

## ***Fire and Gas Cable Technical References for Instrument and Fire and Gas Engineers***

Following are series of excellent technical references which provide educational design information on Fire and Gas cables. These cables are “special” in that they are designed specifically for Fire and Gas and Safety Applications.

[Low Smoke/Zero Halogen Cables](#) information from wikipedia.

[What is a Low Smoke Cable?](#) - A low smoke cable has a LSZH sheath. LSZH stands for Low Smoke Zero Halogen and refers to the compound making up the sheath of a cable - from Eland Cables.

[Flame Retardant Cables and Fire Integrity in reference to Cables - what is the difference?](#) - An explanation from Eland Cables.

[Why Use Halogen Free Cable?](#) - Halogen free or zero halogen cabling is used in many areas of the cable and wiring industry, including aircraft, rail and construction. Used to protect wiring, it is proven to limit the amount of toxic gas emitted when it comes into contact with heat - from Challenger Components.

[Fire Safety of Cables](#) - Electrical cables are a significant fire safety issue in today’s buildings and installations: If the insulating materials in cables catch fire, they can represent a significant quantity of fuel for fire, because of the sheer volume of cables in modern buildings (electrical, telephone, computer connections). If cables are not fire safe, then they highly susceptible to be the cause of fire, making overheating of wires, arcing, short circuits or electrical faults develop into flames of burning insulating material. Furthermore, cables are often the culprit in spreading fire through a building, as they cross fireproof walls, linking occupied spaces to service areas, ceiling voids and other parts of the building - from cefic.

[Cable Sheathing Materials](#) - There are currently a number of different polymeric materials that are specified for cable sheaths (jackets), and the choice of a suitable material depends on the end usage. Materials currently used are [polyvinyl chloride \(PVC\)](#), [polyethylene \(LLDPE, MDPE and HDPE\)](#), and the more specialised fire retardant, low smoke and zero halogen type materials that are now being required for internal installations -from General Cables.

[Fire Performance of Data Communication Cables](#) - The Society of the Plastics Industry, Inc. (SPI) Fluoropolymers Division, under the auspices of the Wire and Cable Subcommittee, sponsored a series of tests at the Building Research Establishment/Fire Research Station (BRE/FRS) test facility located in Bedford , England and Underwriters Laboratory (U.L.), Northbrook, IL. These tests, using “real scale” as well as intermediate scale test methods, were conducted on cables used in horizontal concealed spaces (“plenums”) above ceilings and below floors in commercial and industrial buildings. Cables tested included those used in the U.S. and Europe -thanks to the [Society of the Plastics Industry](#).

[IEEE 1242 Guide for specifying and Selecting Cable for Petrochemical Plants](#) - Donald A Voltz and Joseph H Snow - This technical paper provides an overview of IEEE 1242- 1999, Guide for Specifying and Selecting Power, Control, and Special Purpose Cable for Petroleum and Chemical Plants. This standard addresses wire and cable design, materials, testing, and installation, along with illustrations of typical constructions and application criteria. An

extensive cross-referenced list of standards and technical papers, as they apply to the wire and cable industry, is included in the appendix of the standard. This is a really excellent technical paper from Mustang Engineering.

***New 2.13*** [European Test Procedures For the Functionality of Cables Under Effects of Fire](#) -

Since the year 2000 there is a European test procedure regarding the functionality of cables in case of fire - EN 50200. This test procedure in its latest version of 2006 is leading to the fire protection classifications PH 15, PH 30, PH 60, PH 90 and PH 120. But for the practice this test procedure is insufficient. The European standard EN 50200 is applied for cables with a diameter of up to 20 millimetre. For larger cable diameters a similar test procedure had been developed in parallel to the EN 50200. This procedure is called EN 50362:2003 - from Dätwyler Cables.

[Fire Safety Cables](#) from Graham Small, Sales Manager, Dätwyler (UK) Limited - Cabling is a real minefield for jargon; not least of which in relation to the properties of cables in a fire. Users and specifiers should be aware of the correct terminology particularly in specifying cables with low smoke emission, reduced fire propagation and minimal toxicity.