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**Foundry machinery — Vocabulary —  
Part 2:  
Molding and coremaking machines  
and other equipment related to non-  
permanent mold casting process**

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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](http://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](http://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](http://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](http://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.

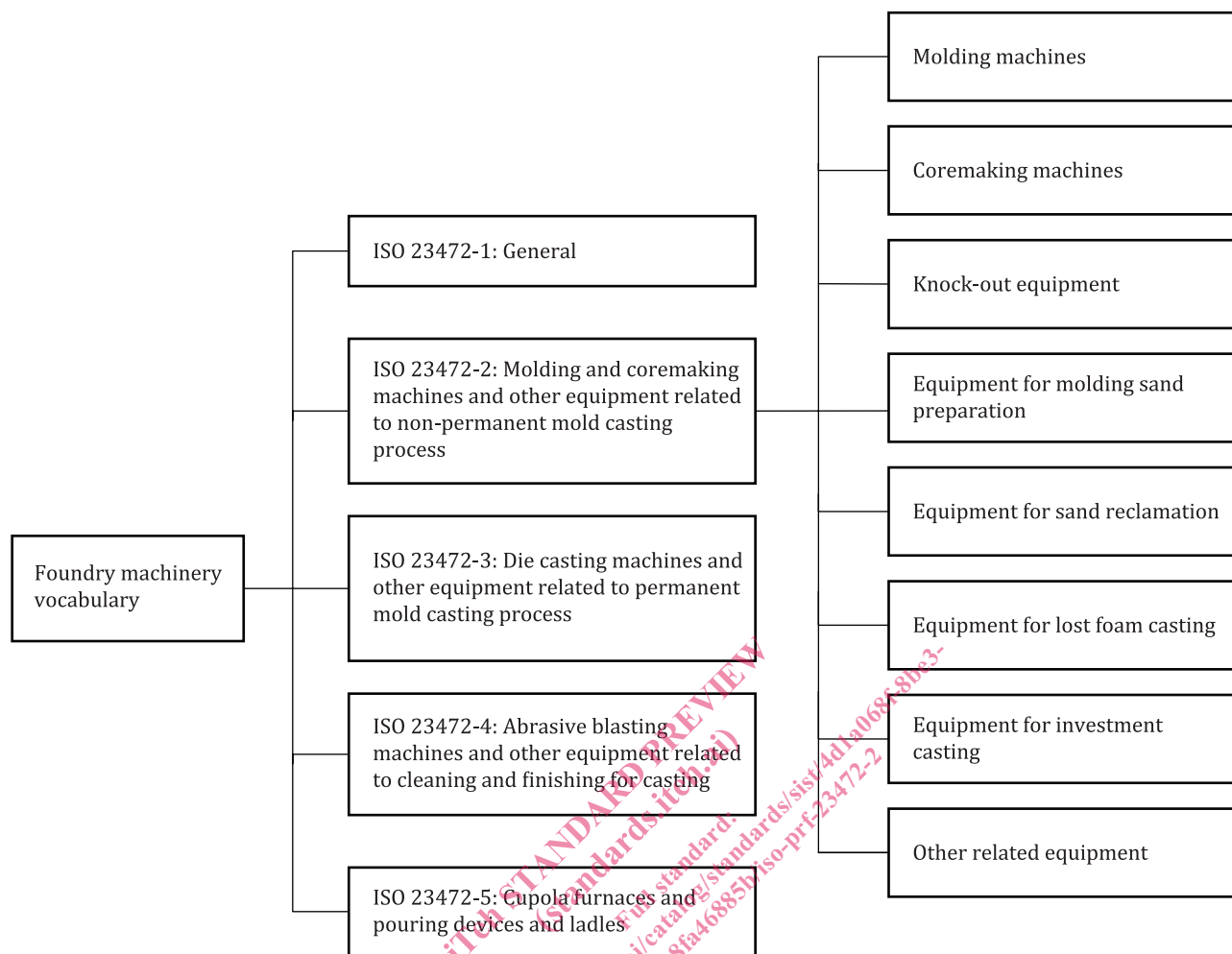
The objects involved in the ISO 23472 series are foundry machines used in foundry production.

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 in 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 remains constantly developing and changing. According to the difference between 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 molding and coremaking machines and other equipment related to non-permanent mold casting process. This includes basic concepts specifically concerning structural characteristics and functions, important mechanisms and parts, main technological processes and parameters of various molding machines, coremaking machines, knock-out equipment, equipment for molding sand preparation and sand reclamation, equipment for lost foam casting and investment casting, and other related equipment (see [Figure 1](#)).



**Figure 1 — Structure of vocabulary on molding and coremaking machines, and other equipment related to non-permanent mold casting process**

# Foundry machinery — Vocabulary —

## Part 2:

# Molding and coremaking machines and other equipment related to non-permanent mold casting process

## 1 Scope

This document defines a set of terms and definitions of molding and coremaking machines and other equipment related to non-permanent mold casting process in foundry machinery.

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

## 2 Normative references

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 terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### **3-D vibrating table**

*vibrating table* (3.199) which can ram in X, Y and Z direction

### 3.2

#### **A+B liquid control system**

automatic control system for two different hardeners A and B, which can adjust each consumption of A and B in real time and control each addition by adjusting the flowrate of the pump with frequency converter to make hardening time proper and strength of sand mold stable

### 3.3

#### **abnormal casting separator**

device for separating waste or trial-produced castings before shakeout

### 3.4

#### **air wax injection machine**

machine used for injecting the wax pattern by compressed air

### 3.5

#### **air-flow-squeeze molding**

molding method which applies air flow for pre-compaction and uses pressure head for compaction for molding sand

3.6

**air-flow-squeeze molding line**

automation molding line which connects *air-flow-squeeze molding* (3.5) machine (host) and auxiliary machines with mold or flask conveyor according to certain process and applying proper control mode

3.7

**air-flow-squeeze molding machine**

molding machine which makes mold by air-flow-squeeze, and air flow is used for molding sand pre-compaction, followed by squeezing for final compaction

3.8

**air-lock unloader**

device installed at the outlet of the *separator* (3.157) in the suction conveying, which can be used to discharge and seal the material

3.9

**anvil jolt mechanism**

mechanism which makes the worktable drop directly, and repeatedly impact the fixed anvil by gravity

3.10

**automatic clamping device for flasks**

auxiliary device in the molding line used for automatically fastening the hook of the cope and the pin-axle of the drag

Note 1 to entry: The purpose is to avoid the shifting and lifting of the flask during pouring.

3.11

**automatic mold conveyor**

automatic conveyor used for transporting the molds and synchronized with a host of vertical parted flaskless shoot-squeeze molding line

Note 1 to entry: It consists of a mold slide platform with a floating pneumatic thrust bar mechanism and a power unit.

3.12

**automatic sand cutter/scrapper**

auxiliary machine in the molding line used for automatically cutting/scraping excess sand from the back of a sand mold (with travelling or stationary cutting device)

3.13

**back and face sand synchronous track filled continuous mixer**

*continuous no-bake sand mixer* (3.35) that can mix and fill facing sand synchronously with backing sand according to a certain trajectory

3.14

**bag-type dust collector**

equipment which can separate and remove dust in gas using filter-bags

3.15

**belt feeder**

short-distance feeding equipment which controls the flow rate of loose materials by outlet area of the guide chute and the speed of belt

3.16

**belt-type electromagnetic separator**

separating device made of ferromagnetic material with a belt conveyor, in which an electromagnet is arranged between head and tail



**3.17****belt-type permanent-magnet separator**

separating device made of ferromagnetic material with a belt conveyor, in which a permanent magnet is arranged between head and tail

**3.18****binder dosing device**

device used for sucking up the binder and controlling the dosage of binder automatically

**3.19****binder holding device**

binder tank with heating and temperature controlling device, which also indicates the level of the binder

**3.20****binder pre-heater**

device which preheats the binder before being added into the mixer to a certain temperature range so as to ensure the viscosity of the binder

**3.21****blade mixer**

mixer equipped with mixing blades which are driven by a horizontal shaft and rotating in the trough or driven by a vertical shaft and rotating in the mixing pan

**3.22****booster**

device used for dynamic compensation of pipeline pressure loss in the compressed air conveying

**3.23****cantilever arm flow-coating machine**

machine used to automatically flow coat the mold

Note 1 to entry: It is equipped with a cantilever used for clamping, lifting and turning the sand mold.

**3.24****catalyst dosing device**

device used for sucking the catalyst up and automatically metering the dosage of catalyst

**3.25****centrifugal wheel**

flat wheel parts installed on *centrifugal wheel muller* (3.26), which can:

- rotate horizontally and generate centrifugal force;
- be used to roll and squeeze the sand flow which is thrown by the scrapers in mixing sand;
- make the sand flow to the side wall by means of the centrifugal force

**3.26****centrifugal wheel muller**

muller which uses horizontal *centrifugal wheel* (3.25) to rub and mix the materials thrown up by the plough

**3.27****chain type roll over machine**

auxiliary machine in a molding line

Note 1 to entry: A rotary machine for turning a half-compacted sand mold flask around the horizontal axis by 180° with chain drive.

**3.28**

**circular conveyor**

conveyor that many pallet cars connect to close the loop one by one and run on the truck, used for conveying the molds

**3.29**

**closing machine**

auxiliary machine in the molding line used for closing cope and drag

**3.30**

**coating drying oven**

oven used for drying the coating on the surface of sand core or mold

**3.31**

**coating mixer**

machine used for stirring, dispersing, emulsifying and mixing the paint, and preventing it from subsiding

**3.32**

**cold box process**

process in which resin-bonded sand is shot into core box and then hardened quickly in room temperature by addition of the catalyst

**3.33**

**coldbox core shooter**

core shooter used for making sand-core by coldbox process

**3.34**

**compactability**

index of appropriate humidity of molding sand, which is expressed by the volume change rate of sand compaction from beginning to end

**3.35**

**continuous no-bake sand mixer**

machine that mixes *no-bake sand* (3.112) continuously, consisting of one or two screw cages for mixing and pushing molding sand, and liquid pump system

**3.36**

**control of molding sand**

conventional or special tests for the quality of molding sand preparation to stabilize the performance of molding sand and in turn obtain high quality castings

**3.37**

**cooling box**

box for storing awaiting cooling castings and used sand from *punch-out equipment* (3.134) in molding line

Note 1 to entry: It can increase cooling time of castings and reduce cost of the flasks in molding line.

**3.38**

**core assembly device**

device used for assembling several sand cores into a sand core package

**3.39**

**core deburring device**

device used for removing the fins on the sand-core surface

**3.40**

**core extruder**

special machine used for making cores via extruding core sand

**3.41****coremaking centre**

production unit used for making the sand core consisting of several core machines and relevant equipment according to the production process requirement

**3.42****core pickup device**

device used for taking the core out of the coremaking machine

**3.43****core setter**

auxiliary machine used for automatically setting the core into the mold

**3.44****cyclone dust extractor**

equipment which applies centrifugal force to separate dust from gas

**3.45****cyclone separator**

equipment which takes advantage of the centrifugal force during pneumatic conveying in which materials and air can be separated

**3.46****degree of ramming**

compression degree of molding sand after compaction

Note 1 to entry: It can be expressed by density (unit volume density,  $\text{g}/\text{cm}^3$ ) or hardness of sand mold.

**3.47****dewaxing cauldron**

device used for melting the pattern material in the mold shell by steam or electro-heating in investment casting

**3.48****dip-coating tank**

paint tank used for the sand core dip-coating optionally equipped with coating stirring device, circulating pump, liquid level control and/or viscosity control device

**3.49****disk feeder****plate feeder**

feeding equipment equipped with rotating disk around the vertical shaft, installed under loose material hopper and used to control the unloading of the materials continuously and uniformly from the rotating disk by adjusting the separation distance between the adjusting sleeve and the disk, and the different guide positions of plough

**3.50****double-arm sand mixer**

*continuous no-bake sand mixer* (3.35) with a horizontal upper arm which can rotate around a vertical axis installed on base and has a horizontal mixing cage that rotates around a vertical axis, is suspended below the arm

**3.51****double-shaft humidifying blender**

device for adding water to evenly mix the moisture of loose material by two parallel symmetric helical axes rotating synchronously and reversely

**3.52****double station horizontal parted flaskless shoot-squeeze molding machine**

horizontal parted flaskless *shoot-squeeze molding machine* (3.163) which has two working stations used separately for molding and core setting