
**Foundry machinery — Vocabulary —
Part 3:
Die casting machines and other
equipment related to permanent mold
casting process**

Machines de fonderie — Vocabulaire —

*Partie 3: Machines à couler sous pression et autres équipements liés
au processus de moulage 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).

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*.

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 of, or the 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 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 core-making 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 die casting machines and other equipment related to permanent mold casting process, including basic concepts specifically concerning structural characteristics and functions, important mechanisms and parts, main technological processes and parameters of various die casting machines, squeeze casting machines, low pressure casting machines, centrifugal casting machines, gravity die casting machines and other related casting machines (see [Figure 1](#)).

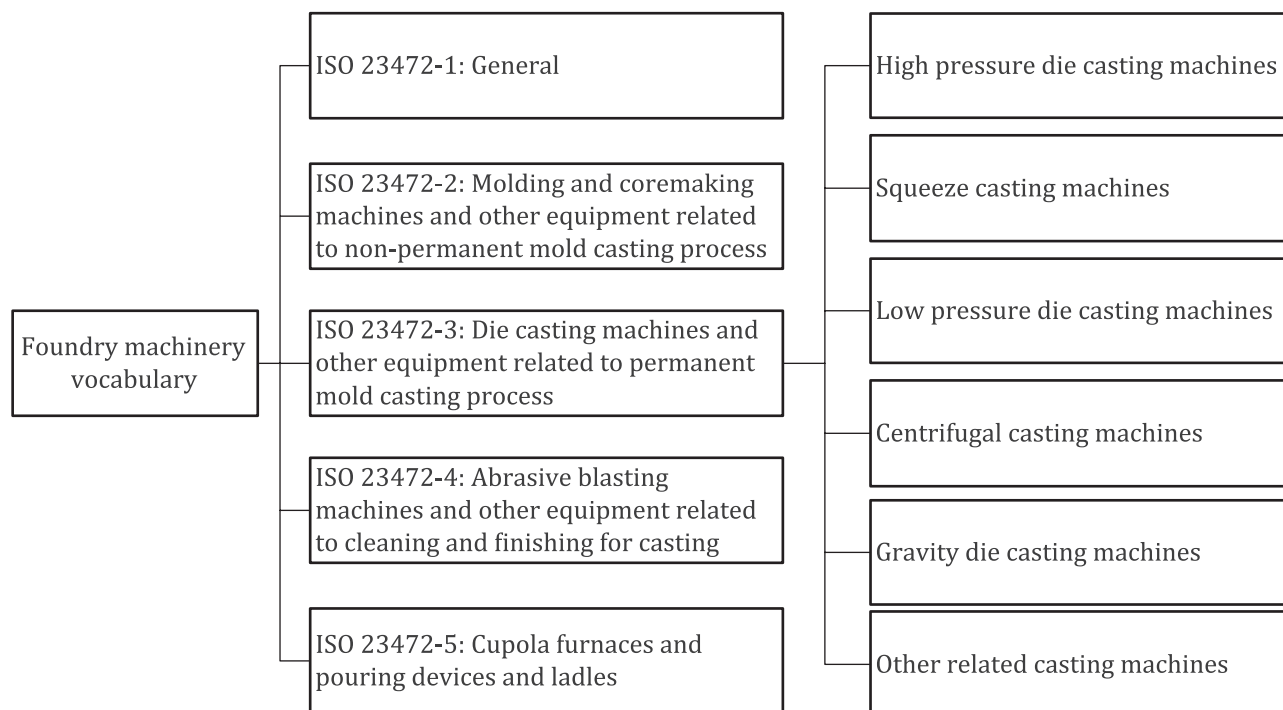


Figure 1 — Structure of vocabulary on die casting machines and other equipment related to permanent mold casting process

It is expected to be used in the field of die casting machines and other equipment related to permanent mold casting process, technical documentation, related scientific and technical publications.

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Foundry machinery — Vocabulary —

Part 3:

Die casting machines and other equipment related to permanent mold casting process

1 Scope

This document defines a set of terms and definitions of die casting machines and other equipment related to permanent mold casting process.

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 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

acceleration of fast injection

time required to achieve the maximum injection velocity from the *fast injection* (3.41) start during the injection process

3.2

access door

doors of the distance guards of a *die casting cell* (3.16)

3.3

auxiliary equipment

devices which carry out additional process functions within a *die casting cell* (3.16)

3.4

biscuit

slug

metal surplus which solidifies in the cold-chamber *shot sleeve* (3.92) and is ejected with the casting

3.5

cantilever type horizontal centrifugal casting machine

horizontal centrifugal casting machine (3.53) whose *pipe die* (3.81) in cantilever shaped to be fixed on one end or both ends of main axle of the machine, or the flange disc(s) which to be connected with one or both ends of main axle of the machine

3.6

casting area

maximum projected area of the *die casting machine* (3.17) that allows the casting (including the gating system, venting system and overflow system) on the parting surface of the die

3.7

casting volume

<theoretical>maximum amount of volume that can be cast for a single casting

3.8

centrifugal casting machine

machine that uses centrifugal casting process to produce castings

3.9

clamping type horizontal centrifugal casting machine

horizontal centrifugal casting machine (3.53) whose *pipe die* (3.81) spins with its both ends to be clamped

3.10

clean-up device for die

device which clean away coating or other residues

3.11

cold-chamber die casting machine

die casting machine (3.17) with a horizontal *die closing system* (3.22), where molten metal is delivered to the *shot sleeve* (3.92) in measured amounts from a separate furnace

3.12

core puller

assembly which controls movements of cores

3.13

counter pressure casting machine

machines that is similar to low pressure casting machine but using differential pressure between die and furnace to allow molten metal to fill into the die cavity to produce castings.

Note 1 to entry: The working pressure levels are usually higher than ones in low pressure casting machine.

3.14

cylinder platen

thrust platen

reaction platen

link housing

rear platen

platen to which the die closing mechanism and the closing cylinder are connected

3.15

die area

area between *fixed platen* (3.44) and *moving platen* (3.79)

3.16

die casting cell

die casting machine (3.17), together with auxiliary and ancillary equipment, which form a complete production unit

3.17

die casting machine

machine with the purpose to inject molten metal under pressure into a parted die which is connected to the platens of the machine

3.18

die clamping device

device for clamping the die to the platens of the machine (automatically or manually)

3.19**die closing cylinder
die clamping cylinder**

hydraulic cylinder that provides force for the *die closing system* (3.22)

3.20**die closing mechanism area**

area between *moving platen* (3.79) and *cylinder platen* (3.14)

3.21**die closing safety device**

device, actuated by the movable guard, which prevents the die from closing if a failure occurs in the control system area where the drives are located for driving the mechanism of the *moving platen* (3.79)

3.22**die closing system**

assembly which opens and closes the die and holds the die against the force exerted on the molten metal during injection and solidification

3.23**die locking force****die clamping force**

force which acts on the parting surface of the die by *die closing system* (3.22) to hold the die against the force exerted on the molten metal during injection and solidification after the die closing

3.24**die opening force**

force that opens the die after the casting is solidified

3.25**die releasing agent tank**

device in which the die releasing agent is placed and stirred, and fed into the parts of the spraying mechanism under a certain pressure

3.26**docking**

process in *squeeze casting machine* (3.101) which presses the *shot sleeve* (3.92) against the die

3.27**docking device**

device in *squeeze casting machine* (3.101) which presses the *shot sleeve* (3.92) against the die

3.28**docking force**

force of *docking* (3.26) the *shot sleeve* (3.92) with the die in *squeeze casting machine* (3.101)

3.29**docking stroke**

displacement of the *docking device* (3.27) of the *shot sleeve* (3.92) in *squeeze casting machine* (3.101)

3.30**dry cycle time**

time required for each dry cycle of the machine in accordance with the sequence of operations

Note 1 to entry: For example, for the *horizontal cold-chamber die casting machine* (3.54), dry cycle time refers to: die closing, injection, die opening, *plunger* (3.82) tracking, injection return, ejection, *ejection return* (3.34) in total time.

3.31**ejection cylinder**

hydraulic cylinder that drives the *ejection system* (3.37)

3.32

ejection force

static force which is applied on the ejector plate or rod by the ejector system, when castings are ejected from the die cavity

3.33

ejection plate

part which transmits movement to the ejector device of the die

3.34

ejection return

action of the ejector system returns after the casting is ejected

3.35

ejection rod

part which joins the ejector plate of the machine to the ejector device of the die

3.36

ejection stroke

moving distance of the ejector plate

3.37

ejection system

die casting machine's (3.17) assembly which ejects castings from the die cavity

3.38

ejector coupler

component for automatically coupling the ejector plate of the machine with the ejector system of the die

3.39

entirely vertical cold-chamber die casting machine

cold-chamber die casting machine (3.11) in which the die is installed above the *shot sleeve* (3.92), and both the *plunger* (3.82) and the die move vertically

3.40

extractor

device that is used for taking casting out of the mold

Note 1 to entry: It is able to clamp and take out the castings from the die and release it to a specified position, and then identify the integrity of the castings by product detector.

3.41

fast injection

fast shot

process of filling the molten metal into the cavity after the end of the slow shot

3.42

fast injection speed

velocity of the *plunger* (3.82) in the *fast injection* (3.41) process

Note 1 to entry: Usually mean average velocity.

3.43

fast injection stroke

displacement that the *plunger* (3.82) is generated from the *fast injection* (3.41) start to the end of fast injection during the injection process

3.44

fixed platen

stationary platen

platen to which the fixed die-half and the metal *injection system* (3.66) are connected