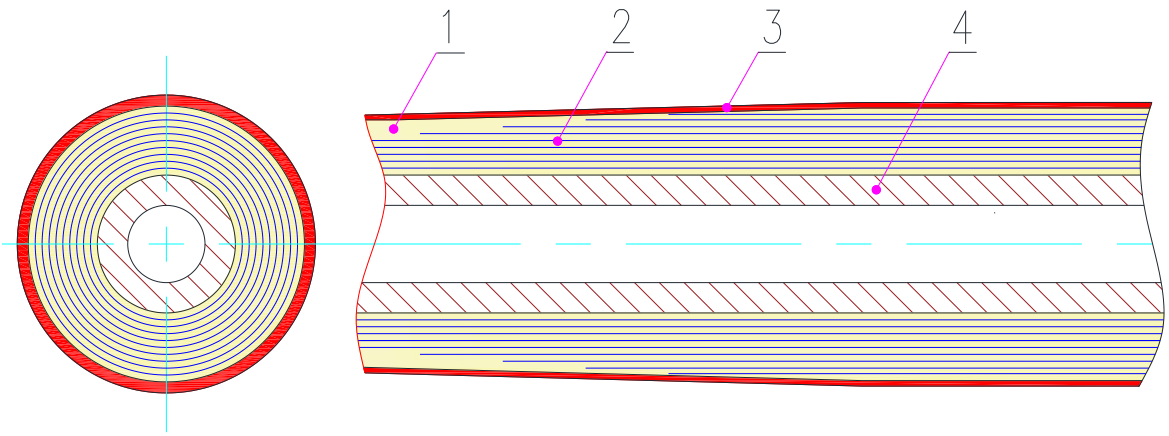
The HV DryShield® CT design described in our paper uses a composite insulation technology that consists of PTFE (PolyTetraFluoroEthylene) film layers with interstitial silicone gel for its primary conductor insulation. See Figure 1 for a sectional view of the primary conductor.



1- PTFE insulation, 2- Aluminum foil screens, 3- heat shrink tube, 4- current carrying conductor

Figure 1 Sectional View of the CT Primary Winding

The PTFE tape used in the HV DryShield® CT design is made of a polytetrafluoroethylene virgin granular fine cut resin. It is fully fluorinated and offers remarkable electrical, thermal, and chemical stability over a wide range of frequencies and temperatures. The ATE (Absolute Thermal Endurance) or RTE (Relative Thermal Endurance) as per IEC 60085 of PTFE is defined as ≥250°C and <275°C (see Table 1).

ATE or RTE (°C)		Temp. (°C)	Therm. class	Related materials
≥250	<275	250	250	polyimides (kapton), aramids (nomex), PTFE, class R materials with new binding materials, polyimid foils

Table 1 Thermal Classes (according to STN EN 60085) and Related Materials

To comply with industry standards and customers specifications, the HV DryShield® CT design was assigned a Class B (85 K) temperature rise limit even though technically the CT thermal class could be 250°C based on the PTFE thermal limit. The temperature rise type test results for the 500 kV cascade design HV DryShield® CTs supplied for the project are shown below.

Winding Terminal Temperature Rise (K)	Windings Temperature Rise (K)	
H1: 57.2 H2: 57.5	X1-X5	5.78
	Y1-Y5	8.29
	H1-H2	83.8
Result: Passed		