HEAT PROTECTION AND FIRE-RESISTANT COATINGS

Heat protective and fire-resistant coatings for EV battery housings & covers

TEGO® Therm L 300, TEGO® Therm HPG 4000 and TEGO® Therm HPG 6806

Enhanced Fire Resistance

Due to the projected strong growth in electric mobility, the demand for batteries is expected to significantly increase in the coming years. This trend is accompanied by strict safety standards that require the use of thermal insulation barriers in **lithium-ion batteries** used in EVs.

The goal is to reduce the risk of fires resulting from infrequent but hazardous thermal runaway incidents in EV batteries. **Thermal runaway** starts in a battery cell and can be triggered by a short circuit, cell malfunction, or external mechanical failure.

Fire-resistant coatings applied to battery covers represent one approach to reduce the risk of thermal runaway incidents.

The **TEGO® Therm** product line facilitates the formulation of sprayable coatings that provide excellent fire resistance and thermal insulation characteristics. The combined use of **TEGO® Therm HPG** granules and the heat-stable **TEGO® Therm** binder allows to formulate flame-retardant coatings that meet the **UL 94 V-0 fire safety standards.**

TEGO® Therm portfolio – At a Glance

TEGO® Therm L 300

- Liquid waterborne polysiloxane hybrid binder with solid content ~50 %
- Superior heat stability
- Low smoke and odor development

TEGO® Therm HPG 4000

- Granules with superinsulation properties from passivated amorphous SiO_2 core
- High hydrophobicity
- Non-combustible/ Non-flammable

TEGO® Therm HPG 6806

- Granules with excellent insulation properties from amorphous SiO_2 core
- Small particle size enable smooth coating surfaces
- Excellent dimensional stability

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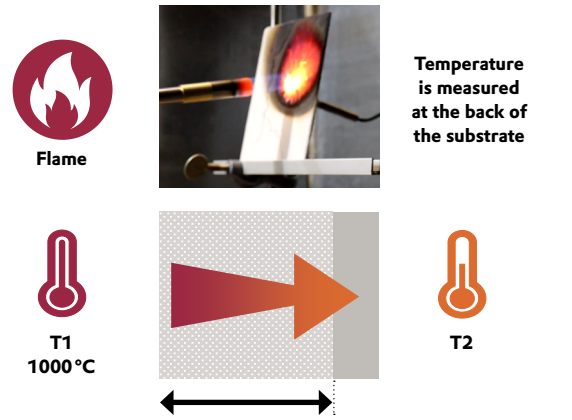
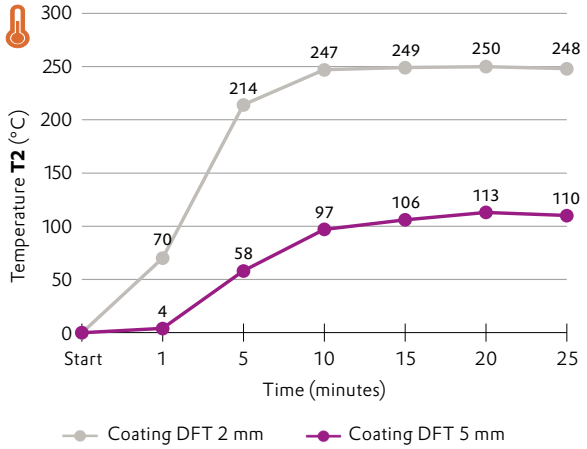
Coatings formulated with TEGO® Therm effectively minimize heat transfer to the underlying substrate while preserving superior mechanical integrity during direct jetflame testing.The higher the layer thickness of the coating, the slower the rise and lower the temperature at the backside of the substrate.

Fire Resistance Test – 20 minutes exposure to a 1000 °C jetflame





Coatings based on **TEGO® Therm L 300** binder combined with **TEGO® Therm HPG** granules can reach a thermal conductivity (λ value) of less than 40 mW/(m K). Thin coatings with a dry film thickness (DFT) of only a few millimeters, suitable for applications with limited space, enable effective insulation and protection of the substrate. Even with a flame temperature of >1000 °C, the temperature on the backside peaked at <250 °C.

GUIDING FORMULATION

TEGO® Therm

HANDLING VIDEO
Production and Application

Technical Introduction

IMPORTANT DATA SHEETS
Find Technical Data Sheet, Regulatory Data Sheet and Sample Order

TEGO® Therm L 300

TEGO® Therm HPG 4000

TEGO® Therm HPG 6806

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