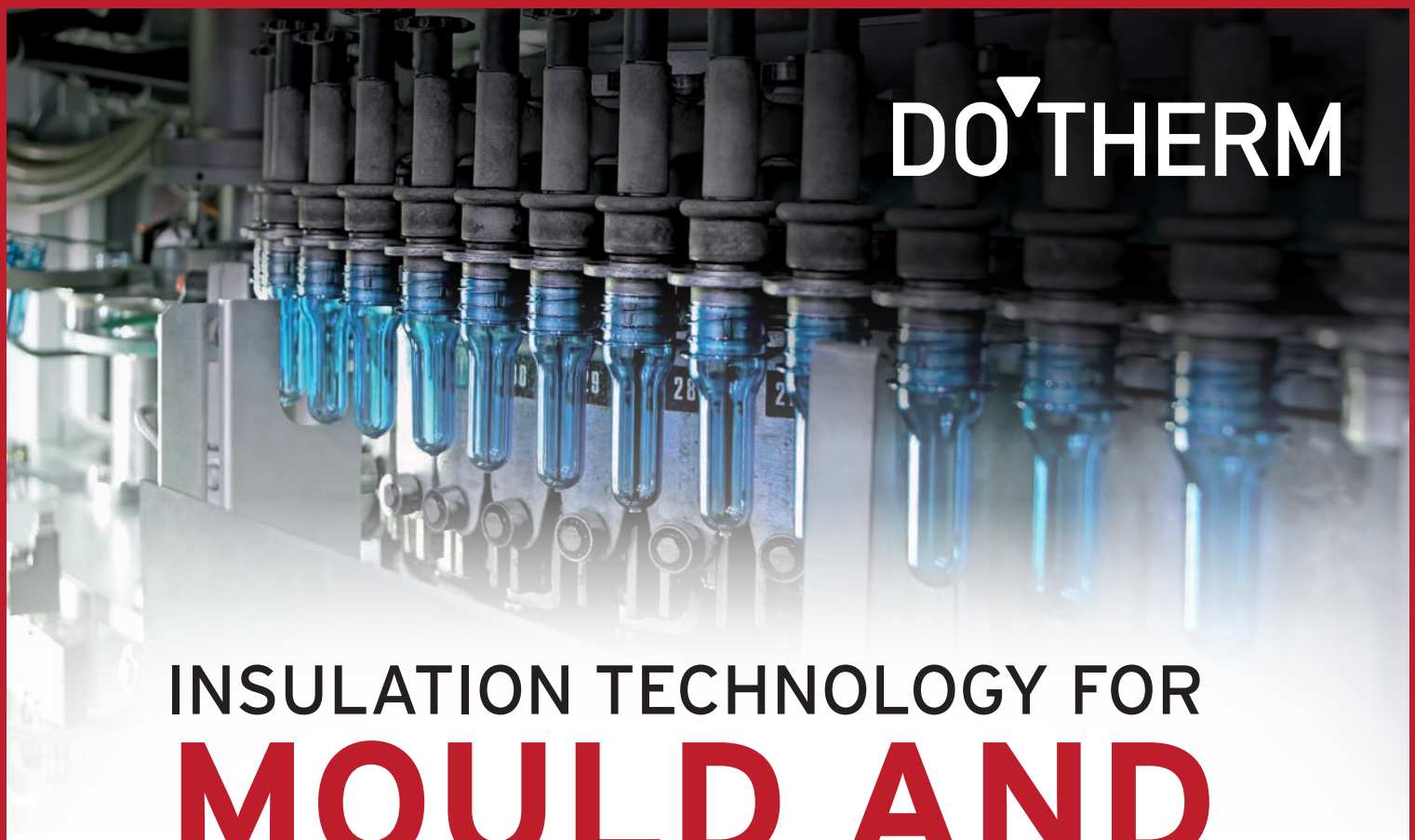


DO THERM

INSULATION TECHNOLOGY FOR

MOULD AND TOOL MAKING

PRECISION COMPONENTS MADE FROM FIBRE COMPOSITE
AND HIGH-TEMPERATURE MATERIALS

MORE PRECISION.
MORE DURABILITY.
MORE EFFICIENCY.

DOTHERM INSULATION TECHNOLOGY OPTIMISES INDUSTRIAL MANUFACTURING PROCESSES IN THE RUBBER AND PLASTIC PROCESSING INDUSTRY.

Whether in casting, injection moulding or pressure casting systems, forming or pressing systems: the optimum thermal insulation of tools and moulds is crucial for first-class product quality.

DOTHERM offers insulation technology that is precisely adapted to the respective process requirements in terms of material, compression strength, temperature resistance and dimensional stability. This also ensures maximum safety and efficiency in systems where tools are under great stress in a high number of cycles.

Our range of services includes external insulation for uniform heat distribution in the tool as well as pressure-transmitting insulation for thermal separation of the machine and tool. Each product is manufactured on state-of-the-art machinery and has precisely defined material properties in accordance with international standards.

We deliver quickly, accurately and punctually because tool planning schedules in mould making and tool making are very tight. This means that you do not lose any time from the transfer of data through to the use of your insulating components.

BENEFIT FROM INNOVATIVE DOTHERM INSULATION TECHNOLOGY FOR:

- Pressure-resistant pressure plate insulation (nozzle and ejector side)
- Clamping plate insulation (magnetic clamping plates)
- Hot runner insulation
- External insulation
- Ejector box covers
- Thermal partitions (multi-component injection moulding, turning tools and stack moulds)

We manufacture DOTHERM insulating components with specially coated or ultra polished surfaces for special production requirements on request.

Customer-specific parts made from FRATHERNIT AN

PRESSURE-RESISTANT INSULATING PLATES

Pressure-resistant insulating plates on the clamping surfaces of tools not only guarantee good thermal insulation, but also transfer the sometimes enormous clamping forces of the plastics machine. It is important to have high compressive strength at the respective application temperature as well as mould and dimensional stability over the entire service life of the tool.

Modern processing methods, such as multi-component and multi-colour injection moulding or magnetic clamping technology require maximum precision and stability of the insulating plate to achieve a perfect result. Even frequent mould changes or the insertion and removal of tools with insulating plates require robust materials to prevent cracks or chips occurring when handling them. The DOTHERM materials **FRATHERNIT AN**, **DN**, **AE3** and **AE4** exceed even these high requirements.

FOR YOUR INSULATION CONCEPT: TAILOR-MADE SOLUTIONS FROM DOTHERM

STANDARD COMPONENTS

DOTHERM offers standard components made from pressure-resistant materials for a variety of applications.

FRATHERNIT AN (600 MPa) and **FRATHERNIT DN** (330 MPa) in thicknesses of 6, 8, 8.5 and 10 mm are used on the nozzle and ejector side of thermoplastic injection moulding tools at tool temperatures of up to 120 °C.

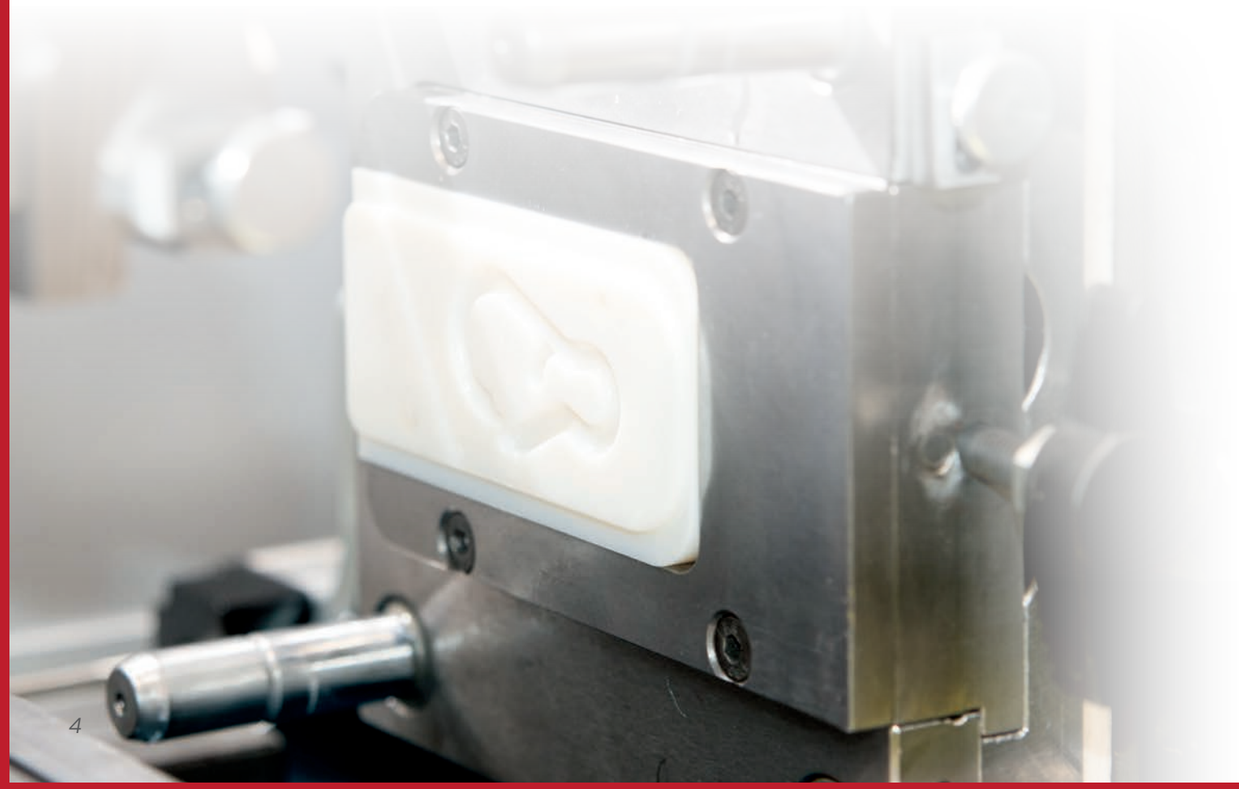
FRATHERNIT SG is used for insulating hot runner manifolds in tools with temperatures > 400 °C. High temperature-resistant colour change caps made from **DOGLIDE ELTIMID** are available for the hot runner sector.

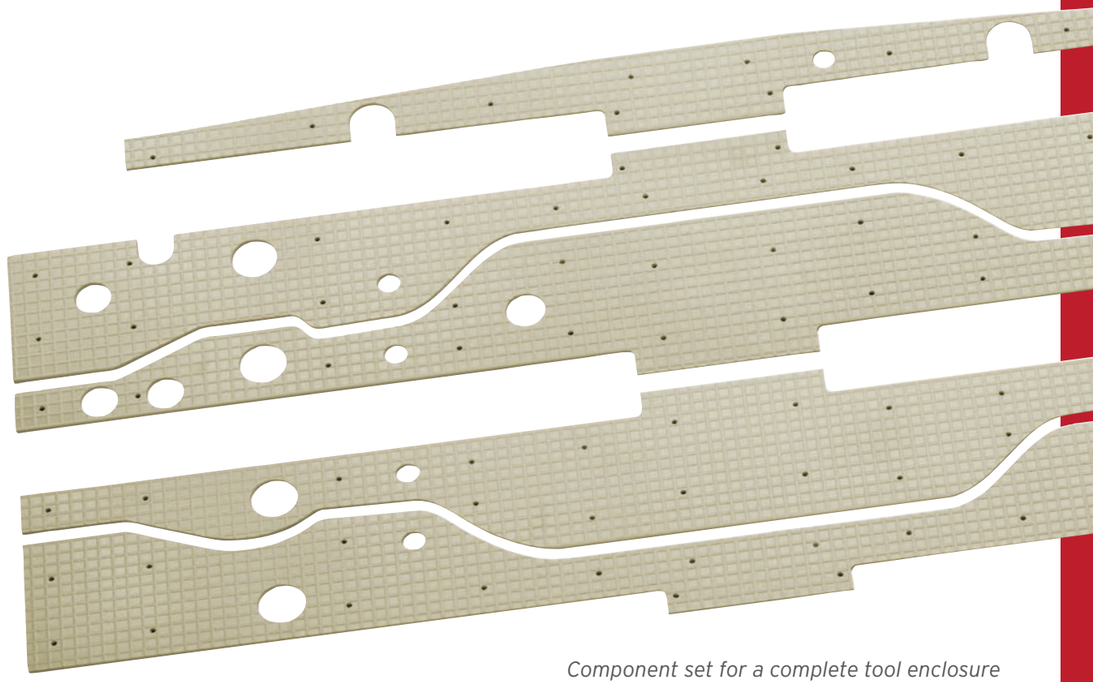
CUSTOM-MADE PARTS

DOTHERM insulating plates are manufactured as unique pieces that are adapted to the special form and function of the tools. These are usually injection moulds for large plastic parts made from thermoplastics or multiple cavity mounds in the automotive, household appliance and packaging industry.

Insulating plates made from pressure-resistant **FRATHERNIT AN** are split on the nozzle and ejector side in the case of extremely large dimensions. The segments are then precisely processed together in a set.

FRATHERNIT 2000B is ideal for the non-pressurised insulation of large, hot external tool surfaces. A special feature is insulation for magnetic clamping plates made from **FRATHERNIT AE4** that is fitted to the machine and not to the tool.





Component set for a complete tool enclosure made from FRATHERNIT 2000B

HOT PRESSING/FORMING TOOLS

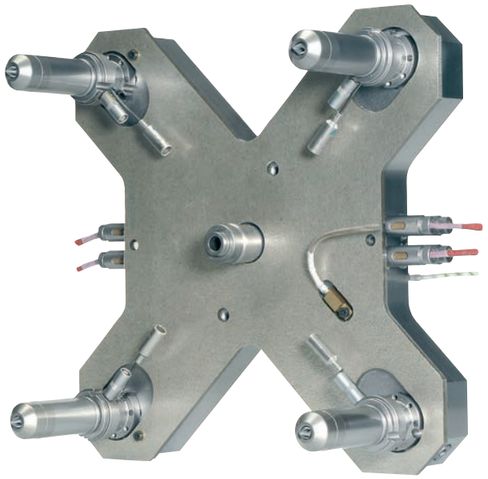
Processing of duroplast and elastomer materials and the manufacture of large textile components for the acoustic and climate management of vehicles (floor assemblies, engine compartment parts, wheel arch covers, roof linings etc.) made from synthetic and natural fibres or fibre matrix materials.

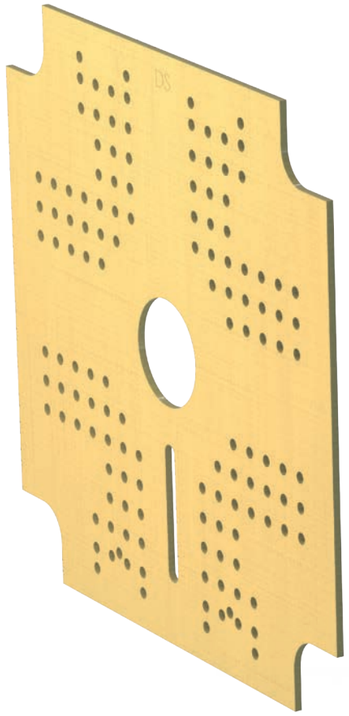
Higher temperature-resistant materials, such as **FRATHERNIT AE4**, **DOTHERM 1100 or FRATHERNIT 4000** are used here in thicknesses of between 15 and 30 mm. They are adapted to process temperatures of 150 °C to 250 °C at relatively low specific pressures.

EXTERNAL TOOL INSULATION: FRATHERNIT 2000B AND FRATHERNIT 4000

External insulation is used to save energy by preventing heat dissipation from heated tools. It lowers the energy consumption thereby and also stabilises the manufacturing process. Last but not least, it protects people from touching hot machine parts.

External tool insulation made from FRATHERNIT 4000





MAGNETIC CLAMPING PLATES

Magnetic clamping systems offer maximum safety and efficiency with optimised profitability in injection moulding processes. The magnetic clamping system offers outstanding advantages for quick tool changes in "just-in-sequence" injection moulding processes. The high-quality design with many technical details for a safe clamping process is supplemented by heat protection plates made from **FRATHERNIT AE4**. They are fitted between the magnetic and machine clamping plate so as not to affect the magnetic tension. Each insulating plate is processed extremely precisely by DOTHERM and adapted exactly to the injection moulding machine and tools.

HOT RUNNER INSULATION: FRATHERNIT SG

FRATHERNIT SG is pressure-resistant up to 410 MPa, temperature-resistant up to 600 °C and has a low thermal conduction coefficient of 0.26 W/mk.

COLOUR CHANGE CAPS FOR HOT RUNNER NOZZLES: DOGLIDE ELTIMID CP

DOGLIDE ELTIMID CP is an isotropic high-performance plastic and resistant up to a constant temperature of 280 °C. It has high mechanical stability over the entire temperature profile and is particularly suitable for colour change caps. They reduce the time for changing the injection material by preventing the pre-chamber area of the hot runner nozzle from being filled with plastic. This minimises the risk of colour mixing and bubble formation.

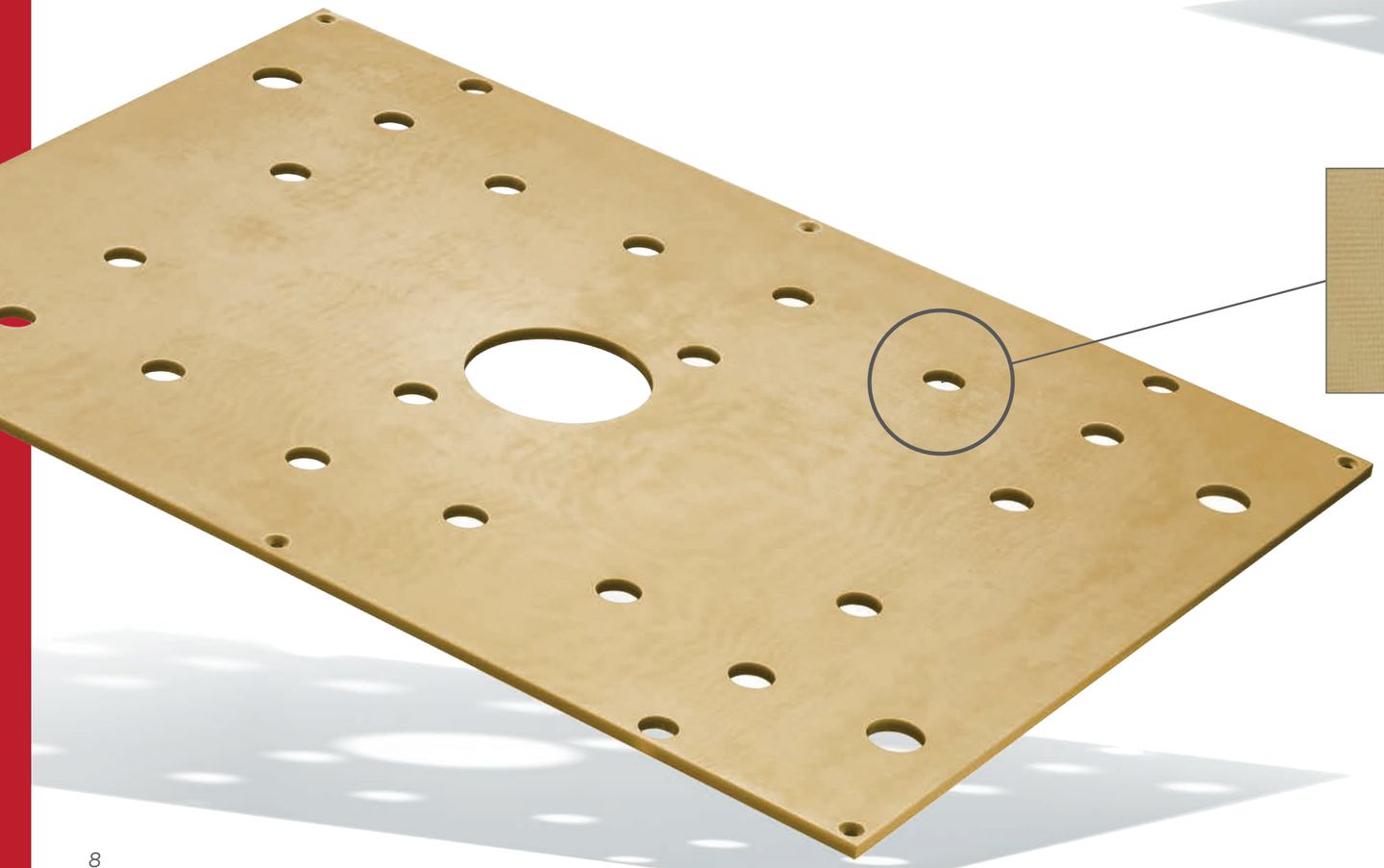
Colour change caps made from DOGLIDE ELTIMID

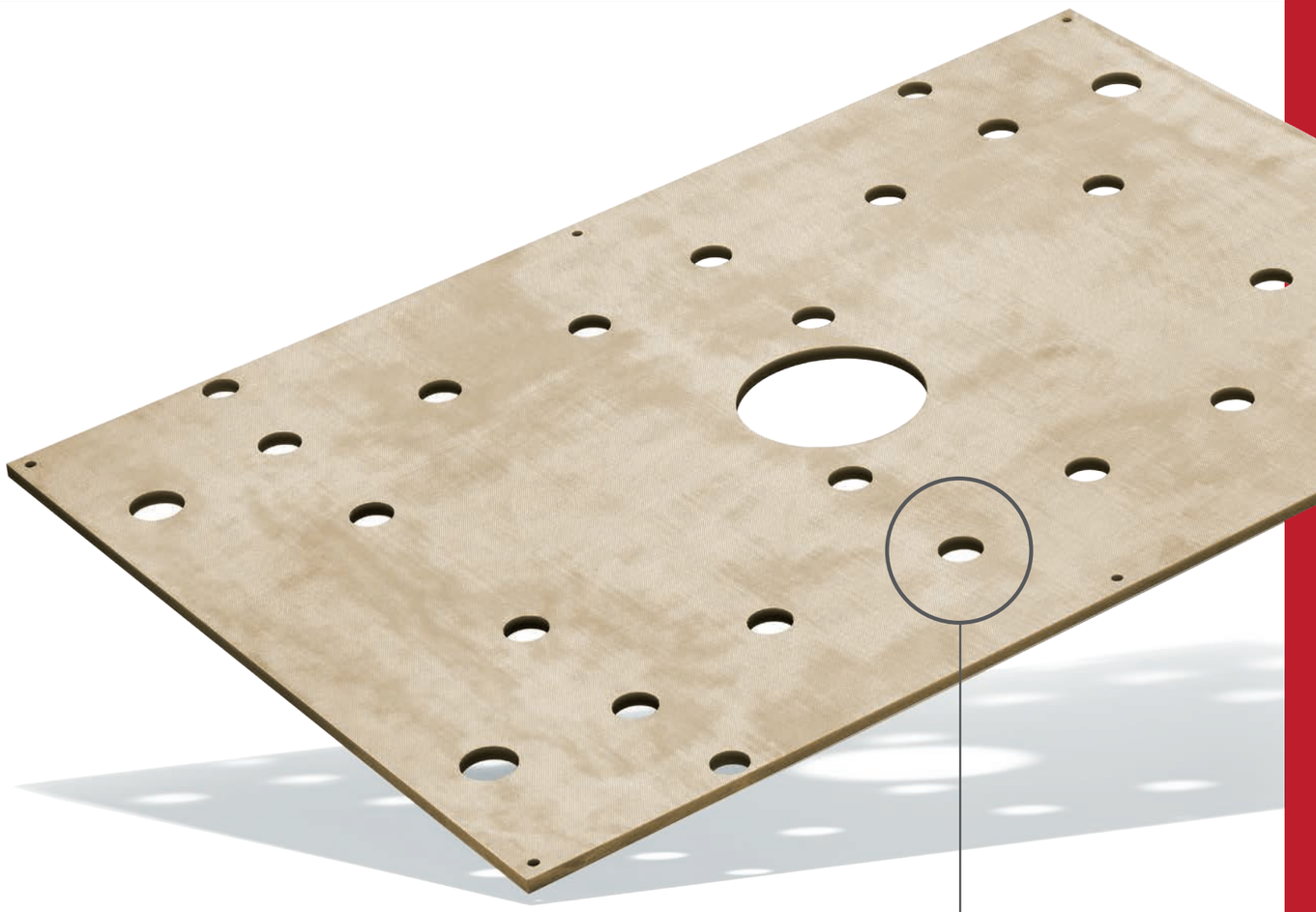
GREATER SAFETY:
Insulation of magnetic clamping plates with FRATHERNIT AE4

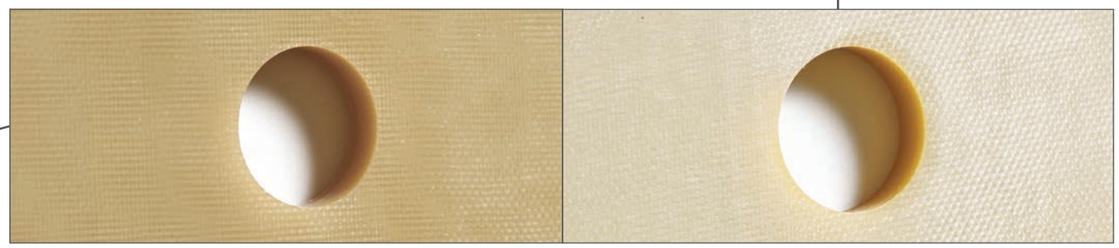
EVER MORE **POSSIBILITIES.**

SURFACE COATING

We manufacture all products in the DOTHERM product range with special **coatings** on request to increase the service life and improve the chemical resistance. In this way, components can be protected against aggressive media, the sliding resistance can be reduced and the tendency for dust and particles to stick and adhere can be reduced for use in clean rooms.







Superschliff surface for minimum thickness tolerance

Standard surface

SURFACE POLISH

The uniform thickness is improved to 0.02 mm (based on a thickness tolerance of +0/-0.4 mm) with the DOTHERM **Superschliff** surface. This means that DOTHERM components ideally fulfil the requirements of precise machine components, enable an exact dimensional chain and therefore significantly increase accuracy in tool making and mould making. We offer pressure-resistant insulation with this surface finish in dimensions of up to 600 mm x 1,200 mm.

EVERYTHING AT A GLANCE.
EVERYTHING IN HAND.

Thermal properties			FRATHERNIT						DOGLIDE ELTIMID
	Test standard	Unit	DN	AN	4000	AE4	2000B	SG	CP
Continuous operating temperature	-	°C	**200**	**200**	**200**	**250**	**200**	**550**	**280**
Maximum operating temperature	-	°C	210	210	230	300	210	700	400
Thermal conductivity	-	W/mK	**0.18**	**0.19**	**0.13**	**0.23**	**0.12**	**0.26**	**0.2**
Linear expansion coefficient	DIN 51045	$10^{-6}xK^{-1}$	18	13	20	19	18	10 ∥ 100 ⊥	62.0

Physical properties									
	Test tandard	Unit	DN	AN	4000	AE4	2000B	SG	350
Density	ISO 1183	g/cm^3	1.8	1.9	1.4	1.85	1.85	2.1	1.27
Water absorption	ISO 62	%	0.3	0.3	0.1	0.1	0.3	1.0	0.6

Mechanical properties									
	Test standard	Unit	DN	AN	4000	AE4	2000B	SG	350
Compression strength at 23 °C	ISO 604	MPa	330	**600**	300	**625**	300	**410**	**600**
Compression strength at 200 °C	ISO 604	MPa	120	350	100	-	110	-	-
Compression strength at 250 °C	ISO 604	MPa	-	-	-	340	-	-	-
Compression strength at 280 °C	ISO 604	MPa	-	-	-	-	-	250	-

DOTHERM

Our team of consultants for technical applications will be happy to give you more information about the latest DOTHERM insulation technology. Please call us or write to us!

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