INTERNATIONAL STANDARD

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Tools for moulding — Tool specification sheet for injection moulds

Outillage de moulage — Formulaire de spécifications d'outils pour moules d'injection

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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 29, *Small tools*, Subcommittee SC 8, *Tools for pressing and moulding*.

This second edition cancels and replaces the first edition (ISO 16916:2004), which has been technically revised. Additional information has been added to Clause 5 in "4.5 Demoulding".

Tools for moulding — Tool specification sheet for injection moulds

1 Scope

This International Standard defines the description and specification of injection moulds to be used when requesting tools (stage of tender) and ordering tools. This International Standard gives data for material acquisition, equipment, structural design of injection moulds including the surfaces of the tool. Information relating to machine-specific data, types of operation and warranty is also contained in this specification sheet.

This International Standard does not apply to compression moulds and die casting dies.

2 Normative references

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

ISO 12165:2000, *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

By using this specification sheet, the offers of various suppliers can be compared with each other. In consideration of these specification misunderstandings, misinterpretations or claims to damages shall already be eliminated or minimized at the time when the tools are ordered.

The user of this specification sheet is permitted to make copies.

5 Tool specification sheet

1 General information			
Buyer:			Date:
Person to contact for all technical questions:		Request No.: Telephone: Telefax: E-mail	
Offer No.:	Drawing No.:	State of modification:	
Moulding designation:		Total amount of pieces planned:	
Part drawing No.:		Prototype tool ☐ Production tool ☐	
Drawing for request: ☐	Approved moulding drawing: ☐		
Type of resin, compound: NOTE Important	Shrinkage:		
Number of cavities:			
Subsequent specification for mould offer: ☐			
Subsequent specification for mould ordering: ☐			
Supplier of standards:			
External supplier: (external work bench)			
2 Guidelines			
2.1 The mould design concept shall be presented to the customer for approval prior to purchasing the material and starting the production of the mould.			
2.2 The manufacture of the cores and cavities shall be carried out in accordance with the actual mould design.			
2.3 If there are any uncertainties with respect to the drawing data, agreement with the customer is necessary in each case.			
2.4 Sampling of the mould should preferably be done in the hardened state.			
2.5 Sampling of the mould shall be carried out with the moulding compound given in the moulding drawing.			
2.6 The performance of the mould in full automatic cycle shall be verified.			
2.7 The rights of ownership of electrodes, software (CNC programmes) and original construction documents are handed over to: ☐ customer ☐ supplier			
2.8 The buyer shall specify the data relating to the contents of the mould type plate.			
3 Description of mould order			
3.1 To be provided for offer ☐ **and order** ☐			
		provided by the customer	provided by the orderer
Moulding drawing		☐	☐
CAD data		☐	☐
Sample		☐	☐

	provided by the customer	provided by the orderer
Mould design	☐	☐
Master pattern	☐	☐
Shrinkage pattern	☐	☐
Raw material	☐	☐
Mould assembly	☐	☐
Hot runner	☐	☐
Standard parts	☐	☐
Electrodes	☐	☐
Machine data sheet	☐	☐
Other	☐	☐
3.2 Scope of delivery relative to the mould		
	by the customer	by the orderer
Design with parts list	☐	☐
Drawings of components, cores and cavities	☐	☐
Drawing of plates	☐	☐
Drawing of electrodes	☐	☐
Drawing of wire pattern	☐	☐
CAD data	☐	☐
List of coordinates	☐	☐
Mould type plate (visible on the tool)	☐	☐
Set of electrodes	☐	☐
NC programmes	☐	☐
Connection cables	☐	☐
3.3 Sampling		
	by the customer	by the orderer
Samples	☐	☐
Test report	☐	☐
4 Mould design		
4.1 Type of mould		
Square mould assembly	☐	
Round mould assembly	☐	
Standard mould	☐	
Split mould	☐	
Stripper plate mould	☐	
Three-plate mould	☐	
Stack mould	☐	
Hot-runner mould	☐	

4.2 Setting up/Transport		
4.2.1 Setting up		
	Supplier	National standard or ISO
Lifting device	☐	☐ .....
Transport securing unit	☐	☐ .....
Resting feet	☐	☐ .....
Lifting eye bolt	☐	☐ .....
Stop screw	☐	☐ .....
Tool centring	☐	☐ .....
Locating ring		
— movable half (MH)	☐	☐ .....
— fixed half (FH)	☐	☐ .....
4.2.2 Clamping on machine		
	Supplier	National standard or ISO
Mould clamping by means of		
— screws	☐	☐ .....
— clamping units	☐	☐ .....
— quick-action clamping	☐	☐ .....
— magnetic clamping plate	☐	☐ .....
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	☐	☐ .....
4.3 Type of gating		
	Supplier	National standard or ISO
Sprue gate	☐	☐ .....
Sprue on subrunner	☐	☐ .....
Tunnel gate	☐	☐ .....
Film gate	☐	☐ .....
Pin-point gate	☐	☐ .....
Ring gate	☐	☐ .....
Umbrella gate	☐	☐ .....
Three-plate system	☐	☐ .....
Side-gate in mould parting area	☐	☐ .....

	Supplier	National standard or ISO
Hot-runner — Manifold block with distributor bushing		
— heated internally	☐	☐ .....
— heated externally	☐	☐ .....
Heated nozzle with pin-point gate	☐	☐ .....
Heated nozzle with open gate	☐	☐ .....
Heated nozzle with needle valve	☐	☐ .....
4.4 Cooling/heating		
4.4.1 Expected mould temperature in degree Celsius		
Fixed half (FH): _____ Movable half (MH): _____		
Number of cooling/heating circuits (FH): _____ Number of cooling/heating circuits (MH): _____		
4.4.2 Cooled/heated mould components		
Inserts	☐	
Cores	☐	
Threaded cores	☐	
Slides	☐	
Cavity plates	☐	
Backing plates	☐	
Clamping plates	☐	
4.4.3 Thermal insulating sheets		
	Supplier	National standard or ISO
Fixed half (FH)	☐	☐ .....
Movable half (MH)	☐	☐ .....
4.4.4 Cooling nipple		
	Supplier	National standard or ISO
Design		
— with open passage	☐	☐ .....
— with valve	☐	☐ .....
Mounting position		
— countersunk	☐	☐ .....
— projecting	☐	☐ .....
Size of connecting thread	☐	☐ .....
4.4.5 Electric mould heating		
	Supplier	National standard or ISO
Cartridge heaters		
— cylindrical	☐	☐ .....
— tapered	☐	☐ .....
Heating coil	☐	☐ .....
Band heater	☐	☐ .....

4.5 Demoulding					
Slide	☐	In horizontal position	☐	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	☐				
Air activity:		Air valve	☐	Blow off strip	☐

	Supplier	National standard or ISO
Two-stage ejector	☐	☐ .....
Latch locking unit	☐	☐ .....
Angle ejector	☐	☐ .....
Thread removal by:		
— helical spindle	☐	☐ .....
— rack hydraulic system	☐	☐ .....
— collapsible core	☐	☐ .....
Drive:		
— hydromotor	☐	☐ .....
— hydraulic system	☐	☐ .....
— electrically, e.g. servo motor	☐	☐ .....

4.6 Process control					
		Supplier		National standard or ISO	
Internal mould pressure:					
— pressure transducer		☐		☐	
— measuring pin		☐		☐	
Temperature control device		☐		☐	
Thermocouple		☐			
Position monitoring by micro switch:					
Slide	on	☐	off	☐	
Ejector	on	☐	off	☐	
Core puller	on	☐	off	☐	

4.7 Mould centring of fixed half and movable half by

	Supplier	National standard or ISO
Tool centring of fixed half and movable half by		
— tapered locating units	☐	☐ .....
— prismatic locating units	☐	☐ .....
— self-centring inserts	☐	☐ .....
— square locating units	☐	☐ .....

5 Mould steel grades, heat treatment

Designation	Fixed half	Movable half	Hardened	Case-hardened	Tempered	Nitrided	Other treatment	Hardness
Clamping plate								
Cavity plate								
Backing plate								
Ejector retainer plate								
Ejector base plate								
Risers								
Inserts								
Slides								
Other								

6 Surfaces

Surfaces shall be manufactured in accordance with the specification of the moulding drawing.

Within the area of direction of removal from the mould: line-polished, parallel to the direction of removal.

Coating of cores and cavities

	Fixed half	Movable half
TIC	☐	☐
Chromium-plated	☐	☐
Nickel-plated	☐	☐
Other coating	☐	☐

7 Marking of components	
Numbering of mould cavities	☐
Stamp for recycling	☐
Date stamp	☐
Identification number	☐
Manufacturer's trademark	☐
Engraving/Graphic characters	☐
Other	☐
Type and size of characters according to work standard No. (To be supplied with the order)	.....
8 Machine data	
Machine type	
Alternative 1	
Alternative 2	
9 Type of operation	
Fully automatic	☐
— fall down	☐
— robot automatic	☐
Semi-automatic	☐
Semi-automatic with removable inserts	☐
10 Warranty	

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Price based on 8 pages