



**Electrochem®**  
Ultra Performance Silicones & TPE  
ELECTROCHEM SILICONES LTD



**Electrochem®**  
Ultra Performance Silicones & TPE  
ELECTROCHEM SILICONES LTD

### **ELECTROCHEM SILICONES Ltd**

SILICONE ELASTOMERS – SPECIALTY POLYMERS  
EN ISO 9001:2015 - EN ISO 13485:2016 CERTIFIED

Lyoner Strasse 14, DE-60528  
Frankfurt a. M. (Hessen), Germany  
Tel. +49 6966554388 • Fax +49 6966554389  
✉ [infode@electrochem.eu](mailto:infode@electrochem.eu)

Industrial Area Thessaloniki (Sindos)  
DA 11 Str – 39A Block  
GR-57022, Thessaloniki, Hellas  
Tel : +30 2310 796680 • Fax: +30 2310 215236  
✉ [info@electrochem.eu](mailto:info@electrochem.eu)

[www.electrochem.eu](http://www.electrochem.eu)



electrochem ©2020 all rights reserved



Railway and  
Mass Transit  
Silicones

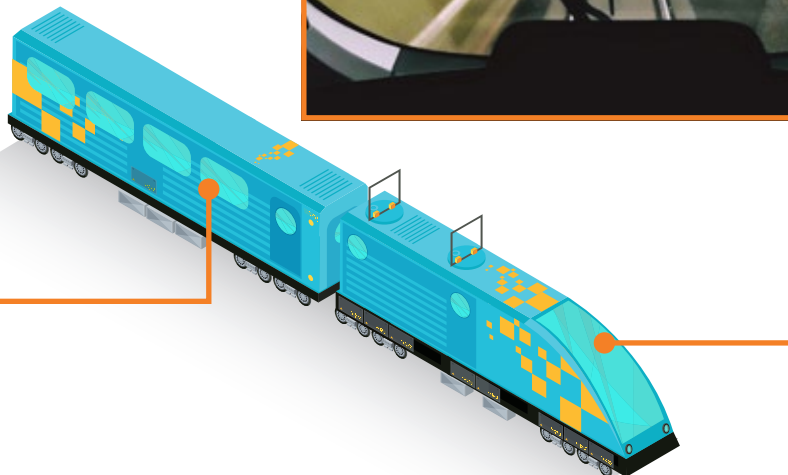
## Siloheat® FR 800 serie: Fire-resistant silicones for Railway & Mass Transit

Our Siloheat® FR 800 serie HCR silicone rubber has been specifically designed for Railway and Mass Transit featuring very high levels of efficiency in fire resistance and ultra low levels of smoke emissions. Siloheat® FR is made by Electrochem Silicones under license by Elkem Silicones (France) and is available in several grades of hardness and colors for extrusion of profiles (doors, windows, walls) and manufacture of panels a.o. In order to help customers meet stringent requirements and comply to the European standard we have additionally designed the Siloheat® FRL 877 with improved performance.



### Siloheat® FR 800 serie & EN 45545-2 Standard: New challenge in fire-resistant silicones

EN 45545-2 is a recent standard with strict safety requirements and has been in effect and mandatory application across EU. The scope of this standard is to standardize the regulation and guarantee the same level of security across all countries in which railway applications are located. Electrochem Silicones has the answer to this challenge: Siloheat® FR 800 serie meets the requirements of the EN 45545-2 standard.



#### KEY BENEFITS



Excellent fire resistance



LSZH:  
Low Smoke  
Free of Halogen



Non-toxic and non-corrosive smokes



Ultra performance heat stability up to 200°C



Low temperature flexibility up to -50°C

## EN 45545-2 Standard: Requirements for fire behavior of materials and components, Hazard Levels & Testing

### Examples of product requirements:

- R1 requirements for horizontal / vertical interior surfaces, e.g. ceiling and walls, window frames or display screens.
- R22 / 23 requirements for interior seals, inductance coils, coils and contacts.
- R24 / 25 requirements for printed circuit boards
- R26 requirements for small electronic products

	Flame spread	Ignitability	Rate of heat release	Smoke production	Toxicity of smoke
R1	ISO 5658-2		ISO 5660-1	ISO 5659-2	ISO 5659-2
R7	ISO 9239-1		ISO 5660-1	ISO 5659-2	ISO 5659-2
R22			ISO 5660-1	ISO 5659-2	ISO 5659-2
R23		ISO 4589-2		ISO 5659-2	NFX 70-100-1 NFX 70-100-2

### Hazard Levels

Railway vehicles are classified in accordance with the fire hazard level associated with their design and operation. There are three hazard levels; HL1, HL2 and HL3 with HL1 being the lowest requirement and HL3 being the highest. The classification depends on how many kilometres the trolley is in tunnels and whether it is automatic, two-storey or if sleepers are on board.

### Testing

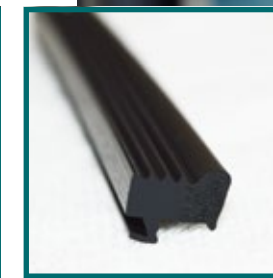
A series of tests are used to measure how the product compares to the product requirement sets. Key parameters that are measured include flame spread, ignitability, heat release, smoke opacity and toxicity. Some test methods include:

- TO1 Oxygen Index
- O3 Flue gas density
- T12 Smoke toxicity

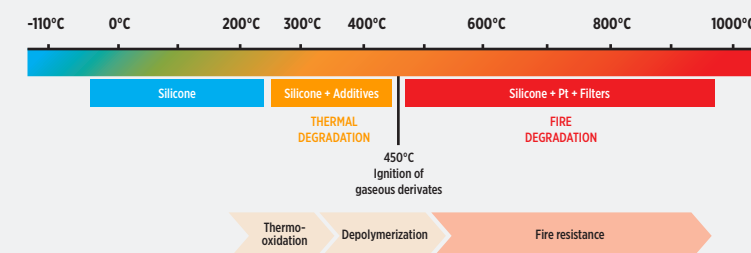
## Self-extinguishing and low-toxicity silicones: Siloheat® FR 800 serie & Siloheat® FRL 877

### Main applications:

- Watertight seals for doors and windows, ducts, cables etc
- Profiles and tubes used in construction and manufacturing of components
- Insulation of high-voltage conductors



### HEAT STABILITY & FIRE-RESISTANT MECHANISMS



During the burning of silicone rubbers, some volatile and cyclic molecules are produced with self-ignition near 450°C and are transformed into inert silica, H<sub>2</sub>O, SiC and CO<sub>2</sub>. By consequence, low smokes emissions are nontoxic, noncorrosive and halogen free. This behavior allows a safe and quick evacuation of people during the event of fire.