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Foundry machinery — Vocabulary —

Part 4: Abrasive blasting machines and other equipment related to cleaning and finishing for casting

Machines de fonderie — Terminologie —

Partie 4: Machines de grenaillage abrasif et autres équipements liés au nettoyage et à la finition pour le moulage

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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).

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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*.

A list of all parts in the ISO 23472 series can be found on the ISO website.

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

Documentation gives rise to numerous international exchanges of both intellectual and material nature. These exchanges often become difficult, either because of the great variety of terms used in various fields or languages to express the same concept, or because of the absence, or imprecision, of useful concepts.

To avoid misunderstandings due to this situation and to facilitate such exchanges, it is advisable to select terms to be used in various languages or in various countries to express the same concept, and to establish definitions providing satisfactory equivalents for the various terms in different languages.

The objects involved in the ISO 23472 series are foundry machines used in foundry production.

The purpose of the ISO 23472 series is to provide definitions in English that are rigorous, uncomplicated and which can be understood by all concerned. The scope of each concept defined has been chosen to provide a definition that is suitable for general application within foundry machinery, which includes machines and equipment adapted at each stage of the processes within different casting processes.

As a metal thermoforming method that fills molten metal into the mold to produce machine parts or rough parts after solidification, casting has a long history and various processes, and its technology is constantly developing and changing. According to the differences in the mold used, or different ways of molten metal filling or solidification, casting processes are usually divided into sand casting, permanent casting and other casting processes. According to different casting processes and different stages of production, casting equipment covered by foundry machinery is divided into the following major categories:

— molding and coremaking machines and other equipment related to non-permanent mold casting process;

— die casting machines and other equipment related to permanent mold casting process;

— abrasive blasting machines and other equipment related to cleaning and finishing for casting;

— cupola furnaces and pouring devices and ladles.

This document only involves terms and definitions of abrasive blasting machines and other equipment related to cleaning and finishing for casting, including basic concepts specifically concerning structural characteristics and functions, important mechanisms and parts, main technological processes and parameters of various abrasive blasting machines, degating devices, decoring machines, grind fettling machines and other related equipment (see Figure 1).

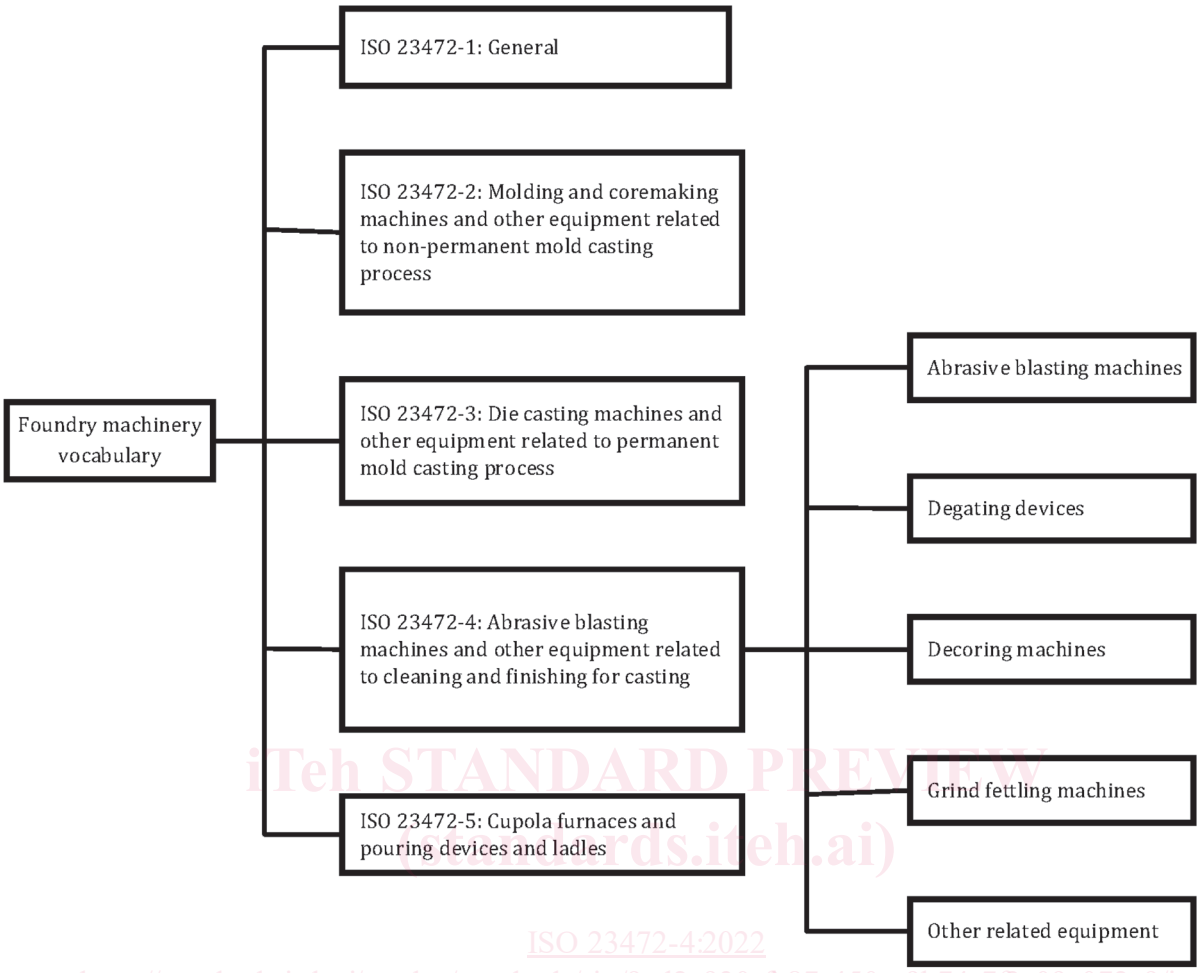

Figure 1 — Structure of vocabulary on abrasive blasting machines and other equipment related to cleaning and finishing for casting

Foundry machinery — Vocabulary —

Part 4:
Abrasive blasting machines and other equipment related to cleaning and finishing for casting

1 Scope

This document defines a set of terms and definitions of abrasive blasting machines and other equipment related to cleaning and finishing for casting in foundry machinery.

It applies to standard development in the foundry machinery field, technical documentation, related scientific and technical publications, etc.

2 Normative reference

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases 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
abrasive blasting
shot blasting
process in which workpiece to be cleaned or surface to be treated is subjected to continuous attack by *abrasive media* (3.4) to achieve a desired result

[SOURCE: ISO 23472-1:2020, 3.1]

3.2
abrasive blasting machine
shot blasting machine
machine used for *abrasive blasting* (3.1) by either centrifugal force or compressed air to accelerate *abrasive media* (3.4)

Note 1 to entry: Terms “abrasive blasting machinery”, “shot blasting machinery” are used to address the same assembly of machines.

3.3
abrasive cut-off machine
grinding cutter
device for cutting gate and riser of castings or other metal materials with a high-speed rotating grinding *wheel* (3.84)

3.4
abrasive media
shot blasting media
granular metallic or non-metallic material to be forcibly applied to a surface to achieve a desired result

Note 1 to entry: Classification of metallic abrasives is provided in ISO 11124-1, and of non-metallic abrasives in ISO 11126-1.

[SOURCE: ISO 23472-1:2020, 3.3]

3.5
abrasive media recirculating system
system in *abrasive blasting machine* (3.2) that collects the mixture of *abrasive media* (3.4) and abrased material, separates the *abrasive media* (3.4) from this mixture, and supplies it to the blasting process

Note 1 to entry: This system usually consists of *bucket elevator* (3.25), screw conveyor, *abrasive media separator* (3.6), vibrating screen, storage hopper, *switch valve* (3.72), pipe, etc.

3.6
abrasive media separator
device that removes impurities from used *abrasive media* (3.4) and separates reusable *abrasive media* (3.4) by means of gravity, air stream, mesh screen and/or magnetic force

3.7
abrasive media throughput rate
abrasive media flow rate
amount of *abrasive media* (3.4) blasted by the *wheel blaster* (3.86) or *air blaster* (3.8) in unit time during *abrasive blasting* (3.1)

Note 1 to entry: Usually in minutes as unit time.

3.8
air blaster
assembly consisting of blast *nozzle(s)* (3.16), *blast pot(s)* (3.17) and connected hose(s) or tube(s), which accelerates *abrasive media* (3.14) by pressurized air

3.9
air blasting machine
abrasive blasting machine (3.2) that uses *air blaster* (3.8)

3.10
air chipper
hand-held pneumatic tool for removing flashes, burrs and raised defects of castings

3.11
automatic cleaning cell
system that automatically completes the cleaning process of castings by robots, manipulators, machine tools, etc.

Note 1 to entry: It is equipped with a tool library, and the robot can automatically replace cleaning tools according to the requirements of the program.

3.12
band cutting machine
band saw
device for cutting gate and riser of castings with ring endless band

Note 1 to entry: It is usually used to cut gate and riser of castings made of light weight metal.

3.13
blade
vane
component of *wheel blaster* (3.86) that receives and blasts *abrasive media* (3.4)

3.14
blast gun
rod-shaped component connected to the outlet end of *blast hose* (3.15) of *air blaster* (3.8) for holding or clamping, holding the *blast nozzle* (3.16) at the outlet

3.15
blast hose
blast tube
hose or tube connecting a nozzle to the *blast pot* (3.17)

3.16
blast nozzle
component connected at the outlet of the *blast gun* (3.14) with the desired shape, size and abrasive resistance which determines the *abrasive media* (3.4) flow and angle

3.17
blast pot
blast hopper
container of *air blaster* (3.8) for storing *abrasive media* (3.4)

3.18
blasting angle
angle between the centre line of the abrasive beam ejected from the nozzle and the surface of the workpiece being blasted during *abrasive blasting* (3.1)

3.19
blasting chamber
chamber of *abrasive blasting machine* (3.2) which contains the workpiece and also prevents the *abrasive media* (3.4) from escaping to the environment after impacting on the workpiece

3.20
blasting density
amount of *abrasive media* (3.4) blasted per unit area within the surface that has been impacted by the *abrasive media* (3.4)

3.21
blasting distance
distance between the nozzle and the surface of workpiece to be blasted during *abrasive blasting* (3.1)

3.22
blasting pattern
effective area of workpiece surface covered by abrasive beam blasted by *wheel blaster* (3.86)

3.23
blasting pressure
working pressure of compressed air fed into nozzle or in *blast pot* (3.17) during *compressed-air abrasive blasting* (3.29)

3.24
bogie decoring machine
decoring machine (3.36) that uses bogie to transport workpieces

3.25
bucket elevator
continuous conveyor that uses a series of bucket shaped hoppers uniformly fixed on the endless circular traction component to vertically lift *abrasive media* (3.4), foundry sand and impurities

3.26
carbon-arc-gouging torch
device for purging molten metal and oxides with compressed air while melting flash and burr by arc heat generated between graphite rod or carbon rod and castings

3.27
casting cooling and transferring system
system used for recooling of casting after demolding

Note 1 to entry: It uses continuous conveyor, such as vibrating conveyor or overhead chain conveyor, and can be equipped with ventilating and spray cooling system.

[SOURCE: ISO 23472-1:2020, 3.14]

3.28
centrifugal abrasive blasting
wheel blasting
abrasive blasting (3.1) using *wheel blasting machine* (3.87)

3.29
compressed-air abrasive blasting
air blasting
abrasive blasting (3.1) using *air blasting machine* (3.9)

Note 1 to entry: The *abrasive media* (3.4) may be injected into the air stream from a pressurized container or may be drawn into the air stream by suction from an unpressurized container.

3.30
continuous grind fettling machine
grind fettling machine (3.46) with automatic workpiece conveying and clamping mechanism which is capable of continuous grinding operation

3.31
conveyor type blasting machine
abrasive blasting machine (3.2) that uses conveyor to carry the workpiece into and out of the *blasting chamber* (3.19)

Note 1 to entry: The machines are further differentiated by conveyor type, i.e. rollers, rubber belt, wire mesh, chain.

3.32
coverage
percentage of a surface that has been impacted by *abrasive media* (3.4) to the surface area required for treatment

3.33
deburring
removal of flashes and burrs from castings

3.34
decoring
core knock-out
process in which sand core is removed from the inner cavity of the casting by hammering or any other way

[SOURCE: ISO 23472-1:2020, 3.38]

3.35
decoring cell
complete set of *decoring* (3.34) equipment that consists of a *decoring machine* (3.36), a robot for loading and unloading workpieces, an exhaust system, etc.

[SOURCE: ISO 23472-1:2020, 3.39]

3.36
decoring machine
machine that removes the sand core from the inner cavity of the casting by pneumatic or hydraulic *impact hammer* (3.52)

Note 1 to entry: It is usually composed of a hammering mechanism, a conveying mechanism for workpiece and a chamber which prevents dust from escaping. Among them, the conveying of the workpiece can adopt motorized roller(s), mobile car(s), turntable(s), manipulator(s) or robot(s).

[SOURCE: ISO 23472-1:2020, 3.40]

3.37
degating device
equipment and device used to remove gate and riser of castings, such as gate hydraulic cutting machine and riser impacting hammer

[SOURCE: ISO 23472-1:2020, 3.43]

3.38
derusting
removal of rust on the surface of castings

3.39
descaling
removal of oxide scale on the surface of castings

3.40
direct pressurized air blaster
one type of *air blaster* (3.8) that injects compressed air in the *blast pot* (3.17) to transport the *abrasive media* (3.4) to the *blast gun* (3.14)

3.41
electro-hydraulic cleaning device
complete set of devices used to remove adhering sand on the surface of castings and sand core in the inner cavity of castings by means of electro-hydraulic cleaning process

3.42
fettling
removal of surface adhering sand and core residues, gate and riser, and other excess metals (e.g., flash, burr, oxide scale) from castings after knock-out

3.43
finishing
fine cleaning process with the main purpose of improving the surface condition of castings by manual, mechanical or robotic means after initial cleaning of removing the adhering sand, core residues, gate and riser, including deflashing, *deburring* (3.33), repairing, etc.

3.44
finishing room
room accessible to personnel for *finishing* (3.43) of castings, including workpiece conveying system and/or lifting appliances, and *finishing table* (3.45)

Note 1 to entry: The room is enclosed or semi-enclosed with sound insulation and dust escape prevention functions.