MICA MAX®

von Roll

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The demand for **higher power density** is leading to ever higher operating temperatures in high-voltage machines. Electrical insulation systems are needed that **resist the increased thermal and electrical stresses.**

Von Roll developed Mica MAX©, an **advanced electrical insulation system**, which enables a **higher thermal load** on the machine, as well as a **more compact design and thus a higher utilization factor.** Thanks to these advantages, the Mica MAX© insulation system is particularly suitable for generators used in decentralized power supply, as well as for highly stressed industrial drives, emergency power generators and wind power generators.

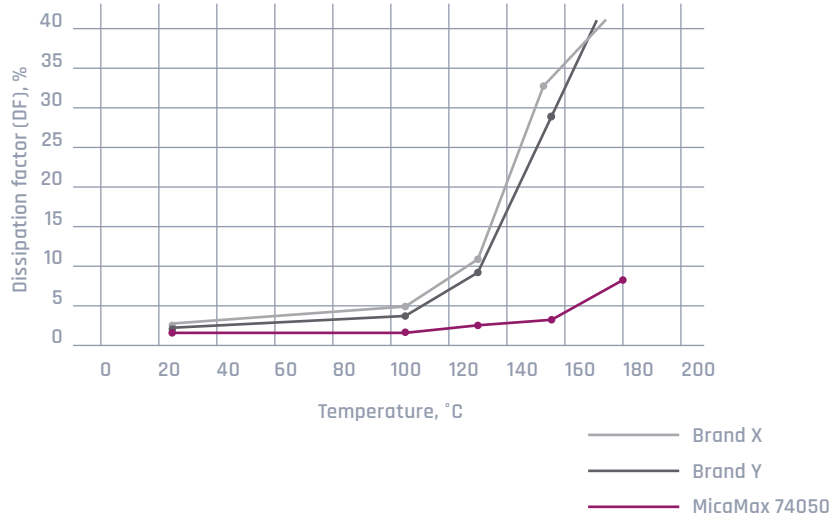
With several years of successful operation, Mica MAX® meets the requirements of class 155 (F) and class 180 (H). Graph 1 on page 4 shows the temperature dependent dissipation factor (DF) curve of two competitive resins compared to Mica MAX® 74050. The measurement has been performed on test bars all using the same main wall mica tape, insulated for a rated voltage of 11 kV. A typical goal would be to have a dissipation factor below 10% at operating temperature. Dissipation factors above 20% at operating temperature may lead to forced dielectric heating and shortened life during operation or voltage endurance testing. Competition resins meet the level of our medium voltage resins, but they do not compare to the high voltage Mica MAX® system at temperatures above 130°C.

LEADER IN THE MARKET

Our most recent product launch of mica tape 2546XS was to improve the Mica MAX® system with an optimized binder resin system in the tape for an even better performance. The softer and more flexible 2546XS replaces the previous optimized companion tapes for Mica MAX® with a more readily available and easier to apply tape. The improvements are significant, as shown by the %DF at temperature from the 2546XS compared to the other standard Mica MAX® tapes 2537XS and 2480XS in the graph No. 2 on page 4.

Graph 1

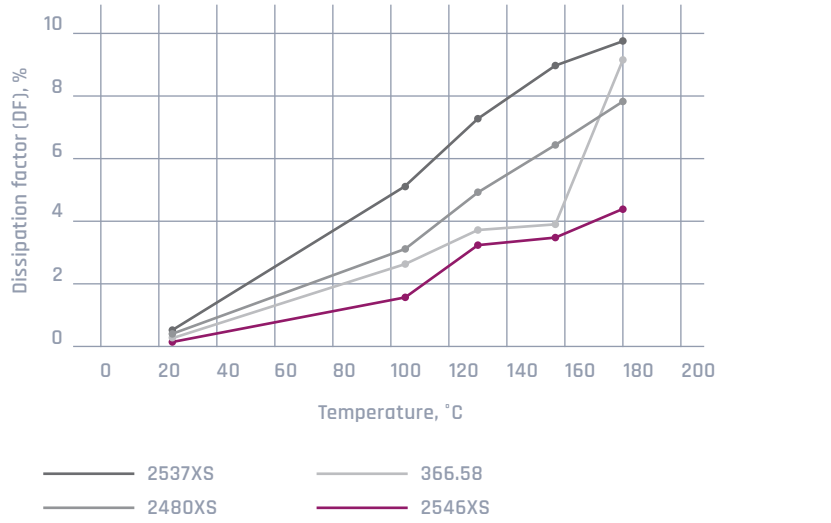
DF Vs Temperature,
high voltage systems

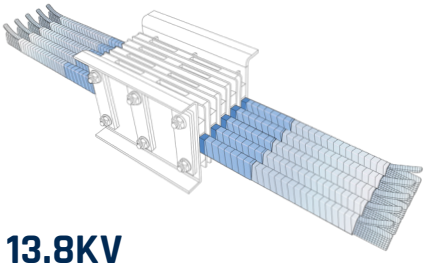


SUPERIOR PERFORMANCE AT TEMPERATURES ABOVE 130°C

Graph 2

%DF vs Temperature
Various Mica Tapes VPI'ed in 74050





MICA MAX® – EXCEEDING 13.8KV

Testing of systems and capabilities continues in our high voltage application laboratories in Schenectady, NY and Breitenbach, Switzerland. Here in Schenectady we recently tried to investigate the upper limits of the insulation design and the achievable maximum rated voltages possible with the Mica MAX® system. Impregnation trials were performed on a test bar insulated with 30 layers of mica tape 2546XS. All 30 layers were well impregnated. This successful trial leads to opportunities above rated voltage levels of 13.8kV.

MICA MAX® BENEFITS AT A GLANCE:

Mica MAX® is based on specially matched components, such as the anhydride-free 74050 resin system, a thermally robust conductor insulation, a mica-containing main insulation with increased electrical life and materials for corona protection.

+ Suitable for higher temperature classes
+ Environmentally friendly and safe
+ Very low dissipation factor at high temperatures

As one of the oldest industrial companies in Switzerland, founded in 1803, we focus on products and systems for power generation, transmission and distribution, rotating machines and mechanical engineering. Von Roll is the global market leader for insulation products and the only company to offer the complete range of insulation products, composites, consulting, tests and services for the electrotechnical industry.

For more than 100 years, we have been making outstanding contributions to this market, developing a number of highly innovative products that have enabled both steady increases in power output and smaller and more compact machines.

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