

## Eco-Conscious Solution Removes Halogens from Electrical Junction Boxes

Global electrical/electronics producer differentiates itself with new products featuring non-halogenated flame-retardant seals molded from thermoplastic elastomers.

### Situation

Schneider-Electric NB (Strömfors), a Nordic-based producer of electrical parts recently switched to a non-halogenated gasket (seal) material from PolyOne in boxes and enclosures for household electrical installations. This region of the world maintains a high sensitivity to preserving nature and the environment, and the producer's desire to look for alternative material solutions not yet required by law follows this cultural tendency.

This division's global manufacturing parent company leads the market in eco-friendly products and innovative approaches to energy savings. Always on the lookout for environmentally friendly technologies, Schneider-Electric has developed a reputation

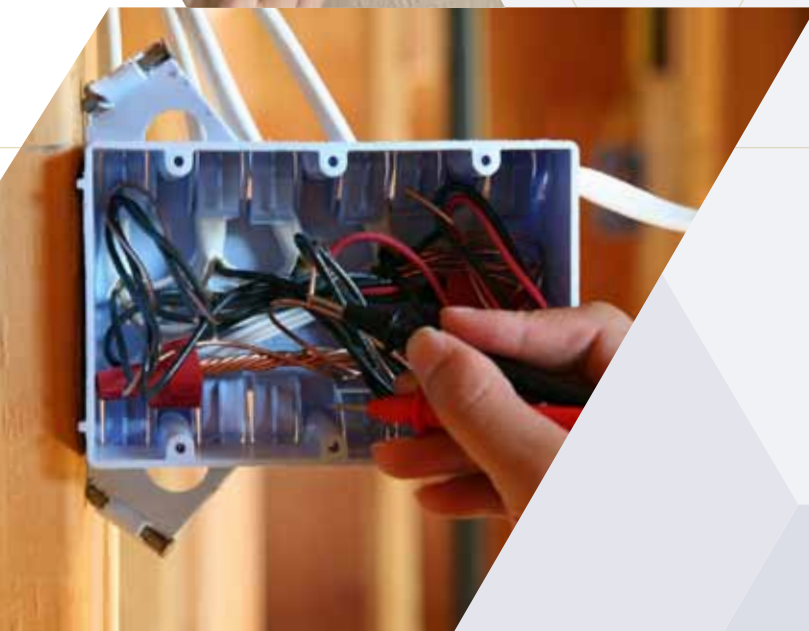
for having the "greenest" applications on the market, helping to differentiate itself from competitors by its proactive approach.

In a recent project, Schneider-Electric NB (Strömfors) sought to remove halogenated material from the gaskets (seals) for electrical junction boxes found on the interior of homes and buildings. Gaskets are intended to insulate the boxes for electrical safety, and must be flame retardant to reduce the chance of fire caused by sparks or electrical overload. Further, according to international standard IEC 60670-1, the materials used in the wall boxes have to pass a Glow Wire Flammability Index (GWFI) 850°C testing (IEC 60695-2-12) at the application thickness, and 960°C at 2mm.

### The PolyOne Difference

The Schneider-Electric NB (Strömfors) design staff turned to PolyOne for help in selecting the right material. PolyOne GLS thermoplastic elastomer (TPE) material specialists identified a current TPE within the OnFlex™ S HF, non-halogenated, flame retardant portfolio that could be slightly modified to meet the application's requirements.

First, the material had to be tested for shear resistance based on the thickness of the seal. PolyOne determined the TPE would perform satisfactorily at an 85 Shore A hardness level. Next, the materials team formulated a grade that would offer enough heat resistance to be overmolded onto polypropylene, the underlying rigid material. Finally, the OnFlex-S HF grade was developed to bond sufficiently and be chemically compatible with polypropylene.



## Delivering a Value-Added Solution

By replacing traditional sealing materials with non-halogenated OnFlex S HF TPE, Schneider-Electric NB (Strömfors) was able to offer its customers several significant benefits:

- For flexibility in processing, OnFlex S HF compounds can be supplied in either natural or pre-colored grades. Natural grades can be colored during processing with compatible products from PolyOne's OnColor™ color concentrate line.
- The non-halogenated solution has a density 0.4 g/cm<sup>3</sup> less than a traditional halogenated material, and this density advantage makes it price competitive with the traditional solution.
- High-flow properties of OnFlex S HF TPE allow the gaskets to be overmolded in multicavity tools (up to 12 cavities per tool). In addition, this material can be used in tools originally constructed for halogenated materials with no rework required.

Finally, by promoting the more environmentally conscious new non-halogenated products, Schneider-Electric NB (Strömfors) may be able to increase its market share by approximately 20%. Based on current market data, this translates to potential increased sales revenue of as much as €150,000 (\$225,000 US). This environmental differentiation also helps the producer to prevent market share erosion due to low-cost competition from producers in Asia.

Additional advantages of these compounds include:

- Highly flame retardant without the inclusion of halogens
- Low temperature flexibility
- Excellent processability
- Good abrasion resistance
- Excellent colorability
- Operating temperatures from -50° C to +100° C
- All grades meet UL94-V0 at 1.5 mm
- All grades pass IEC 60695-2-12 Glow Wire Flammability Index (GWFI) at 960° C

**Product choices often vary by region due to differences in regulatory and agency requirements, availability and other key factors. Please contact your nearest sales office for assistance in choosing the right solution for your locale.**

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