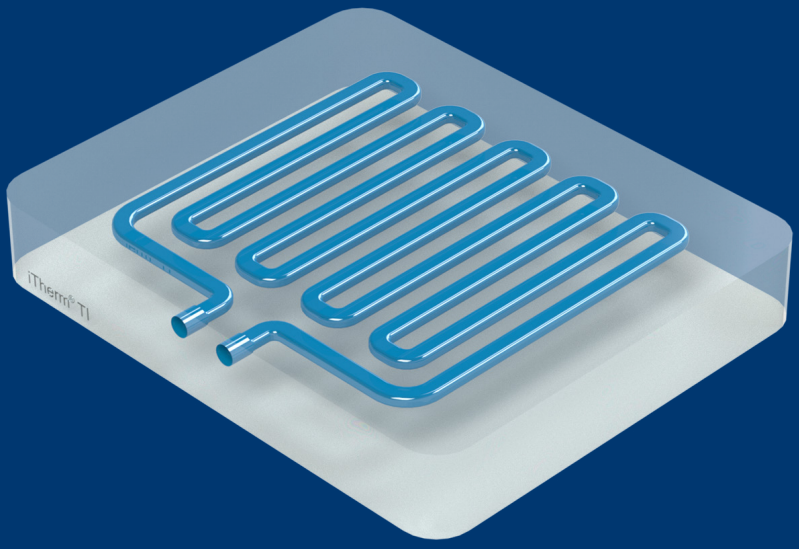
Products & Services > Injection moulding > iTherm® Mould Insert

DATA SHEET

iTherm® Mould insert



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DESCRIPTION

iTherm® Mould insert is produced from tool steel forged or rolled blocks using HTS proprietary additive manufacturing technology. It is a single body component with equal mechanical properties as a tool steel monoblock. It has only two connectors for the cooling medium (IN and OUT). Cooling channels can be freely designed according to cooling/heating requirements of the moulded part, not by limitations of using conventional drilling methods. It is highly customizable to specific customer requirements.

MAIN ADVANTAGES

- iTherm® Mould insert is manufactured with an integrated cooling circuit, therefore no cooling system engineering, drilling and tapping is required (this means at the plate interior there is a prefabricated network of cooling channels that form an effective cooling system, the plate exterior is the same as a conventional tool plate with ground surface finish).

- The plate is manufactured as a tool-steel monoblock with only two connectors for cooling water IN and OUT at the side of the plate, so no leakage is possible.

- iTherm® Tool Inserts are designed for highest temperature homogeneity of the working surface; see figure below.

- Cooling power of the insert can be selected depending on the desired process parameters and plastics specifications.

- A selection of various cooling arrangements is possible (Linear, Round). One can define additional material stock to accommodate different part geometry, as well as type of Sprue / Gate Bushing, or even a hot runner nozzle.

- A custom design of the cooling system is also possible.

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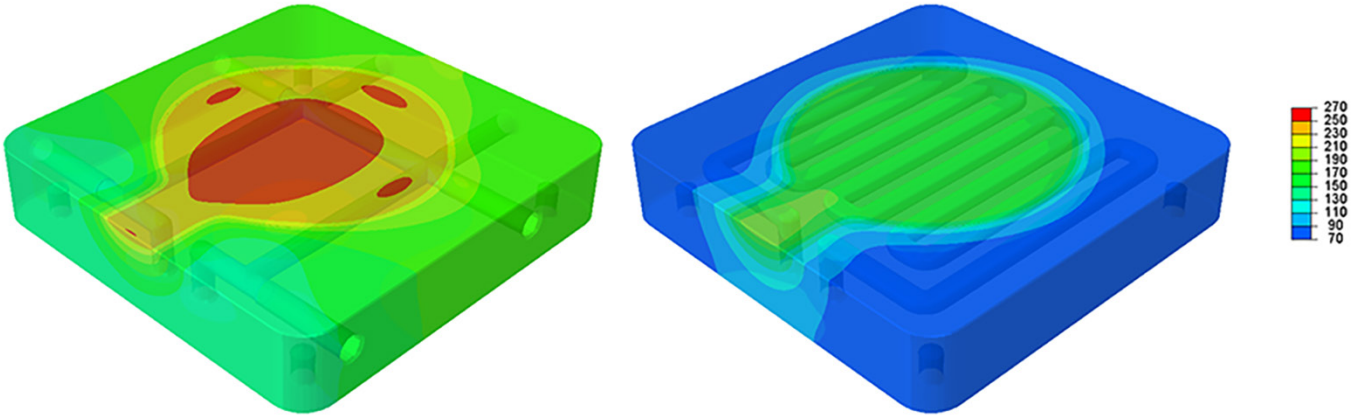
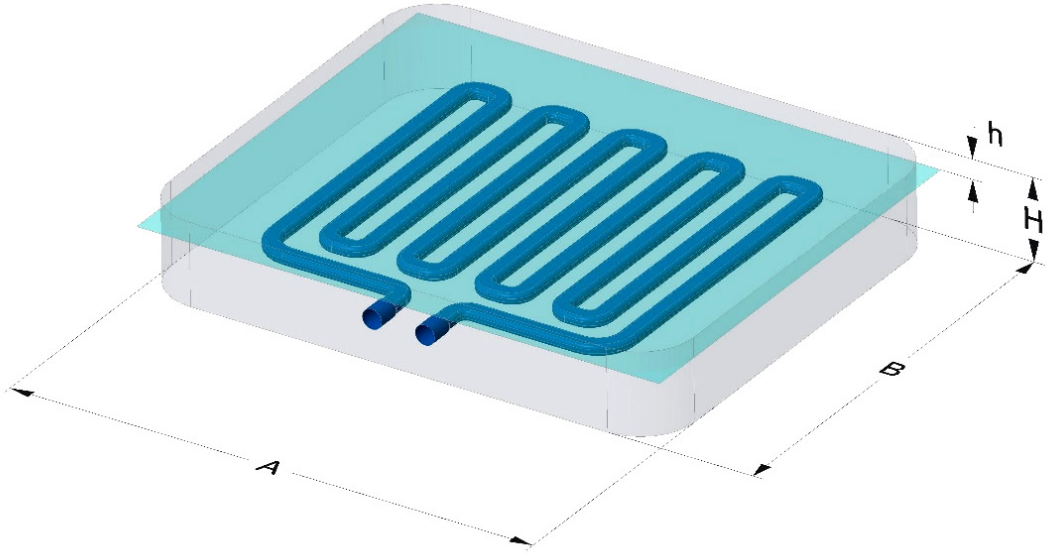
TEMPERATURE HOMOGENEITY OF THE WORKING SURFACE

In comparison with conventionally made Mould insert (left image), using iTherm® mould insert (right image) the heat is distributed much more evenly across the working surface, resulting in more even cooling.



DESIGN PARAMETERS



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Parameter	Selection Range
Dimension A × B iTherm® Mould inserts are available in selected standard dimensions	Dimension range is between 100x70mm and 430x280mm.
Plate thickness, H H is the overall insert thickness. Depending on selected H, customer is given the information on availability of extra material stock on the insert, h.	Available H depends on insert dimension, and range from 16mm up to 60mm.
Thickness Parameter, h Parameter h defines maximum stock of material needed for positioning of product. Its maximum cavity / core depth. The parameter is vital for correct positioning of the cooling system.	Parameter h is available in different dimensions according the plate thickness H and minimum height needed for positioning of cooling system. Therefore, parameter h varies according to plate thickness and plate dimension.
Sprue Cooling system in iTherm® is optionally designed to include the sprue, which is always positioned in the plate center. The Linear and Round design are modified if the sprue option is selected.	For a selection of: COLD sprue, the cooling system is designed to allow a maximum sprue opening diameter 55mm. HOT sprue, the cooling system is designed in such a way that it allows the positioning of a desired hot runner nozzle type.

iTherm® Mould insert

Material

Different tool steel materials are currently available

Hardness

Desired hardness of the insert material can be individually selected.

Available hardness from 40 to 54HRC

Cooling System Type

Cooling system with two different design arrangements is available. Dimension of cooling channels and overall cooling surface dimension depends on the insert size selected.

Design available: Linear design with dimension of the cooling surface covered, a x b; Round design with diameter of cooling surface, D;

Cooling Power definition

By inserting 4 process parameters, one can define its cycle time and Cooling Power. Calculator is a novel method for simple determination of desired Cooling Power and consequently also cycle time.

Cooling power and cycle time are defined by following parameters: plastics type, plastics thickness (tp), eject temperature (Te) and working surface temperature of tool (Tw).

Connectors

Connectors for cooling water are determined based on plate dimensions and system cooling power.

As Inserts are pre-machined, connection holes comes in a diameter of cooling system requirements. Threads can be added at final machining process.

iTherm® Mould insert

CUSTOM ORDER

iTherm® Tool Insert can be ordered with custom built cooling system. Select the insert using the insert selector (A,B, material, hardness), and select Custom at Type of cooling system path shape, to provide your individual cooling system design (2D design) and specify thickness parameters h.

On special request non-standard dimension inserts can be manufactured, also with Individual 3D cooling circuits. Contact our sales team for information.

Do you need a slightly different design or component?

We got you covered.

Contact our die casting professionals and we will do our best to match your requirements. You can count on us to support you through each step of preformance improvement.

sales@hts-ic.com