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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

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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).

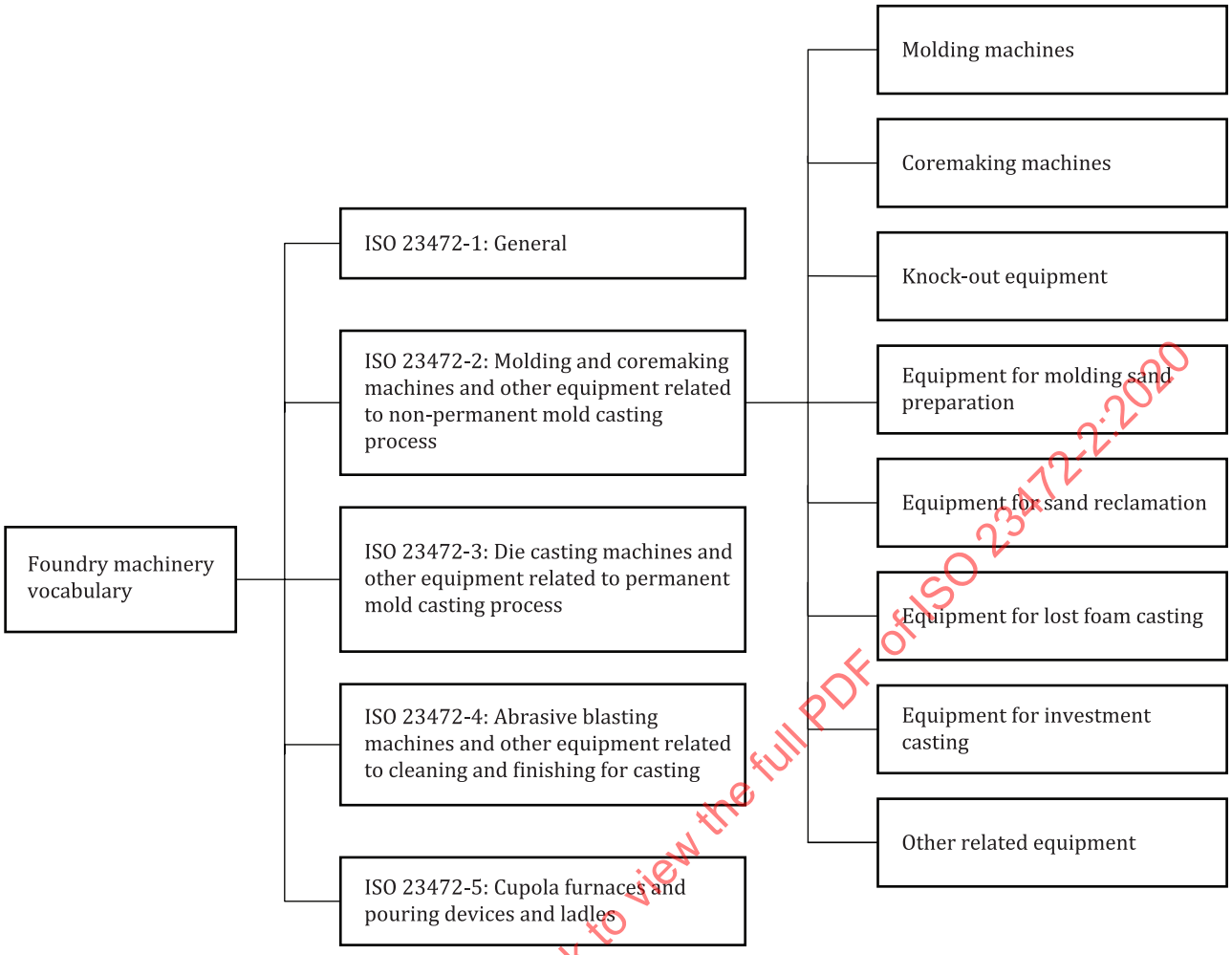

Figure 1 — Structure of vocabulary on molding and coremaking machines, and other equipment related to non-permanent mold casting process

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

3.53
double-mass shakeout
two-mass shakeout
shakeout vibration body which consists of working mass and exciting mass, connected by a resonant spring

Note 1 to entry: The exciting force generated by the *exciter* (3.61) is transmitted to the grid and groove body through resonant spring.

3.54
double-side squeezing
double-sided squeezing
method in which molding sands in the chamber are squeezed from mold parting face to mold back face by two *squeeze heads* (3.173)

3.55
drum breaker screen
equipment which is applied to screen used sand in the rotating drum and in which sand lumps can be broken

3.56
eject box stripping
method in which pattern plate is fixed and the flask is lifted upwards to separate the pattern plate from the mold

3.57
electromagnetic drum
magnetic separation device which consists of a rotating hollow drum made of non-magnetic material, and a stationary electromagnet in the drum

3.58
electromagnetic pulley
driving pulley of belt conveyor with magnetic separation which is manufactured by *electromagnetic drum* (3.57) method

3.59
electromagnetic vibrating feeder
vibrating feeder (3.195) which utilizes the vibrating force generated by the electromagnetic *vibrator* (3.61)

3.60
elevating flask device
auxiliary machine used for elevating mold and putting on another mold conveyor located on the molding line

3.61
exciter
vibrator
device used for generating exciting force which can apply the exciting force to shakeout and other vibration equipment, including inertial exciter, electric vibrator and directional force exciter

Note 1 to entry: Exciting force of inertial vibrator is produced by using the centrifugal inertia force of the rotating unbalanced mass.

Note 2 to entry: Inertial vibrator exciter of electric vibrator is combined with rotating unbalanced mass and special motor.

Note 3 to entry: Exciting force of directional force exciter is produced by the vibrator and is the resultant force of the centrifugal inertia of unbalanced mass of two-axis rotation.

3.62
flask separator
auxiliary device used for separating a cope and a drag of closed flask in the molding line

3.63
flask size
main parameter of the molding line which refers to the inner dimensions of the flask, generally expressed in terms of the length ×width × cope height/drag height, in millimetres

3.64
flaskless molding
molding method which uses double-sided pattern plate for making molds by *squeeze compaction* (3.171), by which the mold is ejected from the flask after molding and closing the flask

3.65
flow-coating machine
equipment for flow-coating the paint from the paint bucket to the surface of the mold cavity by using a pump and nozzle

3.66
fluidized bed
grooved or tubular equipment for fluidizing granular or powdered material by blowing airflow from the bottom

Note 1 to entry: This equipment is often used in the foundry production, such as the used sand fluidized cooling, the fluidized sand shells making in investment casting, the fluidized conveying of new sand and clay, etc.

3.67
foam cluster
complete foam mold which consists of lost patterns of one casting or several castings and gating system

3.68
fusion wax holding furnace
water bath furnace used for melting and holding wax, equipped with a heating component and a temperature control component, such as a thermometer

3.69
grid-type proportioner
intermittent quantitative device measured by volume method

Note 1 to entry: A quantifier for loose materials is controlled by using a fixed grid and a grid can open and close at each upper and lower ports of a box.

3.70
hammer crusher
equipment which crushes bulk materials by means of several hammers or wear-resisting metal blades hinged on a high-speed rotating rotor in the crust

3.71
hardening station
station section in a *no-bake sand* (3.112) molding line, in which *no-bake sand* (3.112) molds are hardened

3.72
high pressure molding machine
molding machine which makes mold with high pressure molding method

3.73
horizontal barrel revolving drier
equipment which applies continuous hot air flow to dry moist sand that rolls forward along the spiral trough or blade of the horizontal barrel

3.74
horizontal parting flaskless molding machine
molding machine which makes molds by *flaskless molding* (3.64) method

Note 1 to entry: The mold is horizontally parted.

3.75
hot air tube drier
device which applies hot air flow to convey sand and meanwhile remove moisture from sand

Note 1 to entry: It is mainly composed of, but not limited to, a blower, a transmitter, a *separator* (3.157) and a hot blast stove.

3.76
hot box process
core-making process in which thermosetting resin sand with an appropriate amount of curing agent is blown into heated core box and then hardened under curing agent in a short time

3.77
hot water dewaxing device
device used for melting wax pattern out of the mold shell by hot water in investment casting, consisting of the lifting mechanism including, but not limited to, steel rope, steel frame and hot water trough

3.78
hotbox core shooter
machine which makes sand core by hotbox process

3.79
impact molding
molding method in which molding sand is compacted with pressure waves produced by instantaneous release of compressed air or deflagration of gas

3.80
impact molding line
automation molding line which connects air *impact molding* (3.79) machine (host) and auxiliary machines with mold or flask conveyor according to certain process and applying proper control mode

3.81
impact molding machine
molding machine which makes molds with air *impact molding* (3.79) method

3.82
inorganic-bonded core shooter
machine which shoots the sand core by inorganic binder process

3.83
jolt compaction
jolt ramming
method that molding sand or core sand is compacted by inertia according to shocking impact in low frequency and high amplitude motion

3.84
jolt mechanism
mechanism for realizing compaction

Note 1 to entry: This includes anvil jolt mechanism and shockless jolt mechanism.

3.85
jolt molding machine
molding machine which makes molds by *jolt compaction* (3.83) method

3.86
jolt-squeeze mechanism
mechanism for compacting sand molds in molding machines, which is the telescopic form plunger cylinder composed of a *jolt mechanism* (3.84) and a squeeze mechanism

3.87
jolt-squeeze molding machine
machine which makes molds by jolting compaction and squeezing compaction

3.88
jolt-squeeze rollover molding machine
machine which makes molds by jolting compaction and squeezing compaction and includes turning over stripping mechanism

3.89
jolt-squeeze snap flask molding machine
machine which makes molds with snap flask by shockless jolting compaction and squeezing compaction, while the flask is removed and mold is stripped by hand

3.90
jolt-squeeze stripper
molding machine which makes molds by jolting compaction and squeezing compaction and has lifting pin stripping mechanism

3.91
key core
core lock
special process for assembling core in which the single core produced using the *cold-box core shooter* (3.33) is mechanically assembled into the core assembly fixture, which is then locked into an integral core by *shooting* (3.161) sand in the special *cold-box core shooter* (3.33)

3.92
lever-type proportioner
device which applies the gravimetric method to weighing each batch and is made of a weighing box or a weighing hopper by the principle of leverage in mechanical weighing apparatus

3.93
locating device
device for positioning pallet car or flask according to process requirements

3.94
lost foam molding line
mechanized and automated molding line which applies to lost foam casting process and consists of several process equipment such as sand filling, compacting, negative pressure pouring, cooling, flask turning, sand removal, etc.

Note 1 to entry: The process equipment is connected to the flask conveyor and controlled by the appropriate mode.

3.95
magnetic separator
equipment which can adsorb and separate the iron impurities by the magnetic force of permanent magnet or electromagnet

3.96
match plate
pattern plate where two half patterns and the gating system composed of a complete mold are respectively installed on the two sides of the same pattern mounting plate

Note 1 to entry: The same pattern plate can be used for completing the upper and lower mold.

3.97
matchplate molding machine
molding machine which makes two half molds by *match plate* (3.96) at a time

3.98
mechanical reclamation equipment
equipment used for mechanically treating the *waste sand* (3.206) to meet the requirement of the reclamation process

3.99
mechanical wax agitator
machine used for squeezing the wax and stearic acid material into a paste, equipped with a screw-stirring device of high-speed rotation, and where the temperature of the pattern material is raised by the friction and extrusion between the wax material and the tiring device of high-speed rotating

3.100
mixing rotor
component in which several round rods or blades are vertically installed on the rotary structure body

Note 1 to entry: It can rotate at a high speed and is used for mixing and loosing molding sand.

3.101
mold jacket
device used for preventing the expansion of mold after pouring and jacketed on the mold before pouring

Note 1 to entry: It is similar to the flask and is taken off from mold after cooling process.

3.102
mold jacket machine
machine used for covering the sand mold with *mold jacket* (3.101)

3.103
mold push off device
device used for pushing off the mold from the pallet car

3.104
mold shell making trolley line
production line used for making mold shell assembly that is carried by an overhead chain conveyor

Note 1 to entry: When the conveyor runs a cycle path, the following processes are completed: coating, stuccoing, hardening, drying, etc. The conveyor repeats several times until the thickness of the mold shell is obtained.

3.105
molding line productivity
main parameter of the molding line which refers to the number of complete molds that can be produced per hour (in flasks per hour) by the molding line

Note 1 to entry: The unit can also be “molds per hour”. A complete mold includes upper and lower mold for horizontal parted line, front and back molds for vertical parted line.

3.106
molding sand slinger
auxiliary machine to a molding machine used for automatically applying sand (fine) onto the pattern plate

3.107
multi-cooler
device which can cool the hot sand that is stirred and rolled by two groups of opposite sand plough, and blown into airflow in the two interconnected round pans

3.108
multi-layer cooling line
vertical multi-layered conveyor lines used for cooling and storing of molds after pouring

3.109
multi-mull
continuous sand mixer which is composed of two interconnected roller mechanisms with the same disc diameter

3.110
multiple station automatic wax pattern injection machine
wax injection machine with a multiple rotating table mounted on multiple sets of patterns die evenly, which used for completing the process automatically for wax pattern such as injecting wax, cooling, opening pattern die, stripping, cleaning and closing pattern die, etc.

3.111
multi-tube water cooling fluidized bed
fluidized bed (3.66) which is equipped with multi-tube water cooling heat exchangers for cooling hot sand

3.112
no-bake sand
chemical hardening sand made of raw sand, self-hardening binder, curing agent, etc.

Note 1 to entry: Molds and cores are made of self-hardening sand without baking and can fully self-harden at room temperature.

3.113
no-bake sand mixer
mixer which mixes no-bake resin sand

Note 1 to entry: The resin binder can be coated on the surface of sand particle effectively by the stirring of blades.

3.114
no-bake sand molding line
molding line which connected *no-bake sand* (3.112) mixer, *vibrating table* (3.199) and other auxiliary equipment with conveyor according to *no-bake sand* (3.112) production process and proper control

3.115
pallet cleaner
device for cleaning scattered sand on a pallet car

3.116
pattern bolster plate
frame-shape base plate device used for installing pattern plates

Note 1 to entry: There are some threaded holes and locating pins on it for installing pattern plates.

3.117
pattern cutting machine
machine used for processing foam plastic plate into the required shape mold or pattern

3.118
pattern film drawing device
movable combined equipment which can draw film automatically for vacuum molding, including fixing frame of film laying, lift frame, electric heater, air exhausting device of negative pressure, driving device for moving, etc.

3.119
pattern forming machine
machine used for forming the foam pattern, in which pre-foamed beads are filled into the mold cavity and steam is then introduced into the cavity to soften and expand the beads

3.120
pattern gluing machine
machine used for gluing a piece of pattern into a complete pattern

3.121
pattern plate exchanger
device which can exchange pattern plates to make molds in a cycle time of molding machine

Note 1 to entry: It can be divided into shuttle type and circular type.

3.122
pattern plate quick changing device
pattern plate change device which can complete operation of the changing pattern plate in a cycle time of the molding machine

3.123
permanent-magnet drum
magnetic separation device which consists of a rotating hollow drum made of non-magnetic material and a stationary permanent magnet in the drum

3.124
permanent-magnet pulley
driving pulley of belt conveyor with magnetic separation which is manufactured by *permanent-magnet drum* (3.123) method

3.125
piece of foam pattern
one of several parted patterns that are divided from one lost foam pattern of a casting in order to make easer for forming the foam pattern

3.126
pneumatic transporter
device used for transporting the materials by compressed air as a component of the compressed air conveyor

3.127
pouring station
pouring line
area in a molding line, in which pouring proceeds

3.128
precision mold conveyor
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 two sets of mold transfer table with one up-down motion mechanism (or only one with an up-down motion mechanism) and a power unit.

3.129
pre-compact
method in which molding sand is preliminary compacted by using vacuum, impact, vibration, etc.

3.130
pre-expander
machine used for expanding raw material beads in advance to meet the density requirements of beads for foam pattern forming

3.131
pre-lift stroke
displacement of the worktable of the molding machine from the initial position where it moves upwards to lift the sand box and the residual *sand frame* (3.149) to the position where it stops at the ready sand position

3.132
pressure type pneumatic conveyor
equipment used to convey loose material by compressed air in the closed pipe

3.133
pulse pneumatic conveyance equipment
device which applies compressed air to convey loose material in the closed pipe where successive material column is cut into intermittent plunger flows

3.134
punch-out equipment
equipment used for separating the mold and castings from the molding box by vertical or horizontal movement of a punch-out piston

3.135
pushing machine
device which pushes flask to the *shakeout station* (3.159) in a molding line

3.136
reaction crusher
equipment which crushes bulk materials

Note 1 to entry: Bulk materials are pounded and impacted reciprocally by many hammers which are rotating in a high speed. Furthermore, the materials are thrown to the impact plates and crushed.

3.137
roasting furnace of sand reclamation
equipment which is applied uniformly for heating *waste sand* (3.206) particles to the required temperature

3.138
rock-over stripping
method in which the pattern plate with the sand mold is tipped on a table, and is then withdrawn upwards from the mold

3.139
roller mixer
mixer which applies the ploughs and rollers for mixing sand mixture, in which the ploughs and rollers driven by a vertical drive shaft are rotating on the mixing pan and have the effects on the section of stirring, rolling compacting and kneading of molding sand or core sand

3.140
rolling wheel
component consisting of rotatable wheel-shaped parts installed on the horizontal shaft of a *roller mixer* (3.139), used for rolling compacting and kneading of sand mixture in the mixing process

3.141
rollover stripping machine
auxiliary machine used for the roll-over stripping in *no-bake sand* (3.112) molding line and can turn a compacted sand mold and pattern plate around the horizontal axis by 180° together

Note 1 to entry: There are two kinds of structures - O type (close) and C type (open).

3.142
rotary feeder
feeding device that applies a rotating rotor with uniformly arranged blades to feed materials from the upper inlet and discharge materials from the lower outlet in the box body

3.143
rotary polygonal screen
device that can screen materials by applying screen body which is arranged in polygonal shape along the direction of the rotating shaft and is driven by the rotation shift

Note 1 to entry: Screen body is usually large at one end and small at the other end.

Note 2 to entry: The materials enter from one end of the screen body and the screen residue discharges from the other end.

3.144
rotary screen
device that can screen materials by applying the rotating drum which is composed of screen meshes with a certain diameter of aperture

3.145
rotator mixer
mixer which applies ploughs and *mixing rotors* (3.100) for mixing sand mixture on the mixing pan

3.146
sand cooler
equipment which can be applied to cool reclaimed sand in a hot state to a certain temperature

3.147
sand dosing device for core sand making
subsidiary device used for metering quantities of adding sand each batch for core-sand mixer, with the volume dosing or the weighing sensor dosing for sand dosage

3.148
sand dosing hopper
auxiliary machine in the molding machine used for a uniform charging of a pre-dosed sand quantity into the molding

3.149
sand frame
filling frame
device located on top or bottom flask used for storing molding sand that fills in flask in compacting process

Note 1 to entry: There are two type of frame, one is the top sand frame for top squeezing and the other is the bottom sand frame for bottom squeezing.

3.150
sand mold dimension
main parameter of the molding line which refers to the external dimensions of the sand mold generally expressed in terms of the length × width × thickness of the sand mold in mm units

3.151
sand reclamation system
complete set of equipment which makes used and *waste sand* (3.206) to meet or close the performance of new sand after reclamation treatment

3.152
sand temperature modulator
device which can control the temperature of raw sand or reclaimed sand in a certain range before the process of mixing

3.153
sand washer
equipment used for washing away mud from the sand with water

3.154
sand-shot system
mechanism that causes a sudden expansion of quantitative compressed air to shoot sand into a flask or core box

Note 1 to entry: It is mainly composed of sand gate, sand *shooting* (3.161) chamber, sand shooting valve, quick exhaust valve and sand shooting head.

3.155
screw feeder
feeder which applies spiral rotating thrust to transport materials and can control the flow rate of powder or granular materials by changing the rotation rate or delivery time

3.156
scrubber
device which treats waste gas by the special absorption of activated carbon, low-temperature plasma, washing, etc.

3.157
separator
device used for separating materials and air in a pneumatic conveying system

3.158
set-down flask machine
auxiliary machine used for dropping mold and then putting it on another station of mold conveyor in the molding line

3.159
shakeout station
station section in a molding line, in which mold is punched out from flask and then pushed to shakeout for separating used sand and castings

3.160
shockless jolt squeeze molding machine
molding machine which makes molds using the shockless jolt squeeze molding method

3.161
shooting
process in which the molding sand or core sand is shot and compacted into a molding chamber, a flask or a core box by suddenly expanding compressed air

3.162
shooting pressure
pressure of compressed air used for *shooting* (3.161) molding sand or core sand

Note 1 to entry: The pressure can be adjusted according to process requirement.

3.163
shoot-squeeze molding machine
molding machine which makes mold by *shooting* (3.161) sand into flask and squeezing compaction by pattern plate and *squeeze head* (3.173)

3.164
shower adding sand device
device used for adding sand evenly as a shower by adjusting the hole position of the fixed hole plate and discharging the sand hole plate, which is installed at the bottom of sand hopper

3.165
single-mass knock-out equipment
knock-out equipment of which the vibration body is an integral structure, and the exciting force produced by *exciter* (3.61) installed on the body is transmitted directly to the grid and groove body

3.166
sodium silicate-bonded sand molding line
no-bake sand (3.112) molding line used for producing mold by self-hardening sand with sodium silicate-bonded

3.167
specific squeeze pressure
pressure per unit area on top surface of the mold in squeezing process

Note 1 to entry: A parameter of molding machine.

3.168
spheroidal bowl mixer
mixer which applies high speed blade to mix each batch and has hemispherical or spherical shell

3.169
spraying machine
device to spray the paint in the bucket to the surface of mold cavity with pump and spray gun

3.170
sprue cup/riser drilling device
machine used for drilling sprue cup/riser on the mold in a molding line

3.171
squeeze compaction
method in which molding sand in the flask is compacted by press plate, flexible film or combined press head through hydraulic, mechanical or pneumatic pressure

3.172
squeeze compaction stroke
maximum relative displacement between worktable and *squeeze head* (3.173) in squeezing process

Note 1 to entry: A parameter of molding machine.

3.173
squeeze head
mechanical component to squeeze molding sand in a flask or a mold cavity in squeezing process

Note 1 to entry: A specialized squeeze head with a profile of pattern is called contoured squeeze head.

Note 2 to entry: A multi-piston squeeze head consists of many pistons by hydraulic oil or air composition and the squeeze stroke of every piston can be changed according to the shape of pattern. The pressure of multi-piston squeeze head divided into several groups as needed is called squeeze head division.

3.174
squeeze molding machine
squeezer machine
molding machine which makes molds by squeezing compaction

3.175
squeezing compaction pressure
total pressure on top of the mold in squeezing molding process

Note 1 to entry: A parameter of molding machine.

3.176
standard sieves for foundry
series of sieves used for testing sand size distribution

3.177
stationary single arm sand mixer
continuous no-bake sand mixer (3.35) with a horizontal mixing cage that rotates around a vertical axis installed on a stationary base

3.178
stripping and closing manipulator
manipulator to finish the operation of stripping and closing mold

3.179
stripping and flow-coating manipulator
manipulator to finish the operation of stripping, overturning sand mold and flow-coating

3.180
stripping plate molding machine
molding machine which applies pattern stripping that a stripping plate is used for holding the mold and pattern plate lowers through the middle hole of the stripping plate

3.181
stripping stroke
relative displacement between the pattern plate and the mold in the process of stripping

Note 1 to entry: One of the parameters of molding machine.

3.182
stuccoing fluidized bed
device used for fluidizing the granular refractory in the tank by the compressed air and complete stuccoing on the mold shell

3.183
synchronized belt conveyor
belt conveyor used for conveying mold synchronically with host of vertical parted flaskless shoot-squeeze molding line

3.184
thermal reclamation equipment
equipment used for heating *waste sand* (3.206) to meet the requirement of the reclamation process

3.185
transfer car
transfer truck
device used for transferring the pallet cars or mold supporting plates from a track to another one

3.186
transferring flask device
auxiliary machine used for carrying the cope flask from the molding section to the cope flask section in the molding line

3.187
turnover machine
mold rollover
auxiliary machine used for turning over the mold in the molding line

3.188
vacuum rotator mixer
rotator mixer (3.145) which can cool sand mixture by adding water to the mixer and vacuum pumping in the mixing process

3.189
venthole cleaning device
device used for blowing floating sand on the vent hole in the mold cavity

3.190
venthole drilling device
auxiliary machine used for drilling vent hole in a molding line

3.191
venthole piercing device
auxiliary machine used for piercing holes on mold with one or several needles for vent

3.192
vertical parted flaskless shoot-squeeze molding machine
molding machine which makes molds without flask by *shooting* (3.161) and squeezing compaction

Note 1 to entry: The mold is vertically parted.

3.193
vibra-drum
vibration machinery in which sand and castings are conveyed and separated by means of the reciprocating of the drum

Note 1 to entry: It is a reciprocating knock-out and/or cooling drum.

Note 2 to entry: The inertial *exciter* (3.61) is used as the vibration source of the drum.

3.194
vibrating crusher
equipment used for completing the process of crushing of the sand blocks and abscission of the attachment around sand particles by means of the friction between the sand and sand blocks caused by vibration

3.195
vibrating feeder
feeding equipment which applies the vibrating to continuously throw loose materials forward in the feeder trough

Note 1 to entry: The exciting force is generated by the *exciter* (3.61). The rate of flow of loose materials can be controlled through the adjustment of the gradient and vibration amplitude of chute body. The structure of chute body is usually rectangular, trapezoidal and circular.

3.196
vibrating fluidized-bed cooler
device used for cooling hot sand in the fluidized state having a vibrating trough body with a special opening at the bottom plate, which simultaneously throws hot sand forward along the vibrating trough and blows airflow with external environment temperature into hot sand from the special opening at the bottom of the trough body

3.197
vibrating fluidized-bed drier
device used for drying wet sand in the fluidized state having a vibrating trough body with a special opening at the bottom plate, which simultaneously throws wet sand forward along the vibrating trough and blows hot airflow into wet sand from the special opening at the bottom of the trough body

3.198
vibrating screen
device used for screening materials by vibrating in which the sieve body is subjected to a periodic change of excited force generated by the *exciter* (3.61) and is supported on elastic parts

3.199
vibrating table
vibration device which applies *vibrator* (3.61) or vibration motor as vibration source for compacting mold sand, and is suitable for molding sand with good fluidity

3.200
volume separator
device which is used for separating the materials and the air in pneumatic conveyor via the means of high-velocity airflow. The materials are reduced by volume expansion through the settling box and solid particles depend on gravity for settling simultaneously

3.201
V-process box
device for special box-type structure in V-process, which is installed on the surface of *vibrating table* (3.199) and used for absorbing the film at the beginning of molding

3.202
V-process molding machine
molding machine which compacts dry sand into the mold by negative pressure and vibration

3.203
V-process vibrating table
device used for compacting sand mold of V-process by vibrating

Note 1 to entry: Two kinds of installation- fixed and mobile.

Note 2 to entry: A mobile *vibrating table* (3.199) is installed on the moving trolley driven by power, and there is an air spring to isolate vibration between the *vibrating table* (3.199) and the moving trolley.

3.204
VRH process
vacuum replacement hardening process
method used for hardening sodium silicate sand molds or cores by putting them into the sealed chamber, then vacuuming the chamber below 2,67 kPa and blowing CO_2 into it

3.205
VRH room
vacuum room used for hardening sand mold with *VRH process* (3.204)

3.206
waste sand
used sand which cannot be used directly or be discarded according to the performance requirements of molding sand or core sand

3.207
weight
heavy object with certain shapes which is jacketed on mold to prevent the floating of the upper mold after pouring

3.208
weighting device
device used for putting on, taking off and transporting *weight* (3.207) added in molding line

3.209
weight-jacket device
device used for putting on, taking off and transporting *weight* (3.207) added and *mold jacket* (3.101) in horizontal parting *flaskless molding* (3.64) line

3.210
wet-type dust collector
equipment which can separate and remove dust in exhaust gas by taking advantage of the contact between water or other liquid and dust airflow

3.211
wet-type sand reclamation equipment
equipment which applies water to wash dust and mud of the *waste sand* (3.206) in order to meet requirements of the reclamation process of *waste sand* (3.206)

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