

## CMT MATERIALS, INC

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Air permeable material

# Thermoforming Mold Construction Guidelines

## METAPOR thermoforming moulds

Like conventional tools, Metapor moulds are firmly mounted on the vacuum table. In order to avoid any damage to the mould, it is essential to preheat the mould to the required mould temperature ( temperature depends on the forming temperature of the plastic material ).

## **Cooling of METAPOR moulds**

For moulds, to be used as production tools, sufficient cooling has to be provided. This can be achieved with different methods.

*Flat moulds*, advantageously have to be placed on a coolingplate; *deep moulds* will be equipped with cooling lines made out of a material with high thermal conductivity. The cooling lines should be installed in parallel to the mould surface. Usually, the maximum distance to the mould surface is approx. 30 – 40 mm. When mounting the cooling lines, a close contact to the METAPOR mould is necessary. Air gaps have an isolation effect and need to be filled with a material of high thermal conductivity.

The air permeability of the entire surface of METAPOR tools offers very efficient cooling if compressed air of up to 5 bar is blown through the METAPOR mould between the thermoforming cycles.

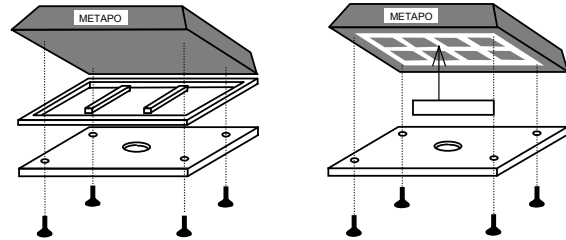
## Air distribution

Air distribution channels on the bottom of the mould have to be provided for perfect thermoforms. The following sketches show the most common procedures. Air distribution channels, machined into a METAPOR mould, could look as follows:

Depth of channel: 5mm

Distance from channel center to channel center: 50mm.

The individual design depends on size and geometry of the mould.



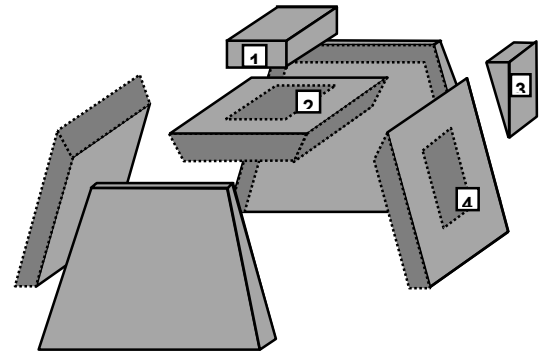
Distance holder or distribution channels on base plate

Distribution channels milled into METAPOR

## Design of a hollow METAPOR mould

Hollow forming tools can be rapidly and securely manufactured at low cost in using segments of METAPOR slabs. The individual segments can be connected by bonding or screwing. (See also bonding and screwing guidelines)

## **Construction of mould**



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Size of mould: 300 x 400 x 40mm

Size of distribution channel: 15 x 5 mm