Fire rated coaxial cables from SSB

SSB-Electronic GmbH introduce its fire rated coaxial cables for public buildings, railway and shipbuilding with increased fire protection requirements

Statista.com has reported that around 300 deaths each year in Germany are the result of smoke, fire and flames. According to the Central Association of the Electrical Engineering and Electronics Industry Germany (ZVEI-Zentralverband Elektrotechnik- und Elektronikindustrie e.V.), the cause of death in 95 per cent of the fire cases in buildings is not the direct exposure to flames, but rather smoke inhalation.

Fire safety in buildings is becoming more and more important, not least due to numerous legal requirements in the area of fire protection. SSB-Electronic GmbH has developed special coaxial cables that are approved and certified for installations in buildings with high fire protection requirements. These coaxial cables reduce the spread of flames and the heat release in buildings, considerably limiting the emission of smoke and acid gases, as well as burning particles during the fire.

Since 1 July 2017, all cables that are permanently installed in buildings are subject to the European Construction Products Regulation (CPR). This regulation defines uniform rules for the use of construction products inside buildings and is implemented in all EU member states through the EN 50575 standard. Cables as construction products are assigned to specific fire performance classes based on their reaction to fire. The classification is based on flame spread and heat release, additional criteria include smoke emission, acidity of gases and flaming droplets.

Each fire class has special quality control requirements following the corresonding system of Assessment and Verification of

Constancy of Performance (AVCP). The CPR thus creates a uniform system for the classification, evaluation and certification of construction products for all EU countries. The purpose of the CPR is to increase the fire safety in buildings.

The use of certified cables will extend the time available for evacuation and rescue in case of fire. SSB-Electronic GmbH offers flexible and low-loss coaxial cables in different CPR classes, which can be installed in various building types or areas according to the specific fire protection requirements.

Coaxial cables with CPR rating Cca for buildings with high fire safety requirements

The coaxial cables of the Ecoflex Plus Heatex and Aircell Heatex product series meet the strict criteria of the Euroclass "Cca" and are suitable for the use in public buildings with high fire safety requirements. The products with the brand names Ecoflex and Aircell with Heatex jacket are flame retardant and have only low flame propagation. Due to this low smoke cable jacket the escape routes remain visible in case of fire.

Fig. 1

Fire rated coaxial cables of SSB-Electronic	Outer diameter	Max. frequency	Attenuation @1GHz (at 20°C)	Max. power handling @1GHz (at 40°C)
Aircell 7 Heatex	5,0 mm	10 GHz	29,54 dB	178 W
Aircell 7 Heatex	7,3 mm	6 GHz	20,44 dB	191 W
Ecoflex 10 Plus Heatex	10,2 mm	8 GHz	13,49 dB	285 W
Ecoflex 15 Plus Heatex	14,6 mm	8 GHz	9,80 dB	446 W

These Heatex coaxial cables are also free of halogen and contain no reactive elements such as fluorine, chlorine and bromine. They have low acidity of gases and thus minimise the subsequent damages caused by fire. The Euroclass "Cca" ensures that the cables meet all important classification criteria regarding flame spread, heat release, emission of smoke and acid gases as well as burning droplets and comply with all relevant standards. In detail, the coaxial cables of the new series meet the following standards and guidelines:

- Jacket material according to DIN EN 50290-2-27 (HD 624.7)
- Flame retardant according to IEC 60332-1-2
- Corrosivity of fumes according to IEC 60754-2
- Smoke density according to IEC 61034
- RoHS compliant (Directive 2011/65/EC & 2015/863/EU RoHS 3)
- Low Smoke Zero Halogen (LSZH)
- UV-resistant

The coaxial cables of the Ecoflex Plus Heatex and Aircell Heatex series are verified by special cable test procedures related to their fire protection class Cca in order to meet the strict requirements of the highest system of conformity assessment (AVCP system 1+). For this reason, they are particularly suitable for installations in public buildings and highly populated facilities and areas, for example in schools, hotels, large stores, office and tower buildings, as well as in poorly ventilated areas such as underground car parks.

The Ecoflex Plus Heatex cables are available with 10mm or 15mm outer diameter, the Aircell Heatex cables with 5mm or 7mm outer diameter. Fig. 1 provides the key characteristics of Heatex coaxial cables.

Fig. 2 provides an overview of the fire ratings of the coaxial cables of SSB-Electronic GmbH and their recommended application areas according to the fire safety requirements in a building.

Flame retardant cables also for railway applications

The Ecoflex Plus Heatex coaxial cables are manufactured in accordance with the DIN EN 45545-2 Table 5 standard and are therefore also suitable for use in rail vehicles. Table 5 of this standard specifies the required tests and measures for the materials and components used in rail vehicles. Depending on the hazard level (HL), which results from the operation category and design category of the rail vehicle, corresponding requirements for flammability, density and toxicity of fumes of the materials and components used are derived and summarised in requirement

Coaxial Cable	Euroclass according to EN 50575	Building Fire Safety Requirements	Application Area	Classification Criteria	AVCP System (Assessment and Verification of Constancy of Performance)
Aircell 5 Aircell 7 Ecoflex 10 Ecoflex 10 PLUS Ecoflex 15 Ecoflex 15 PLUS Aircom Premium Ecoflex Multicore	Eca	low	Cables for standard applications: in buildings with low height or low volume of occupants, in appartments	Flame propagation EN 60332-1-2 H ≤ 425 mm	System 3: Initial type-testing by third-party notified testing laboratory Factory production control (FCB) by manufacturer
Ecoflex 10 PLUS Heatex	Cca s1 d0 a1	high	Cables for areas with increased fire risk: in tower buildings, facilities, administration & office buildings, commercial buildings, restaurants, hotels, underground parking, schools, prisons, leisure facilities, etc.	Flame propagation EN 60332-1-2 H ≤ 425 mm Heat release, vertical flame spread EN 50399 FS ≤ 2,0 m THR ≤ 30 MJ max. HRR ≤ 60 kW FIGRA ≤ 300 W/s Flammenquelle = 20,5 kW Smoke production EN 50399/EN 61034-2 s1, s1a, s1b, s2, s3 Acidity/Corrosivity EN 60754-2 a1, a2, a3 Flaming droplets EN 50399 d0, d1, d2	System 1+: Initial type-testing by third-party notified product certification body Continuous factory inspection by third-party notified product certification body Continuous audit testing of samples by third-party notified product certification body Factory production control (FCB) by manufacturer
Ecoflex 15 PLUS Heatex	Cca s2 d2 a1				
Aircell 5 Heatex Aircell 7 Heatex	Cca s1 d0 a1				

Fig. 2

sets. According to the DIN EN 45545-2 table 5, the Ecoflex Plus Heatex coaxial cables meet the fire protection requirements of the requirement set R15 for cables and wires for interior applications (component number EL1A) and are suitable for the use in rail vehicles with the second highest hazard level HL 2.

In addition to the Heatex products, SSB-Electronic offers other flame retardant and free of halogen coaxial cables that can be used in case of low fire safety requirements - the well-known cable brands Aircell, Ecoflex and Aircom Premium with an FRNC jacket with outer diameters ranging from 5mm to 15mm. These FRNC coaxial cables have the approval for the minimum fire protection class and meet basic fire protection requirements (flame retardant and free of halogen). They are therefore suitable for installations in the industrial and private construction sector, if the compliance with a higher fire protection class is not required.

As well as this, SSB-Electronic GmbH continues to offer the coaxial cables of the SeaTex series for marine and offshore applications. Due to their special weather-resistant SHF2 cable jacket and worldwide shipbuilding approval (DNV GL certificate) SeaTex coaxial cables are intended for use in

harsh environmental conditions.

The declarations of performance of the certified Heatex coaxial cables can be found on the website of SSB-Electronic GmbH at www.ssb.de/en/cpr. Coaxial cables can be purchased directly from the mentioned website or from relevant cable dealers. Suitable coaxial connectors of all standards are also available.

Upon request, the coaxial cables can also be delivered pre-assembled, including detailed RF measurement report. The customer thus receives extremely flexible and low-loss high quality coaxial cables, which meet specific requirements of the installation area as well as all relevant requirements regarding the fire safety.