

PyroBubbles®

PyroBubbles® is a fire extinguishing agent tested by MPA Dresden GmbH, it complies with DIN EN 3 for European fire classification A (solids), B (liquids), D (metals) and F (fats and oils). The hollow glass granulate is assigned to construction material class A1. In fire prevention it is used for infilling or as fire safety panels. The product is lightweight, main component is silicon dioxide, grain sizes range between 0.5 and 5 mm.

The foamed micro hollow spheres may be used to extinct problematic fire loads like *Triethylaluminium (TEA)* and *Silanes*, which can hardly be controlled by conventional fire extinguishing agents. Even Thermite fires can be enclosed safely by PyroBubbles®. Due to its low electrical conductivity the product can be used safely in electrical systems.

Cable System Protection

In modern societies stable and reliable electricity supply is of utmost importance for people and businesses alike. Within the construction a power grid cable systems play a crucial role in order to meet supply and demand continuously and to deliver power to each household or entity. Therefore, preventive fire protection for cable systems is for the benefit of all parties involved.

At the same time preventive fire protection for cable systems needs to meet three important criteria environmental compatibility, easy retrofitting and cost effectiveness.

In August 2011 PyroBubbles® have been chosen by the German grid operator 50Hertz Transmission GmbH to meet all of the above requirements for preventive fire protection of its cable routes for power transformers: Previous laid cables have been coated with a layer of PyroBubbles® (approx. 30 mm) within the existing cable tray (retrofitting) in order to protect the cables (picture A, B). In case of a short circuit and involved high temperatures of the burning cable insulation, a larger fire is prevented due to the lack of oxygen. Hence, the damage is the cable solely and there is no entire power outage and no interruption of operations across the grid. Furthermore, PyroBubbles® protect cable systems from external impacts such as incendiary agents and fireworks etc. The Granulate forms a protective cover that resists temperatures above 1050 °C whilst maintaining the operativeness of cable systems (picture C). The high fluidity of PyroBubbles® ensures easy-to-apply retrofitting without being forced to remove existing cable systems. For example cable pits along railway tracks can be filled retroactively at ease.

The filling of hollow spaces for preventive fire protection can be applied to cable routes, cable ducts, cable cellars, cable racks and server rooms (picture D, E).



Picture A: Show Exhibit



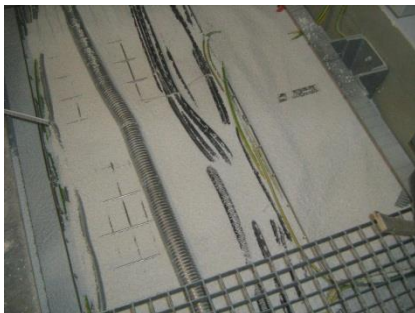
Picture B: Protected Cable Route



Picture C: External Influences



Picture D: Cable Cellar Pre Filling



Picture E: Cable Cellar After Filling



Picture F: Cable Cellar Suction

Summary

PyroBubbles® are a cost-efficient and easy-to-install preventive fire protection system for cable systems. They are extremely light, water-neutral, food-safe and can be recycled after use through ordinary recycling channels. For maintenance purposes our product can be absorbed (e.g. vacuum cleaner) and reused. Therefore different suction systems are available (picture F). If you wish to learn more about PyroBubbles® kindly do not hesitate to contact us.

References for Cable System Protection

- Albro Versorgungstechnik GmbH, Germany (cable shafts)
- 50Hertz Transmission GmbH, Germany (cable cellar and cable routes)
 - Stadtwerke Güstrow, Germany (installation ducts)
 - Ritz-Carlton, Berlin, Germany (cable cellar)