

Fire-Resistant Cables: Enhance Product Quality and Market Expansion with SS 299:2021

Do You Know the Importance of Fire-Resistant Cables?

Fire-resistant cables (FRC) are used to enable safety during fires. Typically, FRCs have a copper wire conductor and a low-smoke halogen-free outer sheath. Singapore Standard (SS) 299:2021 specifies the construction, performance and test methods of armoured and non-armoured FRCs up to and including 600/1000 V. The standard specifies the requirements for circuit integrity, flame retardancy characteristics (reducing flame spread) including having low smoke zero halogen characteristics and eliminating corrosive gases when affected by fire. This aims to protect public health and avoid possible damage to electronic equipment.

The tests in this standard are applicable to:

- cables having two or more insulated conductors;
- cables that incorporate other metallic elements such as armour, screen or circuit protective conductors; and
- cables having one insulated conductor, provided that the cable incorporates at least one other metallic element.

Global Market for Fire-Resistant Cables

The international market size of fire resistance cables was valued at \$1.8 billion in 2020. This is projected to reach \$2.5 billion by 2030, with a compounded annual growth rate of 3.5% from 2021 to 2030.

There are several types of FRCs in the market, ranging from Cross Linked Polyethylene (XLPE)-insulated FRCs to Steel Wired Armoured (SWA) FRCs, and flexible FRCs. Each type of FRC has different properties and benefits, and is designed for specific applications, such as high temperature environments or areas where flammable liquids are present, among others.

About SS 299:2021

SS 299:2021 Fire-Resistant Cables of Rated Voltage up to and Including 600/1000 V for Fixed Installations, Having Low Emission of Smoke and Corrosive Gases When Affected by Fire – Requirements and Test Methods is a revision of SS 299: Part 1: 1998 (2013).

As the national standards body, Enterprise Singapore administers the Singapore Standardisation Programme. The standard was developed by the Working Group on electric cables under the purview of the Electrical and Electronic Standards Committee (EESC). The Working Group comprises experts from government agencies, associations, testing laboratories and cable manufacturers.

The standard is essential as it ensures the robustness of fire-resistant cables in order for power supply to be sustained in the event of a fire, so that life-saving electrical installations such as fire alarms, smoke detectors, public address (PA) systems and emergency lighting can function. Besides helping to specify the quality requirements of FRCs, the Singapore Standard also sets out its safety characteristics. This in turn fosters consistency and transparency in the FRC market, while driving greater adoption across global markets.

Benefits of Adopting SS 299:2021

As of early 2023, more than 60 organisations in Singapore have adopted SS 299:2021. These organisations include cable manufacturers and distributors, and Testing, Inspection and Certification (TIC) bodies. Other users of SS 299:2021 include professional engineers, licensed electrical workers (LEWs), consultants and contractors. The implementation of the standard has allowed cable manufacturers and distributors to glean several benefits such as enhancing their competitive advantage, enabling compliance and facilitating regional expansion.



Enhancing Quality, Trust and Competitive Advantage

The revised SS 299:2021 provides the customers of cable manufacturers such as Tai Sin Electric, Sigma Cable and Keystone Cable with greater assurance of their products' quality, while ensuring the manufacture of high-quality products across the industry. In addition, Mr Yap Kong Fui, General Manager of Manufacturing at Tai Sin Electric noted, "The standard enhances the reputation of the Singapore brand, thus lending trust and credibility to our company's reputation, while offering a competitive advantage."



Enabling Compliance and Improving Innovation

In continually ensuring the high quality of their products, companies who have adopted this standard are constantly innovating to improve their manufacturing and testing methods and stay ahead of the curve. Mr Tan Wei Liang, Manager at TÜV SÜD PSB, added, "The role of testing laboratories such as TÜV SÜD PSB in the certification of FRCs assures industry compliance to the stringent test methods of SS 299:2021."



Expanding Regionally

"The growing customer trust and brand reputation from leveraging the Singapore brand and standards has paved the way for cable manufacturers and distributors like us to venture into South-East Asia in countries such as Vietnam, Indonesia and the Philippines," explained Mr Lu ChangZhi, Quality Assurance Manager at Sigma Cable.

In Summary

On the public safety front, SS 299:2021 sets the benchmark for fire-resistant cables to maintain circuit integrity if the cables come in contact with fire, thus ensuring that electricity supply, fire alarms, public address (PA) systems and emergency lighting continue to work for a specified period of time under defined conditions.

Companies such as cable manufacturers and distributors can reap economic benefits from adopting SS 299:2021. Certifying the quality and reliability of their products will enhance their reputation, which can potentially help to advance their growth in local and overseas markets.

