

ABERDARE MAKES BREAKTHROUGH IN 'GREEN' PVC ELECTRICAL CABLE



Leading power cable manufacturer Aberdare Cables has developed a range of substitute materials and colour pigments that do not contain heavy metals for its manufacture of ranges of PVC cables to convey power from municipalities to homes and for use in underground electrical reticulation.

Aberdare group materials science manager Zak du Preez said the exclusion of materials containing heavy metals makes the PVC cables considerably more environment-friendly.

He added that it was very involved exercise that included significant focused effort and development work to find and evaluate suitable alternatives to the heavy metal stabilisers found in PVC compounds and colour pigments.

“The complexities lay in the fact that the PVC material identified had to withstand the rigours of compounding and processing on numerous types of cable extruders. Also, the material had to comply with approved specifications, especially heat ageing and colour fastness,” said du Preez.

The materials are now compliant and the exercise of phasing them into Aberdare’s production of PVC cables is well under way. Whereas heavy metal-free materials and pigments were previously imported, they are now produced locally, which is a significant achievement for the local cable industry.

“Throughout this programme we worked very closely with local suppliers who initially did not have the facilities to support the exercise. There was some input from overseas principals which was also helpful and now we have two local suppliers providing lead-free materials,” said du Preez.

Internationally, the Restriction on Hazardous Substances (RoHS) directive was adopted by the European Union in 2003 and became effective in the US in 2006. Du Preez said it was therefore important to meet these RoHS requirements, which for example on lead is 0.1% or 1000 parts per million.

Generally, RoHS restricts the use of lead, mercury, cadmium, hexavalent chromium, and two polybrominated biphenyls (PBB) and polybrominated diphenyl ether (PBDE), both flame retardants, in electronic and electrical equipment.

The scale of electrical cable production in South Africa is such that Aberdare alone compounds and processes more than 2 500 tons of PVC a year. Generally PVC is used as a sheathing grade, in some instances as insulation or bedding for smaller cables and finally as a shape filler in larger cables.

“Overall, this was not an easy exercise,” said du Preez. “Many of the cable products are colour sensitive for identification and the colours need to be perfect for that reason and for appearance. Initially it was not easy to obtain the colour consistency required.”