

# POLARITE™ 503S IN HIGH VOLTAGE ETHYLENE PROPYLENE CABLE INSULATIONS

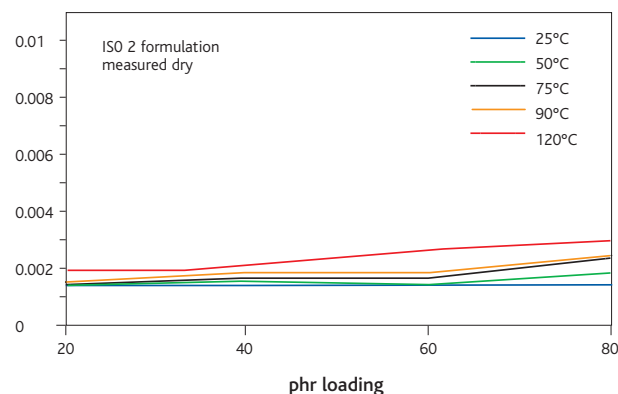
Polarite 503S is a vinyl functional silane treated calcined clay which has been specifically developed for use in very high voltage cable insulation based on EPR.

Polarite 503S imparts extremely good dielectric properties (better than any existing vinyl silane treated calcined clay) which are maintained both at high working temperatures and under wet conditions for the working life of the cable. It also gives good insulating properties in other polymers such as EPDM, cross-linked polyethylene and ethylene vinyl acetate copolymers.

With very high voltage insulation high temperature effects are critical. Figure 1 shows the effects of loading and temperature on an insulation compound (Formulation 1). It should be noted that the industry norm for tan delta measured at 90° in this type of application in the order of 0.0030.

Formulation 1	phr
Nordel 2722	100
LDPE	5
Paraffin wax	5
Zinc oxide	5
90% red lead	6
Flectol H	1.5
<b>Polarite 503S</b>	Variable
Vinyl silane	1
Dicap R	2.6

Figure 1: Effect of loading on dissipation factor on EPR cable insulation

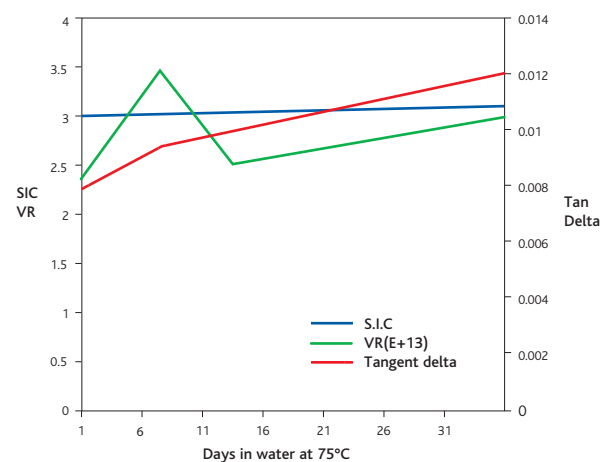


Formulation 2	phr
Vistalon 4608	100
Zinc oxide	5
Stearic acid	0.5
Flectol H	1.5
<b>Polarite 503S</b>	150
Sunpar 2280	30
Vinyl silane	1.5
Rhenofit TAC/S	2
Perkadox 1440	7

Compounds (Formulation 2) based on Polarite 503S also show extremely good stability on water immersion with little change in capacitance, volume resistivity and tan delta (Figure 2).

The combination of specially selected and produced calcined clay and vinyl functional silane gives such good performance that cables produced from ethylene-propylene rubber will be able to compete technically in the very high voltage (> 150 KV) market.

Figure 2: Effect of water storage on the electrical properties of EPDM filled with Polarite 503S



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