

ISO 7000:2014, *Graphical symbols for use on equipment — Registered symbols*

ISO 7731:2003, *Ergonomics — Danger signals for public and work areas — Auditory danger signals*

ISO 9614-1:1993, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points*

ISO 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning*

ISO 10218-2:2011, *Robots and robotic devices — Safety requirements for industrial robots — Part 2: Robot systems and integration*

ISO 11161:2010, *Safety of machinery - Integrated manufacturing systems - Basic requirements*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design*

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

ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

ISO 14120:2015, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

ISO 14122-2:2016, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways*

ISO 14122-3:2016, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails*

IEC 60204-1:2016, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

IEC/TS 60079-32-1:2017, *Explosive Atmospheres — Part 32-1: Electrostatic hazards, guidance*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010 and the following apply.

ISO and IEC maintain terminologydatabases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
external workpiece transport system
system that transports the workpiece to or from the shot blasting machine

3.2
internal workpiece transport system
system that transports the workpiece within the shot blasting machine

3.3
wheel blaster
device which accelerates the shot blasting media by a rotating wheel with blades

3.4
air blaster
assembly consisting of a nozzle and connected hose(s) or tube(s), which accelerates the shot blasting media by pressurized air

3.5
accessible blasting chamber
blasting chamber which, by designated use, is designed to be entered by personnel

3.6
workspace
workplace for the operator as defined by the manufacturer of the shot blasting machine

3.7
interior workspace
workspace inside of a shot blasting machine

3.8
screw conveyor
device that uses a rotating helical blade to move shot blasting media, horizontally or at a slight incline

3.9
belt conveyor
endless belt between two, or more, pulleys to move shot blasting media or products, horizontally or incline

3.10
vibrating conveyor
device that transports shot blasting media or products by using vibration and gravity

3.11
scraper conveyor
device to transport bulk shot blasting media over a floor with the help of scrapers

3.12
hopper
container for storing shot blasting media or for providing or replenishing shot blasting media for the shot blasting process

3.13
bucket elevator
vertical belt conveyor where buckets fixed to the belt transporting shot blasting media up to a desired height