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Tools for moulding — Tool specification sheet for diecasting dies

Outillage de moulage — Formulaire de spécifications d'outils pour moules pour fonderie sous pression

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 24233 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 8, *Tools for pressing and moulding*.

Tools for moulding — Tool specification sheet for diecasting dies

1 Scope

This International Standard presents a tool specification sheet for diecasting dies, for use both when requesting (at the tendering stage) and when ordering the tools. The sheet specifies the data necessary for material acquisition, equipment and the structural design of diecasting dies, including the tool surfaces, as well as information relating to machine-specific data, types of operation and warranty.

This International Standard is not applicable to compression moulds or injection moulds.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 12165, *Tools for moulding — Components of compression and injection moulds and diecasting dies — Terms and symbols*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12165 apply.

4 Use of the specification sheet

The use of the specification sheet will allow offers of various suppliers to be compared. By this means, misunderstandings, misinterpretations or claims of damages can already be eliminated or minimized at the time when the tools are ordered.

An electronic version of the specification sheet presented in Annex A is available at

http://standards.iso.org/iso/24233

The user is permitted to make copies of the sheet.

Annex A
(normative)

Tool specification sheet for diecasting dies

1 General information	
Customer:	Date:
Person to contact for all technical questions:	Request N°: Telephone: Telefax: E-mail:
Offer N°: Drawing N°:	State of modification:
Die designation:	Total amount of pieces planned:
Drawing N°:	☐ Prototype tool ☐ Production tool
☐ Drawing for request ☐ Approved die drawing	
Material of component to be moulded:	
Part- or finish-worked component: ☐ Finish-worked component ☐ Part-worked component ☐ Raw part	
Casting/Diecasting alloy:	
Type of machine: ☐ Vertical ☐ Horizontal	
Casting method: ☐ Cold chamber ☐ Hot chamber	
Size of diecasting machine (locking pressure): ☐ in MN	
☐ Subsequent specification for tool offer	
☐ Subsequent specification for tool ordering	
Supplier of standards:	
External supplier: (external work bench)	
2 Requirements/Guidelines	
2.1 The die design concept shall be presented to the customer for approval prior to purchase of the material or start of production of the tool.	
2.2 The manufacture of the cores and cavities shall be carried out in accordance with the actual drawing for the diecasting die design.	
2.3 If there are any uncertainties with respect to the drawing data, agreement between the manufacturer and customer is necessary in each case.	

2.4 Sampling of the tool should preferably be done in the hardened state.
2.5 Sampling of the tool shall be carried out with the diecasting compound given in the die drawing.
2.6 The performance of the tool in full automatic cycle shall be verified.
2.7 The rights of ownership of electrodes, software (CNC programs) and original construction documents are handed over to the orderer.
2.8 The buyer shall specify the data relating to the contents of the die type plate.

3 Description of die order

3.1 To be provided for: ☐ **Offer** ☐ **Order**

	By the customer	By the orderer
Blank drawing	☐	☐
Finished part drawing	☐	☐
Shrinkage drawing	☐	☐
CAD-data (2D/3D interface)	☐	☐
Sample	☐	☐
Die design	☐	☐
Master pattern	☐	☐
Shrinkage pattern	☐	☐
Raw material	☐	☐
Die assembly	☐	☐
Standard parts	☐	☐
Electrodes	☐	☐
Machine data sheet	☐	☐
Other	☐	☐

3.2 Scope of delivery relative to die

	By the customer	By the orderer
Design with parts list	☐	☐
Drawing of components, cores and cavities	☐	☐
Drawings of plates	☐	☐
Drawings of electrodes	☐	☐
Drawing of wire pattern	☐	☐
CAD data	☐	☐
List of coordinates	☐	☐
Die type plate (visible on the tool)	☐	☐
Set of electrodes	☐	☐
NC programs	☐	☐
Connection cables	☐	☐

3.3 Sampling		
	Provided by customer	Provided by orderer
Samples/Amount/Pieces:	☐	☐
Test report	☐	☐

4 Diecasting die design

4.1 Type of die

☐ Diecasting die for cold-chamber diecasting machine with horizontal pouring sleeve

☐ Diecasting die for cold-chamber diecasting machine with horizontal pouring sleeve three-plate construction

☐ Diecasting die for hot-chamber diecasting machine

☐ Diecasting die for cold-chamber diecasting machine with vertical pouring sleeve

4.2 Specification of casting parameters

Specific casting pressure		☐	
Locking force		in MN	
Die opening force		in MN	
Casting volume		☐	
Size of casting chamber		☐	
Die cavity filling time		☐	
Gate cross-sections		☐	
Heat volume		☐	
Heating and cooling system		☐	
Simulation of setting		☐	
Slide size		☐	
Slide shape		☐	
Size of core puller cylinder		☐	
Casting shape		☐	
Ejector travel		☐	
Slide travel		☐	
Loads		☐	
Forces acting during the casting process		☐	
Design of die cavity		☐	

4.3 Set-up/Transport

4.3.1 Set-up

	Supplier	International or national standard
Lifting bridge	☐	☐
Transport securing unit	☐	☐
Resting feet	☐	☐
Lifting eye bolt	☐	☐
Stop screw	☐	☐
Tool centring	☐	☐
Locating ring		
— movable half (MH)	☐	☐
— fixed half (FH)	☐	☐

4.3.2 Clamping on machine

	Supplier	International or national standard
Die clamping by		
— screws	☐	☐
— clamping units	☐	☐
— quick-action clamping	☐	☐
Clamping plates		
— flush on all sides	☐	☐
— overhanging in lateral direction	☐	☐
— overhanging in longitudinal direction	☐	☐
— overhanging on all sides	☐	☐
Special clamping plates	☐	☐
Adapter plates	☐	☐
Clamping grooves	☐	☐

4.4 Casting system and venting system

Specific documentation required for construction/calculation	☐ Drawing	☐ Calculation	☐ Other documents
Arrangement and size of casting run	☐ Drawing	☐ Calculation	☐ Other documents
Gating and venting	☐ Drawing	☐ Calculation	☐ Other documents
Accessories when using vacuum, additional parts provided at the gate to facilitate pressing, where relevant	☐ Drawing	☐ Calculation	☐ Other documents

Securing in position during pressing, for multiple-cavity dies additional gates provided in order to avoid deformation of components	☐ Drawing	☐ Calculation	☐ Other documents
Specific elements to apply the grippers, where relevant, for mechanical removal of the castings	☐ Drawing	☐ Calculation	☐ Other documents

4.5 Cooling/heating

4.5.1 Expected die temperature in degrees Celsius

Fixed half (FH): Movable half (MH):

Number of cooling/heating circuits (FH): Number of cooling/heating circuits (MH):

4.5.2 Cooled/heated die components

Inserts	☐	
Cores	☐	
Threaded cores	☐	
Slides	☐	
Cavity plates	☐	
Intermediate plates	☐	
Clamping plates	☐	
Other	☐	

4.5.3 Connecting nipple

	Supplier		International or national standard	
Design				
— with open passage	☐		☐	
— with stop valve	☐		☐	
Mounting position				
— countersunk	☐		☐	
— projecting	☐		☐	

Size of connecting thread:

4.6 Demoulding (removal from die)

Slide:	☐ In horizontal position	☐ In position of rotating wedge	
Slide drive system:			
Angle pin:	☐ Hydraulic system	☐ Locking piece	☐ Other
Ejector system:	☐ Fixed half	☐ Movable half	
Ejector plates, guided:	☐ Slide guide	☐ Ball guide	☐ Other

	Supplier		International or national standard	
Angle ejector	☐		☐	
Thread removal by				
— helical spindle	☐		☐	
— rack hydraulic system	☐		☐	
— collapsible core	☐		☐	
Drive				
— hydromotor	☐		☐	
— hydraulic system	☐		☐	

4.7 Loose parts

☐ Fixing of loose parts in the die cavities

☐ Loose parts detachable from the casting using a special device, where relevant

4.8 Pouring parts

☐ Seating and locations in the die, securing against casting pressure, where relevant

☐ Pouring parts to be fixed in end position

4.9 Process control

Position monitoring by micro-switch				
— Slide:	on ☐		off ☐	
— Ejector:	on ☐		off ☐	
— Core puller:	on ☐		off ☐	

4.10 Tool centring

Tool centring of fixed half and movable half by:	Supplier		International or national standard	
— tunnel guide	☐		☐	
— tapered locating units	☐		☐	
— flat centring	☐		☐	
— self-centring inserts	☐		☐	
— other	☐		☐	

5 Tool design

Designation	Fixed half	Movable half	Hardened	Case hardened	Tempered	Nitrided	Other treatment	Hardness
Clamping plate								
Cavity plate (FH)								
Cavity plate (MH)								
Intermediate plate								
Ejector retainer plate								
Ejector base plate								
Risers								
Inserts (FH)								
Inserts (MH)								
Cores								
Slides								
Other								

6 Marking of components

☐ Numbering of die cavities

☐ Stamp for recycling

☐ Date stamp

☐ Identification number

☐ Manufacturer's trademark

☐ Engraving/Graphic characters

☐ Other

Type and size of characters according to work standard N°
(to be supplied with the order)

7 Machine data

Machine type:

Alternative 1:

Alternative 2:

8 Type of operation

☐ Fully automatic

☐ Semi-automatic

☐ Manufacturer's trademark

9 Warranty (guarantee)

ICS 25.120.30

Price based on 9 pages