

# Halogen Free Electrical Tape for Today and Tomorrow

Mr. Peter Wong  
P. Leo & Co., Ltd.  
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## **Abstract** *Impact on Electrical and Electronic Industry :*

*The use of Halogen-free in electrical and electronic products is expected to increase over the coming years. The increase is driven by industry initiatives and legislation aimed at protecting the environment and human health. At the moment the greatest emphasis towards halogen free products is occurring in some large brands with buyers from Japan and from the European Union. This effect can impact on the supply chain globally.*

## **Introduction :**

Restriction on Halogens Free according to IEC 61249-2-21 :

Cl, - maximum 900ppm

Br, - maximum 900ppm

Total (Br + Cl) maximum 1500ppm

## **What is Halogen :**

Group VIIA in the periodic table of non-metal elements including Fluorine, Chlorine, Bromine, Iodine and Astatine. Since Astatine is a radioactive element, halogens are typically only referring to Fluorine (F), Chlorine (Cl), Bromine (Br) and Iodine (I).

## **Background**

The present invention relates generally to electrical insulating films and tapes for use in various applications, such as automotive applications. The present invention further relates to electrical insulating films and tapes, including halogen-free electrical insulating films and tapes, which meet rigorous industry standards for flame retardancy, weatherability, thickness, tensile strength, elongation, dielectric strength, adhesion strength, moisture absorption, temperature resistance, deformation, longevity, and/or conductor corrosion.

P. Leo follows the restriction of Halogen Free from International Electrotechnical Commission (IEC) in their tapes production. Although existing halogen-free electrical insulating films and tapes have increased the knowledge base, further improvements are needed that will yield halogen-free electrical insulating films and tapes that meet or exceed the flame retardancy and mechanical properties of halogen-containing electrical insulating films and tapes. The present invention meets this challenge. To supply a tape that includes a halogen-free backing comprising a polymeric material; a flame retardant; and a coupling agent; and an adhesive layer located on a surface of the backing. The tape is flame retardant tested according to Section 4 of Underwriters Laboratories UL 510, Seventh Edition. P. Leo products use their proprietary halogen-free, high temperature, modified adhesive. e.g. 1K063 Kapton Tape with silicone adhesive, 1K06A Polyimide Tape with acrylic adhesive, 1PFRS is made by Polyethylene Terephthalate film with Flame Class VTM-0 with UL approval tested according to UL510 and meet to RoHs requirement and Halogen Free testing according to BS EN14582:2007.

## **Summary :**

*Halogen-free polymeric compositions have been used to produce insulating films for use in the electrical industry. The halogen-free polymeric compositions that have been used, however, it do not exhibit a sufficient degree of flame retardancy. The present invention includes various compositions and tapes. One exemplary embodiment of the invention includes a tape comprising (a) a halogen-free backing comprising a polymeric material; a flame retardant; and a coupling agent; and (b) an adhesive layer located on a surface of the backing. The tape is flame retardant when tested according to Section 4 of Underwriters Laboratories UL 510, Seventh Edition.*