



Ticona

Green Electronics



Halogen-free without constraints!

In response to issues such as climate change, limited natural resources, and soaring oil and raw material prices, companies around the world are desperately seeking sustainable developments. For many of these companies, promoting these developments and contributing to them is important, both to remain competitive and to create a positive brand image.

This is particularly significant in the electrical and electronics industries, where it is not only the RoHS and WEEE directives that are forcing changes, but also the influential environmental organizations.

Safe and innovative without compromise

Technical innovations are the key to improved sustainability. Progressive

companies protect the environment while meeting all the relevant regulations and directives. Leading manufacturers such as Sony and Apple are already reducing the amount of hazardous materials such as heavy metals and bromine compounds, or removing them entirely from their products. To meet these needs, lead-free solderable, halogen-free and flame-retardant thermoplastics have been developed for use in the electronic components of their products.

Green and safe products are moving forward

The number of electronic products in the home and office is steadily rising. Game consoles and cell phones are also expanding markets. By the end of 2008, there will be approximately 2 billion cell phone users around the

world. That's why protecting the consumer with high safety standards is just as important for manufacturers as meeting international regulations and directives.

"Ticona Green Electronics" makes it possible to achieve both – excellent safety standards with UL 94 V-0 flammability ratings without the use of halogen. There's no need to compromise.



+ Maximum flame retardance

+ For lead-free soldering

+ No additives

+ Halogen-free



Vectra® LCP – For tomorrow's products

Major manufacturers are already using halogen-free engineering thermoplastics. As a specialist supplier of thermoplastics to the electrical and electronics industry, Ticona can draw on 20 years of experience and has developed Vectra® LCP, the high-performance polymer for tomorrow's products. It is inherently flame-retardant, free of additives, halogen-free, and can be soldered without lead. Halogens are on their way out, while fire safety regulations grow even more stringent. Consequently, manufacturers are under increasing pressure to use environmentally friendly and cost-efficient materials in cell phones, computers and other electronic products. As a result, there has been a steady increase in the demand for green components.

Protecting the environment for a competitive edge

However, developments didn't stop there. Major electrical and electronics manufacturers around the world have been focusing on environmental measures to improve their image and have therefore sought to discontinue the use of

halogen compounds in their products. Ticona is one of the suppliers that actively supports this change and offers solutions to make it possible.

Vectra® LCP fulfills RoHS regulations, conforms to WEEE and can be recycled up to 50% (while retaining

UL ratings). In terms of cost reductions, Vectra® LCP scores highly, as it can be injection molded into ultra thin wall sections. The resulting reduction in the amount of thermoplastic required and significantly faster production rates make the price per component extremely competitive.

Vectra® LCP product specifications

- + Continuous-use temperatures of up to 240° C, short term up to 340° C
- + Very low melt viscosity
- + Flash-free manufacturing with injection molding
- + Very high tensile strength and elastic modulus
- + High impact strength
- + Very low heat of fusion (very short cycle times possible)
- + Inherent flame retardancy (UL 94 V-0, 5 VA approval)
- + Excellent dimensional stability
- + Very good chemical and oxidation resistance
- + Very low water absorption property



First-hand plastics expertise

Ticona is a part of the Celanese Corporation and is one of the world's leading manufacturers of engineering thermoplastics. The company has been established for many years in injection molding applications for key markets such as the automotive, electronics and telecommunications industries, and medical technology. Thanks to their high-performance characteristics, thermoplastics used successfully in those industries also offer promising potential for other technologies and fields of application – especially for extrusion. In recent years, the development of special polymer grades has opened

up new applications in the areas of fibers and non-wovens for engineering textiles and composites.

Ticona is more than just a materials supplier and offers a comprehensive customer service. Along with extensive project support, this service includes assistance in the selection and development of materials. With injection molding applications, support can also be provided to customers to assist in the design of components and molds, CAE calculations and the optimization of production processes.

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