

LEONI EcoSense® – our answer to the global trend towards environmental awareness

The recent environmental disasters and the proactive communication from environmental organisations are moving the topic of ecological responsibility back into the forefront of people's minds. Since 2006, Greenpeace has been publishing a guidebook rating the producers of electronic appliances by the contribution they make to the protection of the environment. Some producers have had to accept harsh criticism and have since been working at improving their environmental specifications substantially.

The focus of criticism concerning the production of the appliances is particularly on phthalates (plasticisers in PVC) and PAHs (used in colour batches). They may contain halogens that release toxic fumes when burned. It is not only the Europeans who discussed to add them to their list of banned substances under RoHS II as of 2014; the United States and Japan are also tightening their regulations.

For the cable industry the decision not to use PVC as an insulation material also means a huge challenge: alternatives such as TPE, PUR or silicon do not have the desired flexibility or necessary abrasion resistance to simply replace PVC. The use of the right alternative must, however, be tested specifically for the application.

The focus is on the sensitive and meaningful handling of input materials during cable production. LEONI EcoSense products therefore do not contain any Group 7A substances (17) – chlorine (Cl), bromine (Br), fluorine (F), iodine (I) and astatine (At).

With its LEONI EcoSense product line, LEONI offers appliance manufacturers a comprehensive range of cordsets compliant with HD 21.14 S2:

The cables H03Z1Z1H2-F 2x0.5 mm² through to H05Z1Z1-F 3x1.5 mm² are VDE

approved and have properties similar to those of PVC cables.

The most important European and UK plugs and sockets including a halogen-free insert have already been approved to the relevant standard:

- Euro plug with earthing contact in straight and angled versions
- European flat plug
- UK plug
- 2.5 A socket

Production start-up and development took place in Slovakia; there are plans to extend this to our facilities in Changzhou and Xiamen in China soon.

LEONI EcoSense – treating nature sensitively!



Interview with our Material Specialist, Dr. Henrich Krump



Dr. Henrich Krump is responsible for projects in the field of material research, product management processes and advising customers on R&D specific topics.

Dr. Krump: With its LEONI EcoSense brand the company offers a range of halogen-free power cord products. Please could you explain the difference between PVC and FRNC?

Dr. Henrich Krump: First of all the difference involves their chemical structure. Halogen-free means it does not contain any of the elements in Group 7A (17) (F, Cl, Br, I, At) of the periodic table. Then we are talking about thermoplastic and thermoplastic elastomer materials respectively. As PVC inherently presents flame-resistant properties due to the existence of chlorine in its molecule when used as a cable sheath it provides the same sufficient fire-resistance for most applications. However, in case of PVC fire

develops dark, heavy smoke with toxic and corrosive emissions, dangerous for human beings. Therefore, in recent years the use of so called halogen-free, flame retardant (HFFR), fire-resistance, no corrosive (FRNC), or low-smoke, zero halogen (LS0H) materials has been stepped up due to several major incidents caused by PVC.

Could you please briefly describe the processing of FRNC?

Dr. Henrich Krump: As FRNC materials involve different material classes their processability differs. In general, FRNC materials have a melt viscosity higher than PVC. Such compounds require more

power during processing, which leads to a rapid increase in melt temperature as the screw speed increases.

What significance does this have for the customer?

Dr. Henrich Krump: The HFFR materials have, compared with traditional ones, successfully addressed these concerns especially in regard to smoke density, smoke toxicity and acidity with safer and ecologically acceptable compounds. Another benefit lies in the composition of these materials because, unlike PVC, HFFR materials do not require additives like plasticizers that can migrate to the soil or stabilizers based on heavy metals.