

SAFETY HANDRAIL



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SPECIFICATIONS

THE SAFETY HANDRAIL HAS THE FOLLOWING SPECIFICATIONS:

- The safety handrail is made of glass fibre reinforced polyethylene, is non-flammable and has a diameter of approximately 50mm.
- The LED modules have a length of 1.2 metres.
- By default, the LED modules are equipped with 15 white LEDs, which allows achieving a maximum value of 100 lux on the walkway.
- The LED modules can be expanded with more LEDs and/or green LEDs to facilitate escape route guidance.
- The brightness of the LED modules can be programmed.
- Sections up to 60 metres are powered from the power supply cabinet.
- The handrail is available in various colours.

SAFETY HANDRAIL

The SPIE safety handrail with incorporated LED technology features a number of special and distinctive characteristics.

The chosen construction is a modular system and was designed especially for use in tunnels, in particular, metro, light rail and railway tunnels. The specific requirements in place in railway tunnels were the basis for the designs of the mechanical and electrical constructions. In addition to product safety, sustainability and the energy consumption of the continuous light-emitting LED modules played an important role.

The generation of LEDs used achieve a more than acceptable performance level, so it requires very little energy to reach the desired minimum light level on the flight path.

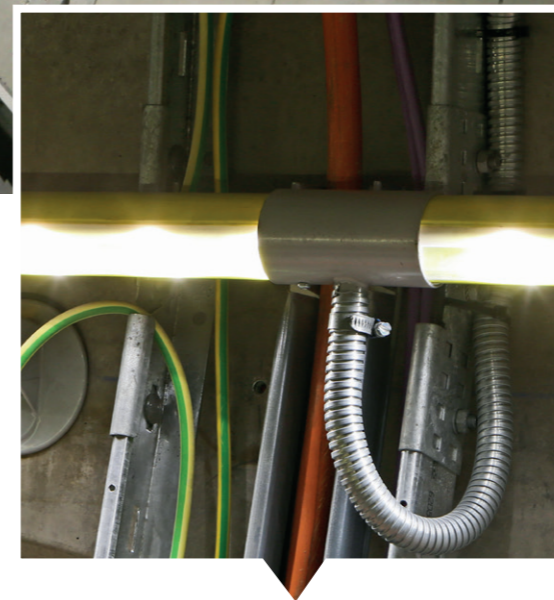


PROFILE OF THE HANDRAIL

The handrail is made of very solid and sturdy GRP profiles with a length of 6 metres, specially designed for this particular application. The halogen-free glass reinforced plastic (GRP) is thermosetting and retains its original shape. Even when exposed to extremely high temperatures, the profile is flame extinguishing rather than flame retardant. The impact resistance, tensile strength, flexural strength and dimensional stability of this profile are exceptionally high under all conditions.

The profile has a cavity running over the entire length to allow the fitting of the 1.2 m long LED modules as well as the entire length of cabling to which the LED modules are connected in a unique, patented manner. Together with the LED modules, the complete GRP profile forms a practical round handrail with a diameter of approximately 49 mm.

During operation, each individual LED module can be removed without interrupting the functionality of the system. So even in the event of one LED module failing, the others will continue to work.



THE LED MODULES

The individual LED modules comprise a closed sturdy, thick-walled polycarbonate housing fitted onto a profiled aluminium LED carrier. This carrier ensures a good heat balance for the LEDs in the LED modules. The choice of material for the polycarbonate housing is tailored to the fire safety requirements in rail and road tunnels (specific requirements with respect to fire-extinguishing properties). The use of this material also guarantees the impact resistance at low temperatures.

The positioning of the LEDs ensures that the fleeing passengers will not be blinded during their escape. A small portion of the co-extruded cover ensures that train drivers are not blinded by the LED lights. Due to the downward angle of the bright lights, the escape route is well-lit at all times. If the version with extra green LEDs is chosen, the upward shining green light will also be directed downward by this diffusion screen. The remaining part of the polycarbonate profile is clear transparent and ensures maximum light output.



ELECTRICAL SAFETY / EARTHING

The safety handrail is electrically non-conductive and therefore requires no earthing. This effectively excludes all risks of electrical shock due to electric currents running through the handrail, which thus remains a safe grip for passengers being evacuated during an emergency. This applies to the risk of short circuits within the system as well as to risks resulting from stray currents or other electrical currents from outside the system, either inductively or by metallic connection to other current-carrying systems within the tunnel, which may occur during emergencies.

Contrary to metal handrails, the electrically non-conductive handrail will therefore have no adverse effect on potential differences and/or cathodic processes within the tunnel structure.