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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*.

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# 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**

<b>1 General information</b>	
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°: .....	<input type="checkbox"/> Prototype tool <input type="checkbox"/> Production tool
<input type="checkbox"/> Drawing for request <input type="checkbox"/> Approved die drawing	
Material of component to be moulded: .....	
Part- or finish-worked component: <input type="checkbox"/> Finish-worked component <input type="checkbox"/> Part-worked component <input type="checkbox"/> Raw part	
Casting/Diecasting alloy: .....	
Type of machine: <input type="checkbox"/> Vertical <input type="checkbox"/> Horizontal	
Casting method: <input type="checkbox"/> Cold chamber <input type="checkbox"/> Hot chamber	
Size of diecasting machine (locking pressure): <input type="text"/> in MN	
<input type="checkbox"/> Subsequent specification for tool offer	
<input type="checkbox"/> Subsequent specification for tool ordering	
Supplier of standards: .....	
External supplier: .....	
(external work bench)	
<b>2 Requirements/Guidelines</b>	
<b>2.1</b> 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.	
<b>2.2</b> The manufacture of the cores and cavities shall be carried out in accordance with the actual drawing for the diecasting die design.	
<b>2.3</b> 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.		
<b>3 Description of die order</b>		
<b>3.1 To be provided for:</b>	<input type="checkbox"/> Offer	<input type="checkbox"/> Order
	By the customer	By the orderer
Blank drawing	<input type="checkbox"/>	<input type="checkbox"/>
Finished part drawing	<input type="checkbox"/>	<input type="checkbox"/>
Shrinkage drawing	<input type="checkbox"/>	<input type="checkbox"/>
CAD-data (2D/3D interface)	<input type="checkbox"/>	<input type="checkbox"/>
Sample	<input type="checkbox"/>	<input type="checkbox"/>
Die design	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Master pattern	<input type="checkbox"/>	<input type="checkbox"/>
Shrinkage pattern	<input type="checkbox"/>	<input type="checkbox"/>
Raw material	<input type="checkbox"/>	<input type="checkbox"/>
Die assembly	<input type="checkbox"/>	<input type="checkbox"/>
Standard parts	<input type="checkbox"/>	<input type="checkbox"/>
Electrodes	<input type="checkbox"/>	<input type="checkbox"/>
Machine data sheet	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.2 Scope of delivery relative to die</b>		
	By the customer	By the orderer
Design with parts list	<input type="checkbox"/>	<input type="checkbox"/>
Drawing of components, cores and cavities	<input type="checkbox"/>	<input type="checkbox"/>
Drawings of plates	<input type="checkbox"/>	<input type="checkbox"/>
Drawings of electrodes	<input type="checkbox"/>	<input type="checkbox"/>
Drawing of wire pattern	<input type="checkbox"/>	<input type="checkbox"/>
CAD data	<input type="checkbox"/>	<input type="checkbox"/>
List of coordinates	<input type="checkbox"/>	<input type="checkbox"/>
Die type plate (visible on the tool)	<input type="checkbox"/>	<input type="checkbox"/>
Set of electrodes	<input type="checkbox"/>	<input type="checkbox"/>
NC programs	<input type="checkbox"/>	<input type="checkbox"/>
Connection cables	<input type="checkbox"/>	<input type="checkbox"/>

3.3 Sampling		
	Provided by customer	Provided by orderer
Samples/Amount/Pieces:	<input type="checkbox"/>	<input type="checkbox"/>
Test report	<input type="checkbox"/>	<input type="checkbox"/>
4 Diecasting die design		
4.1 Type of die		
<input type="checkbox"/> Diecasting die for cold-chamber diecasting machine with horizontal pouring sleeve		
<input type="checkbox"/> Diecasting die for cold-chamber diecasting machine with horizontal pouring sleeve three-plate construction		
<input type="checkbox"/> Diecasting die for hot-chamber diecasting machine		
<input type="checkbox"/> Diecasting die for cold-chamber diecasting machine with vertical pouring sleeve		
4.2 Specification of casting parameters		
Specific casting pressure	<input type="checkbox"/>	.....
Locking force	<input type="text"/>	in MN .....
Die opening force	<input type="text"/>	in MN .....
Casting volume	<input type="checkbox"/>	.....
Size of casting chamber	<input type="checkbox"/>	.....
Die cavity filling time	<input type="checkbox"/>	.....
Gate cross-sections	<input type="checkbox"/>	.....
Heat volume	<input type="checkbox"/>	.....
Heating and cooling system	<input type="checkbox"/>	.....
Simulation of setting	<input type="checkbox"/>	.....
Slide size	<input type="checkbox"/>	.....
Slide shape	<input type="checkbox"/>	.....
Size of core puller cylinder	<input type="checkbox"/>	.....
Casting shape	<input type="checkbox"/>	.....
Ejector travel	<input type="checkbox"/>	.....
Slide travel	<input type="checkbox"/>	.....
Loads	<input type="checkbox"/>	.....
Forces acting during the casting process	<input type="checkbox"/>	.....
Design of die cavity	<input type="checkbox"/>	.....

<b>4.3 Set-up/Transport</b>			
<b>4.3.1 Set-up</b>			
	Supplier	International or national standard	
Lifting bridge	<input type="checkbox"/>	<input type="checkbox"/>	
Transport securing unit	<input type="checkbox"/>	<input type="checkbox"/>	
Resting feet	<input type="checkbox"/>	<input type="checkbox"/>	
Lifting eye bolt	<input type="checkbox"/>	<input type="checkbox"/>	
Stop screw	<input type="checkbox"/>	<input type="checkbox"/>	
Tool centring	<input type="checkbox"/>	<input type="checkbox"/>	
Locating ring			
— movable half (MH)	<input type="checkbox"/>	<input type="checkbox"/>	
— fixed half (FH)	<input type="checkbox"/>	<input type="checkbox"/>	
<b>4.3.2 Clamping on machine</b>			
	Supplier	International or national standard	
Die clamping by			
— screws	<input type="checkbox"/>	<input type="checkbox"/>	
— clamping units	<input type="checkbox"/>	<input type="checkbox"/>	
— quick-action clamping	<input type="checkbox"/>	<input type="checkbox"/>	
Clamping plates			
— flush on all sides	<input type="checkbox"/>	<input type="checkbox"/>	
— overhanging in lateral direction	<input type="checkbox"/>	<input type="checkbox"/>	
— overhanging in longitudinal direction	<input type="checkbox"/>	<input type="checkbox"/>	
— overhanging on all sides	<input type="checkbox"/>	<input type="checkbox"/>	
Special clamping plates	<input type="checkbox"/>	<input type="checkbox"/>	
Adapter plates	<input type="checkbox"/>	<input type="checkbox"/>	
Clamping grooves	<input type="checkbox"/>	<input type="checkbox"/>	
<b>4.4 Casting system and venting system</b>			
Specific documentation required for construction/calculation	<input type="checkbox"/> Drawing	<input type="checkbox"/> Calculation	<input type="checkbox"/> Other documents
Arrangement and size of casting run	<input type="checkbox"/> Drawing	<input type="checkbox"/> Calculation	<input type="checkbox"/> Other documents
Gating and venting	<input type="checkbox"/> Drawing	<input type="checkbox"/> Calculation	<input type="checkbox"/> Other documents
Accessories when using vacuum, additional parts provided at the gate to facilitate pressing, where relevant	<input type="checkbox"/> Drawing	<input type="checkbox"/> Calculation	<input type="checkbox"/> Other documents

Securing in position during pressing, for multiple-cavity dies additional gates provided in order to avoid deformation of components	<input type="checkbox"/> Drawing	<input type="checkbox"/> Calculation	<input type="checkbox"/> Other documents
Specific elements to apply the grippers, where relevant, for mechanical removal of the castings	<input type="checkbox"/> Drawing	<input type="checkbox"/> Calculation	<input type="checkbox"/> Other documents
<b>4.5 Cooling/heating</b>			
<b>4.5.1 Expected die temperature in degrees Celsius</b>			
Fixed half (FH): .....	Movable half (MH): .....		
Number of cooling/heating circuits (FH): .....	Number of cooling/heating circuits (MH): .....		
<b>4.5.2 Cooled/heated die components</b>			
Inserts	<input type="checkbox"/> .....		
Cores	<input type="checkbox"/> .....		
Threaded cores	<input type="checkbox"/> .....		
Slides	<input type="checkbox"/> .....		
Cavity plates	<input type="checkbox"/> .....		
Intermediate plates	<input type="checkbox"/> .....		
Clamping plates	<input type="checkbox"/> .....		
Other	<input type="checkbox"/> .....		
<b>4.5.3 Connecting nipple</b>			
	Supplier	International or national standard	
Design			
— with open passage	<input type="checkbox"/> .....	<input type="checkbox"/> .....	
— with stop valve	<input type="checkbox"/> .....	<input type="checkbox"/> .....	
Mounting position			
— countersunk	<input type="checkbox"/> .....	<input type="checkbox"/> .....	
— projecting	<input type="checkbox"/> .....	<input type="checkbox"/> .....	
Size of connecting thread: .....			
<b>4.6 Demoulding (removal from die)</b>			
Slide:	<input type="checkbox"/> In horizontal position	<input type="checkbox"/> In position of rotating wedge	
Slide drive system:			
Angle pin:	<input type="checkbox"/> Hydraulic system	<input type="checkbox"/> Locking piece	<input type="checkbox"/> Other
Ejector system:			
	<input type="checkbox"/> Fixed half	<input type="checkbox"/> Movable half	
Ejector plates, guided:			
	<input type="checkbox"/> Slide guide	<input type="checkbox"/> Ball guide	<input type="checkbox"/> Other

	Supplier	International or national standard
Angle ejector	<input type="checkbox"/> .....	<input type="checkbox"/> .....
Thread removal by		
— helical spindle	<input type="checkbox"/> .....	<input type="checkbox"/> .....
— rack hydraulic system	<input type="checkbox"/> .....	<input type="checkbox"/> .....
— collapsible core	<input type="checkbox"/> .....	<input type="checkbox"/> .....
Drive		
— hydromotor	<input type="checkbox"/> .....	<input type="checkbox"/> .....
— hydraulic system	<input type="checkbox"/> .....	<input type="checkbox"/> .....
<b>4.7 Loose parts</b>		
<input type="checkbox"/> Fixing of loose parts in the die cavities <input type="checkbox"/> Loose parts detachable from the casting using a special device, where relevant		
<b>4.8 Pouring parts</b>		
<input type="checkbox"/> Seating and locations in the die, securing against casting pressure, where relevant <input type="checkbox"/> Pouring parts to be fixed in end position		
<b>4.9 Process control</b>		
Position monitoring by micro-switch		
— Slide:	on <input type="checkbox"/> .....	off <input type="checkbox"/> .....
— Ejector:	on <input type="checkbox"/> .....	off <input type="checkbox"/> .....
— Core puller:	on <input type="checkbox"/> .....	off <input type="checkbox"/> .....
<b>4.10 Tool centring</b>		
Tool centring of fixed half and movable half by:	Supplier	International or national standard
— tunnel guide	<input type="checkbox"/> .....	<input type="checkbox"/> .....
— tapered locating units	<input type="checkbox"/> .....	<input type="checkbox"/> .....
— flat centring	<input type="checkbox"/> .....	<input type="checkbox"/> .....
— self-centring inserts	<input type="checkbox"/> .....	<input type="checkbox"/> .....
— other	<input type="checkbox"/> .....	<input type="checkbox"/> .....