



## **CONDUCTIVE PRE-ELEC® COMPOUNDS** FOR FLEXIBLE TUBES, HOSES, AND PROFILES



Unlike plastics in general, conductive plastics have the ability to conduct electricity. When grounded, conductive plastics remain at zero potential and do not accumulate static electricity. Premix's conductive PRE-ELEC® compounds offer a wide variety of solutions for various tubes, hoses, and profiles applications.

## ARE YOU IN THE BUSINESS OF MAKING WORKING ENVIRONMENTS SAFE FOR EVERYONE?

There are many mechanisms for increasing safety and these can be implemented in various forms.

Here are some examples of where our thermoplastic elastomers can be used to eliminate static charging and reduce the following risks:

- **Hazardous atmospheres (ATEX)** — sparks may trigger explosions
- **Hospitals** — sparks may harm patients and damage expensive equipment
- **Clean rooms** — sparks damage electronic components and may cause faulty devices

On top of controlling static electricity, there are also other use cases such as contact sensors and healthcare textiles.

## CONDUCTIVE THERMOPLASTIC ELASTOMERS — A Sustainable Alternative To Rubber And Metal

Conductive thermoplastic elastomers

- Protect against static charging
- Enable sensing
- Protect against electromagnetic interference (EMI)
- Can be used to modify electric fields

Thermoplastic elastomers are a sustainable, recyclable, and economical option for metal and rubber composites. Also, they can be processed with typical plastics processing machinery.

## CONDUCTIVE ELASTOMERS FOR EXTRUSION APPLICATIONS

*Our **PRE-ELEC®** compounds can be used in flexible tubes, hoses, and profiles with unique special features.*

### FLEXIBLE TUBES

**Flexible tubes** made of PRE-ELEC® compounds are strong and flexible. They can be used in multi-component structures.

Using our conductive compounds you guarantee conductivity, high abrasion resistance, high flex-life, durability, easy processability, and flexibility even at low temperatures.





## HOSES

**Hoses made** of PRE-ELEC® compounds can be used in multi-layer structures. This means the inner and outer tubing can have different chemical and/or physical resistances.

Conductive hoses are typically used to convey hospital gases, possibly in a combination of multiple materials, such as PVC with TPU inner liner. Our compounds provide constant conductivity and are resistant to bending and flexing for the end-product.



## PROFILES

**Profiles made** of our compounds provide various compression properties for sealings. They resist permanent deformation and, as a result, are suitable for, for example pressure detection.

Our compounds make profiles soft and easy to deform, which provides a good contact or tightness when installed. The abrasion resistance for repetitive loading is good.

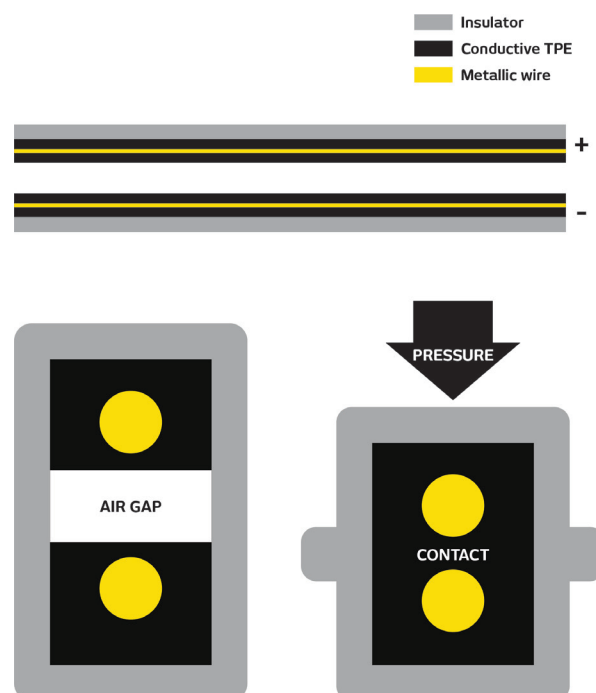
Suitable for use in wide range of temperatures, the materials can be used in different ambient conditions without cracking or creeping.



## SAFETY EDGES

**A safety edge** made of a PRE-ELEC® compound makes it safe to close a garage door. When the door touches something solid, such as a car or a person, the profile bends temporarily. The bending acts as a contact detection and sends a signal to the door mechanism to stop its movement. Unless such safety measures are included in systems operating with powerful motors, a serious level of danger is present.

In the following picture, the safety edge operation principle is demonstrated. The pressure activated contact sends an electric current between + and - terminals, which can be used as an input for electronics, i.e., current implies a contact and lack of current implies the safety edge is not in contact with anything.



Premix offers conductive material solutions for tube and profile applications. The layers can be very thin, which requires very high quality also from raw materials. Premix materials are highly dispersed and easily stretchable, which makes the manufacture of thin products easier.

## PRE-ELEC® Grade Selection Flexible Tubes - Hoses - Profiles

Product	Base polymer	Special features	Typical applications
PRE-ELEC® PE 12841	PE-LLD	FM 400, hardest olefin-based	Flexible tubes
PRE-ELEC® PE 17693	POE	FM 300, Allows slight dilution	Flexible tubes
PRE-ELEC® PE 18480	POE	FM 200, Softest olefin-based, available within EU	Flexible tubes
PRE-ELEC® TPE 1502	TPE-S	TM 10, Our softest conductive, Shore A 65	Gaskets, gripsurfaces
PRE-ELEC® TPE 18416	TPE-S	TM 100, Very high conductivity required by sensor profiles, Shore A 85	Safety edges
PRE-ELEC® TPU 1512	TPU ester	TM 35, Abrasion resistant, High conductivity, good mechanicals	Sheets, Profiles
PRE-ELEC® TPU 18438	TPU ester	TM 25, Abrasion resistant, Medium conductivity, excellent mechanicals	Flexible tubes
PRE-ELEC® TPU 18600	TPU ester	TM 15, Abrasion resistant, High conductivity, good mechanicals	Flexible tubes

If you are looking for an electrically conductive plastic compound or concentrate with special features, do not hesitate to contact us at Premix.

## RECOURCES

**Premix Data Center** for datasheets and more: [www.premixgroup.com/data-center](http://www.premixgroup.com/data-center)

**Contact our sales:** [www.premixgroup.com/contact](http://www.premixgroup.com/contact)

**Subscribe to our blog:** [blog.premixgroup.com](http://blog.premixgroup.com)

## ABOUT PREMIX

With more than 40 years of industry experience, Premix's expertise lies in the formulation and production of functional plastic materials. Premix's materials are more than just traditional plastics – they play an active role in the product or process they are integrated into. Premix was one of the first companies to enter the market for electrically conductive plastics in the early stages, and it is now the world's leading specialist in the area. Today, we are a company that develops future solutions also for antimicrobial materials.

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