



High Voltage Epoxy resin without hardener

Suitable for DC and AC insulators

CONTEXT

Epoxy is one of the most efficient materials for high voltage insulation.

Due to the development of High Voltage Direct Current (HVDC) technology which is particularly suitable for the transmission of large amount of energy over long distances and for off-shore energy integration, new constraints apply to the insulation.

In addition, epoxy requires to reticulate with a hardener. During manufacturing of epoxy parts, this hardener which contains highly volatile chemicals is an irritant for the factory workforce. Due to this drawback, hardeners are under close monitoring by REACH legislation in EU.

APPLICATION DOMAIN

- HVAC and MVAC
- HVDC and MVDC

ADVANTAGES

- Low curing temperature
- Higher glass transition characteristics ($>125^{\circ}\text{C}$)
- Factory HSE improvement

TECHNOLOGY DESCRIPTION

The proposed technology allows to reticulate DGEBA epoxy using a ionic liquid while still keeping the standard fillers.

Without hardener, the reticulated epoxy resin shown :

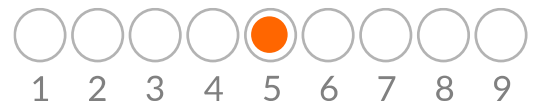
- Similar Mechanical properties (tested on full parts)
- Higher glass transition temperatures
- Higher electrical conductivities*

The material properties reach the higher standards of electrical insulation for AC and DC applications.

In DC, the higher conductivity allows to reduces the space charge accumulation and its subsequent voltage withstand reduction.



TRL SCALE



Patent, process data
Design consultancy

DELIVERABLES

PATENT APPLICATION WO2020141280