Technical Information

Noiseflex® MF TG – thermoformable

Product description:
Noiseflex® MF TG is a thermoformable (thermoset), open-cell dark-grey foam made of melamine resin. Specific formed parts are made from Noiseflex® MF TG according to drawings of our customers in short terms, which are used in thermal form processes for production of parts for automotive and aerospace industry.

Storage:
Direct and prolonged exposure to ultraviolet radiation should be avoided.
Prior to being processed, the form parts should be stored for a minimum of three days, preferably five days, in a standard conditioned atmosphere. The reason for this is the sorption behaviour of the melamine resin. The dimensions of the parts change as they absorb or release moisture.

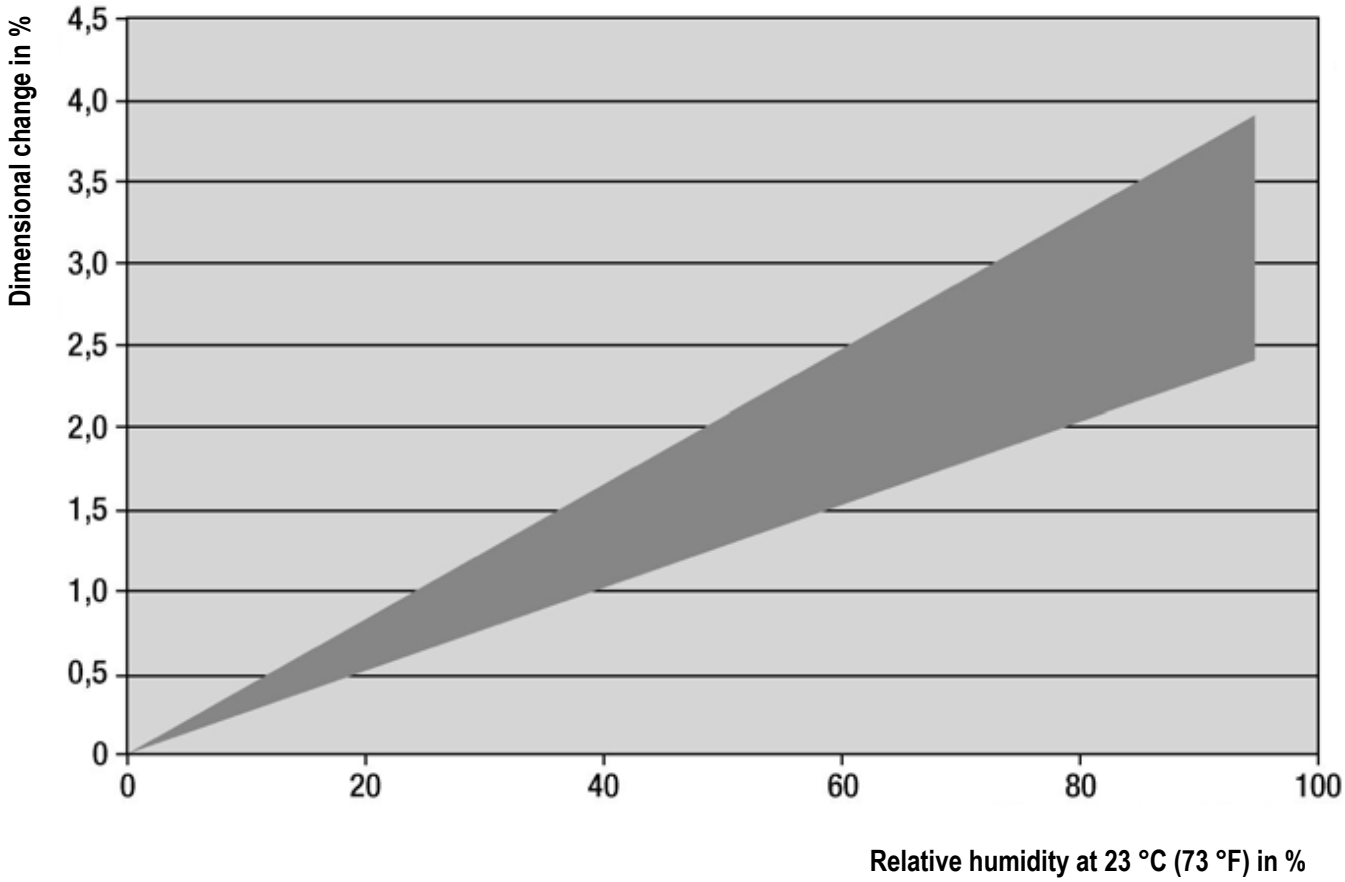

Fig. 1.
Dimensional change of Noiseflex® MF TG as a function of the relative indoor air humidity at an ambient temperature of 23 °C (73.4 °F).

Physical properties:
The combination of the characteristics of a thermoset material with an open-cell structure translates into an attractive property profile, which is specified in table 1. The outstanding quality features are:

- high sound absorption
- low thermal conductivity
- high fire resistance
- high long-term use temperature
- low weight

Properties	Values – Units	Standards
Density	9 ± 2 kg / m³	EN ISO 845
Compressive strength (Average value)	> 5 kPa	EN ISO 3386-1
Tensile strength (Average value)	> 60 kPa	ISO 1798
Elongation at break (Average value)	> 12 %	ISO 1798
Thermal conductivity	0.036 W / (m·K)	DIN EN 12667
Thermal resistance	240 °C	DIN EN ISO 2440
defined on DIN EN ISO 3386-1		
(Change of initial value after exposure to heat of 22 h: < 50 %)		
Fire behaviour	in compliance with a burning rate of 0 mm / Min.	FMVSS 302

Table 1:
Physical properties of Noiseflex® MF TG

Figure 2 shows the thermal conductivity of Noiseflex® MF TG as a function of the mean temperature. The thickness of the specimen in this test series was 50 mm. With its values 0.036 W / (m·K) at 10 °C [50 °F] Noiseflex® MF TG occupies a leading position among the commercially available insulating materials.

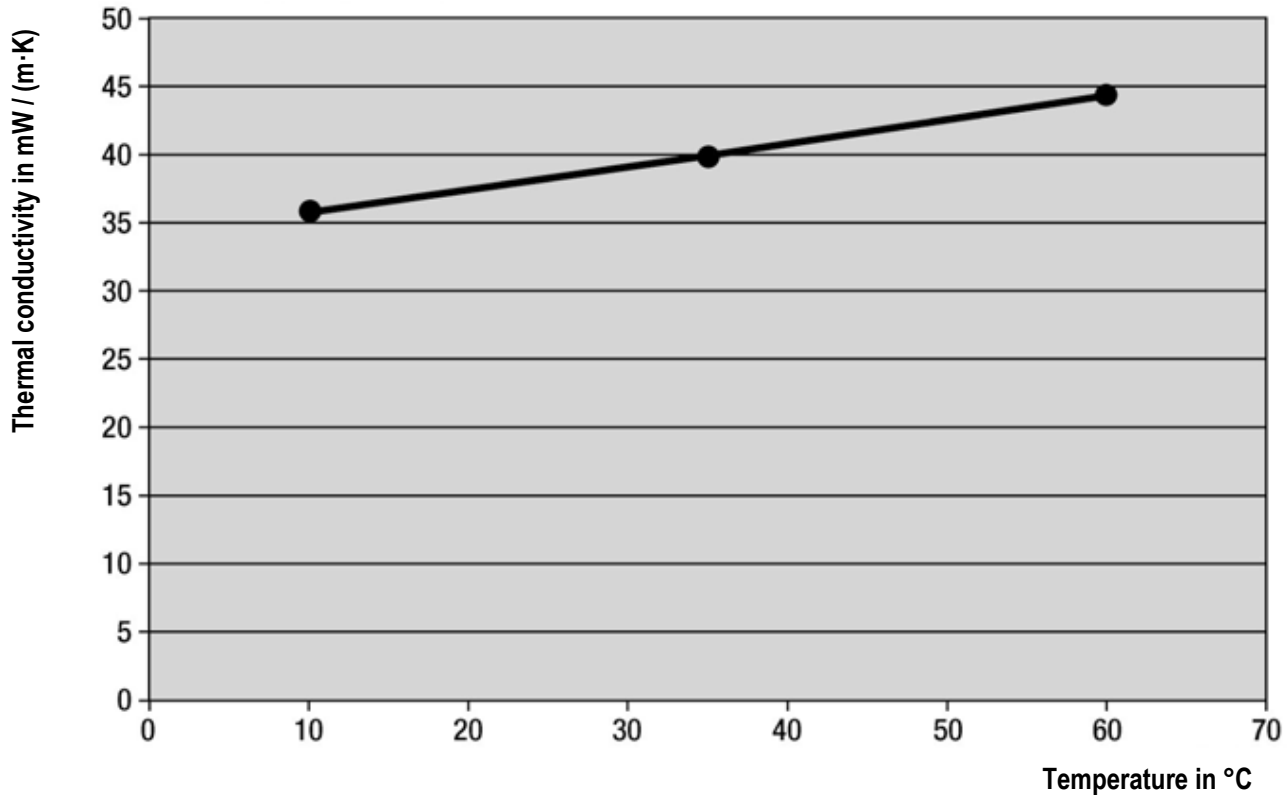

Fig. 2:
Thermal conductivity of Noiseflex® MF TG as a function of the mean temperature, according to DIN EN 12667

The test results from the acoustic experiments in an impedance tube according to ISO 10534-2 are shown in figure 3. In the medium and high frequency ranges, Noiseflex® MF TG exhibits an outstanding sound absorption behavior. At low frequencies, technical acoustic improvements can be achieved, for example, by means of additional heavy layers.

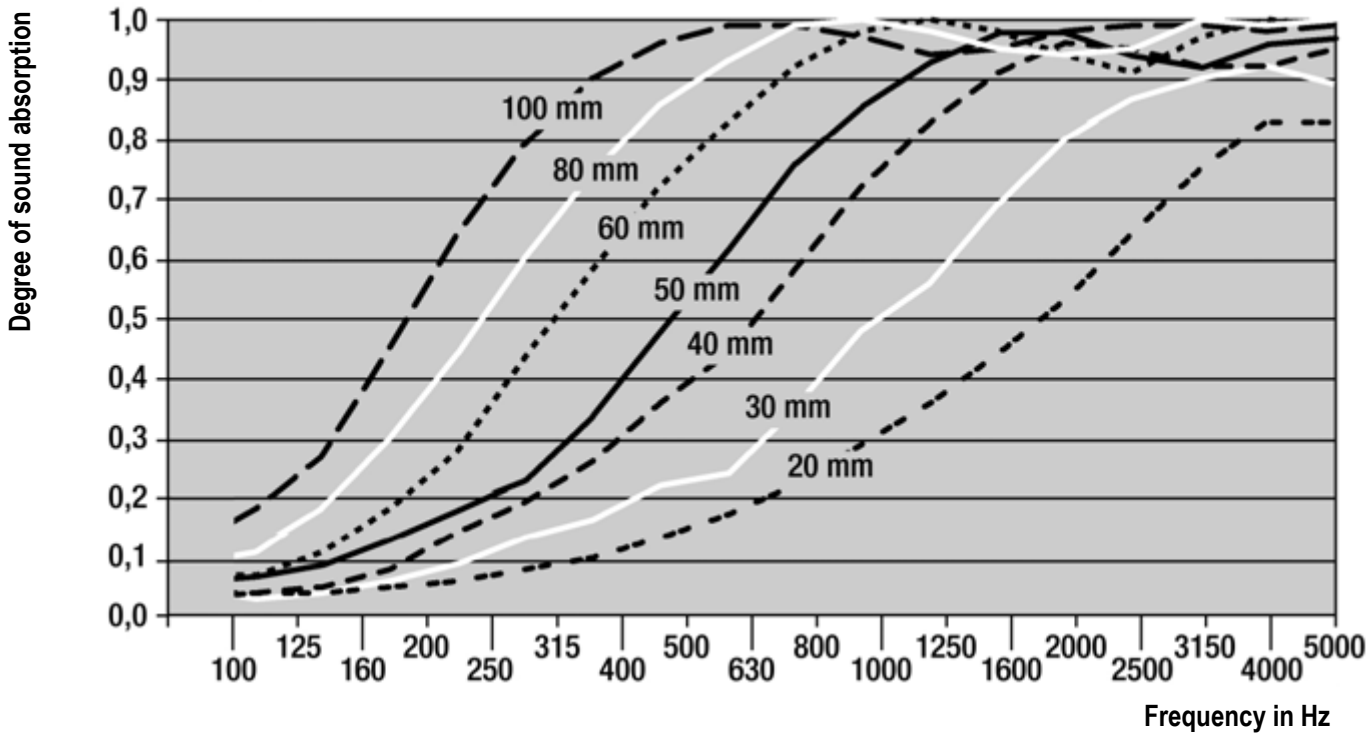

Fig. 3:
Degree of sound absorption of Noiseflex® MF TG as a function of the thickness, according to ISO 10534-2 (impedance tube).

Chemical resistance:
According to EN ISO 175 Noiseflex® MF TG is a thermoset material and as such, it is resistant to many media in its processed state (Table 2). The compressive strength according to ISO 3386-1 (40 % compression, 4th load cycle) serves as the evaluation criterion. The figures apply to a test temperature of 23 °C (73 °F).

Group of medium	Medium	Evaluation*)
Alcohols	Methyl alcohol	+
	Ethyl alcohol	+
	Isopropyl alcohol	+
	Butyl alcohol	+
	Glycol	+
	Glycerine	+
Acids	Formic acid 90 %	-
	Acetic acid 90 %	+
	Lactic acid10 %	+
	Phosphoric acid 50 %	-
	Nitric acid 10 %	-
	Hydrochloric acid 10 %	-
	Sulphuric acid 10 %	-
	Citric acid 10 %	+
Aggressive gases	Chlorine in low concentration	+
	Chlorine in high concentration	-
	Ozone in low concentration	+
	Ozone in high concentration	-
Other Chemicals	Sodium hypochlorite solution	-
	Sodium chloride solution	+
	Water	+
	Hydrogen peroxide 30 %	-
Hydrocarbons	Gasoline	+
	Diesel	+
	Kerosene	+
Bases	Ammonia water 25 %	+
	Sodium carbonate 25 %	+
	Sodium hydroxide solution 40 %	+
Esters	Butyl acetate	+
	Ethyl acetate	-
Ketones	Acetone	+
Other Solvents	Dichloromethane	+
	Diethyl ether	+
	Glycol ether	+

*) + resistant
- not resistant

Table 2:
Chemical resistance of Noiseflex® MF TG. All information is of a preliminary, non-binding nature that is based on exploratory, individual testing.

Recommendations for processing:

- Recommended processing temperature: approximately 220 °C (430 °F).
- The compression times are dependent on the geometry of the part in question as well as on the thickness of the part. In the case of Noiseflex® MF TG cut blanks having an initial height of 25 mm, a compression time of about 1 minute is recommended.
- The processing pressure depends on the geometry of the part in question and has to be adjusted accordingly.
- A bonding agent should be applied to the back of mats in order to ensure proper bonding between the mat and Noiseflex® MF TG.

Regarding occupational safety, the local statutory stipulations must be observed. Supplementary information can be extracted from the valid safety data sheet.

Product safety and the environment:

Noiseflex® MF TG is produced without the use of halogenated hydrocarbons. The product is not hazardous to water. Noiseflex® MF TG is delivered free of blowing agents and is not subject to labelling requirements under the German Hazardous Material Regulations.

Waste from Noiseflex® MF TG can be recycled for purposes of heat and material recovery.

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