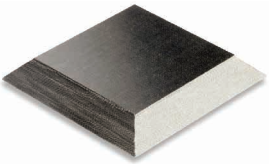


NP310HT

Easy to machine, less abrasive than fiberglass, and heat treated to reduce warping with age



NP342LS

Machines cleanly, engineered not to shrink in generator applications



MC511A

Exceptional strength in high temperatures, plus superior insulation properties



MC511AF

Excellent flexural strength at high temperatures

The power generation industry relies on high temperature thermoset laminates, pre-pregs, and specialty molded shapes that can endure extreme heat and mechanical conditions. Physical properties include resilience at elevated temperatures; tensile, compressive, shear, and flexural strength; creep resistance; abrasion resistance; and electrical insulation properties. Norplex-Micarta offers a full line of these specialty composites, all certified to meet the most challenging power generation specifications. From blocking materials, to molded wedges, to ripple springs, Norplex-Micarta is the preferred high performance composites manufacturer for OEMs and fabricators around the world.

Norplex-Micarta materials retain high strength even at elevated operating temperatures. Several of the grades developed for the power generation industry can function continuously at a temperature of 180°C and have the ability to withstand much higher excursion temperatures. When exposed to elevated temperatures, these products retain a minimum of 50% of their flexural strength, as well as excellent impact and bond strength with little or no creep. New materials that will further extend operating temperatures are in qualification.

To reduce the threat of damage to generators, Norplex-Micarta materials can be manufactured with abrasion-resistant substrates. Fiberglass composites can be produced with Kevlar™ or Nomex™ surface materials to make them comparable to softer, cotton-based products. These custom composites offer long life in wear applications without the risk of abrasion-generated dust particles or damage to sensitive equipment.

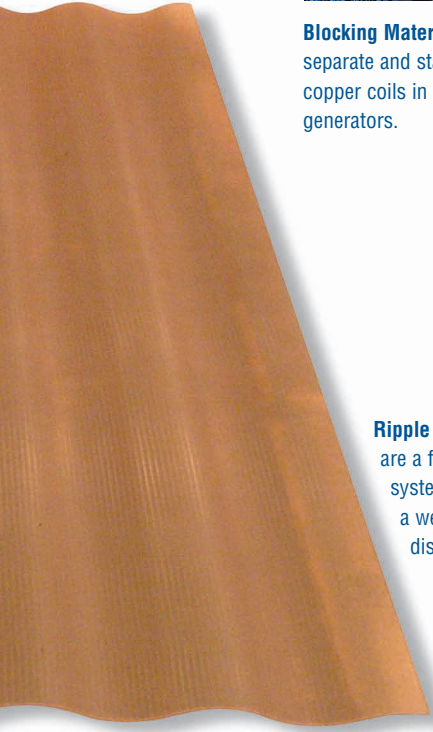
Norplex-Micarta materials also offer excellent electrical insulating properties at high voltages. The products maintain low permittivity and dissipation factors in dry, humid, or extreme environmental conditions.



Molded and Machined Wedges can withstand extreme compressive force at high temperatures.



Blocking Materials separate and stabilize copper coils in power generators.



Ripple Springs are a fail-safe system should a wedge become dislodged.

Molded and Machined Wedges

Wedges provide security to the generator armature. Several layers of copper coils and turn insulation are packed into deep steel grooves that run the entire length of the rotor and stator. Wedges are then hammered into the slots to lock the materials in place. Wedges must first withstand the impact force during installation, then the extreme mechanical forces associated with the magnetic stresses on the rotor and stator coils, as well as the centrifugal force of the spinning rotor during operation. Norplex-Micarta wedges are manufactured from non-abrasive materials with excellent insulation properties and maximum creep resistance, and have the ability to withstand extreme compressive forces in high temperature environments.

Blocking Materials

Norplex-Micarta blocking materials serve several purposes within a power generator. The materials are used to lock electrical coils in place at each end of the rotor and stator, providing superior compressive strength. Blocking materials also support the tremendous weight of the rotor while separating and stabilizing the copper coils.

Ripple Springs

Ripple springs provide protection to the contents of the generator armature. When a wedge is hammered into place, a ripple spring is flattened between the wedge and the contents of the slot. Should the wedge become loose or dislodged, the ripple spring expands to fill the void. This fail-safe system holds the coils and insulation in place against the extreme magnetic field forces of the generator. Norplex-Micarta ripple springs have excellent insulation properties and maximum creep resistance, and can withstand extreme compressive forces in high temperature environments.

Pre-Preg Materials

Norplex-Micarta offers a line of pre-preg (b-stage) products that can be molded into slot cell insulation for power generators. Products feature long life, excellent mechanical and electrical insulation properties in the finished laminate, and superior creep resistance.

Specialty Molded Shapes

Norplex-Micarta understands the design requirements of new generators, as well as the repair and refurbishment of old units. The power generation industry frequently calls for customized products, and Norplex-Micarta works directly with engineers to design molded shapes to fit the most exacting applications.



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