

## 53241 Vermiculite

An aluminum-iron-magnesium silicate that belongs to the group of mica minerals.

### Structure and Manufacturing Process

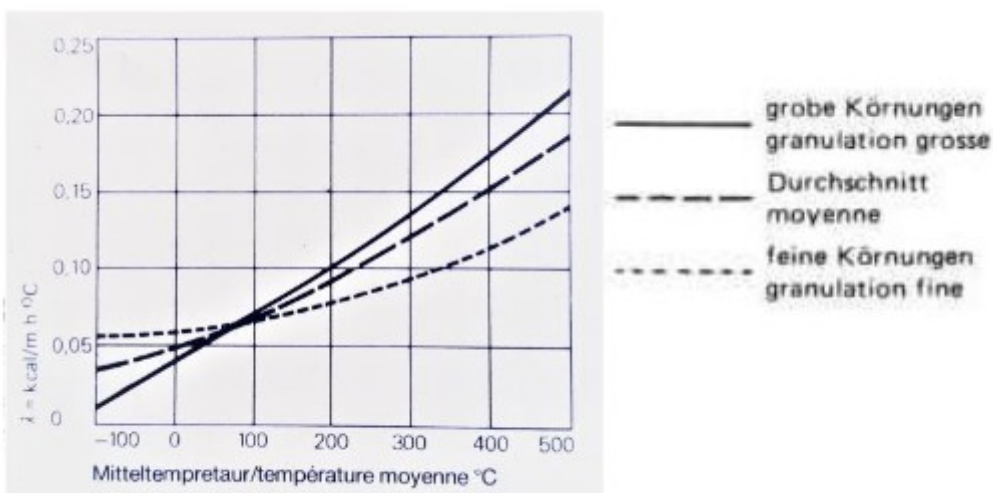
Raw vermiculite consists of thin flat plates. Exfoliation (expansion) takes place at a high temperature (800 - 1000°C) without the addition of other substances. The resulting water vapor - escape of the water of crystallization - drives the individual layers of the structure apart. The volume of the vermiculite particles increases approximately 20-fold. Expanded vermiculite is produced in various grain sizes.

### Properties

pH Volume:	approx. 7.5
Sintering temperature:	approx. 1260°C
Melting point:	approx. 1315°C
Humidity:	1 – 1.5 % after expansion
Industrial hygiene:	no silicosis hazard
Non-combustible:	Classification A1 (DIN 4102)
Thermal conductivity:	0.07 W/mK (DIN 4108)

### Thermal Conductivity

The following graphic shows the thermal conductivity of the Vermiculite granulations in the range between -100°C and +500°C. At high temperatures a smaller granulation is recommended due to the high temperature transition (convection). However, heat transmission can also be reduced when using coarser grain sizes if the material is carefully compressed by around 10 % during installation.



**Chemical Analysis:**

SiO <sub>2</sub>	35 - 41 %
Al <sub>2</sub> O <sub>3</sub>	6 - 9.5 %
TiO <sub>2</sub>	0.6 - 1.4 %
Fe <sub>2</sub> O <sub>3</sub>	6 - 9.5 %
FeO	1.17 %
MuO	0.30 %
MgO	21.5 - 25.5 %
CaO	2 - 6 %
Na <sub>2</sub> O	0.80 %
K <sub>2</sub> O	3 - 6 %
S	0.18 %
Cl:	0.0 - 0.5 %
P <sub>2</sub> O <sub>5</sub> :	0.2 - 2 %
Li <sub>2</sub> O:	0.03 %
ZrO <sub>2</sub> :	Traces
Cr <sub>2</sub> O <sub>3</sub> :	0.01 - 0.15 %
V <sub>2</sub> O <sub>3</sub> :	Traces
NiO:	Traces
CoO:	Traces
BaO:	Traces
F:	0.2 - 0.8 %
SO <sub>3</sub> :	0.02 %
H <sub>2</sub> O + 105 C	5.18 %
H <sub>2</sub> O - 105 C	6.02 %

**Granulation 0 – 4 mm**

Bulk density approx. 90 – 120 kg/m<sup>3</sup>

<i>Dimension</i>	<i>Percentage</i>
5.6-3.15 mm	< 5 %
3.15-2.0 mm	40-50 %
2.0-0.5 mm	45-55 %
< 0.5 mm	< 5 %