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Foundry machinery — Vocabulary —

Part 2: Molding and coremaking machines and other equipment related to non-permanent mold casting process

Machines de fonderie — Terminologie —

Partie 2: Machines de moulage et de noyautage et autres équipements liés au procédé de coulée en moule non permanent

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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*.

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 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).

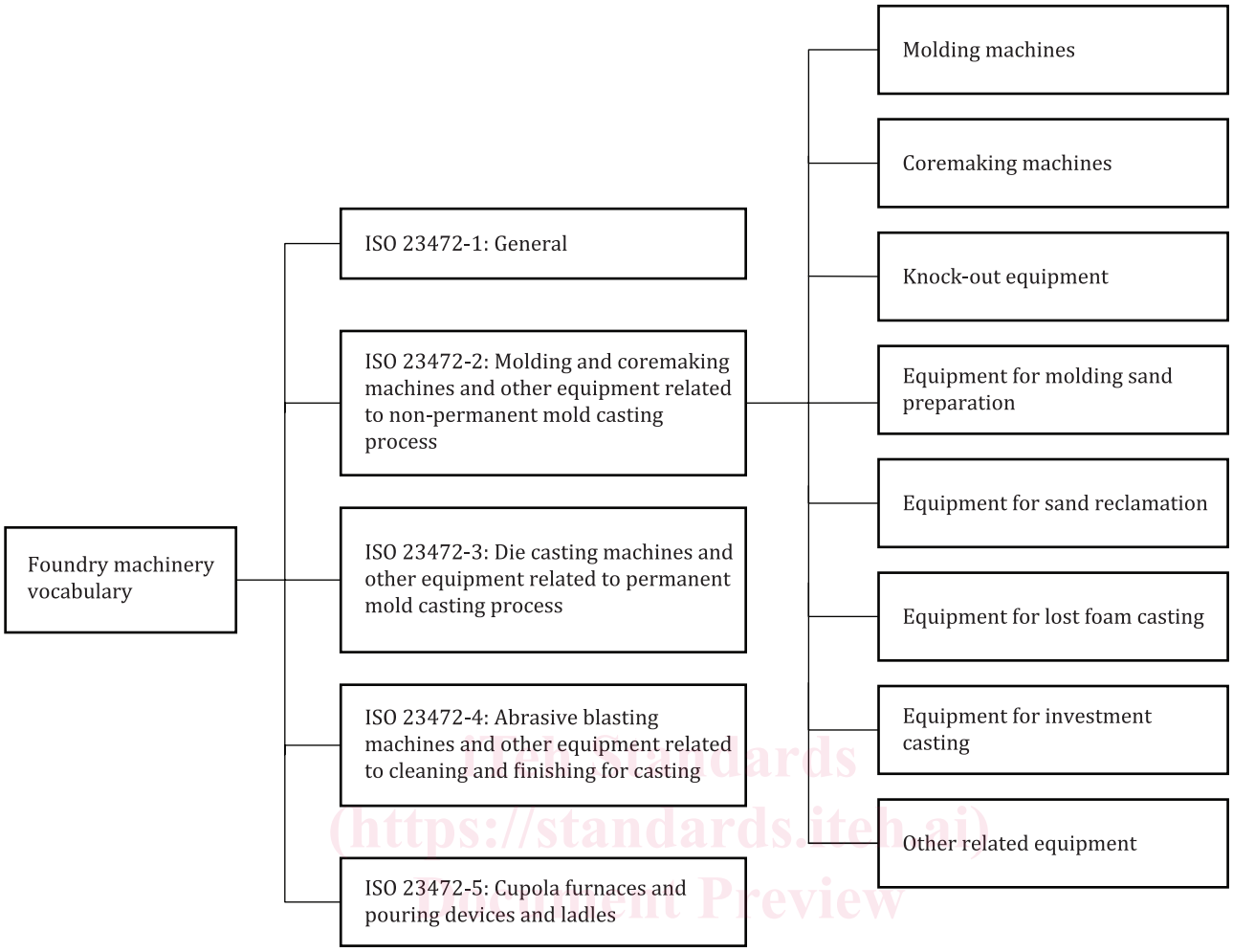

Figure 1 — Structure of vocabulary on molding and coremaking machines, and other equipment related to non-permanent mold casting process

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/scraper
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 used in a molding line for storing castings and used sand coming out of the *punch-out equipment* (3.134) and waiting to be cooled

Note 1 to entry: It can increase cooling time of castings and reduce cost of the flasks in the 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, g/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