



# LAPP GROUP

## Halogen Free Cables for Building Services

With the increased demand for safety in public areas and buildings, contractors are now being advised to install materials that are non-hazardous to members of the public in case of fire. It is now understood that smoke and poisonous fumes can be a greater risk to lives than that of fire alone. The biggest issue is the full understanding of what is a true low smoke halogen free cable? To be assured you are buying a cable that will offer security during fire, it must pass 3 tests pertaining to halogen content, low smoke density and flame propagation. Lapp's range of low smoke halogen free products are stringently tested to IEC and VDE standards to ensure peace of mind when installing these cables where human life or valuable property are exposed to a high risk of fire hazards.



### ÖLFLEX® 130H/135CH

LAPP KABEL STUTTGART ÖLFLEX® CLASSIC 130 H IEC 60332.3 HALOGENFREE RoHS CE

**ÖLFLEX CLASSIC 130 H** are halogen free, flame retardant control cables for use in both fixed and flexible installations. Typical applications include public facilities, airports, railway stations, air conditioning systems, industrial machinery, plant engineering and all other areas where there is a risk of fire.

LAPP KABEL STUTTGART ÖLFLEX® CLASSIC 135 CH  
IEC 60332.3 HALOGENFREE RoHS CE

**ÖLFLEX® CLASSIC 135 CH** are halogen free, flame retardant, screened control cables for use in both fixed and flexible installations. This screened version is recommended when ever electrical interference distorts signal transmission, or when EMI (electromagnetic interference) emissions need to be suppressed.

## HALOGEN FREE vs LSF

There remains confusion in the UK market between the difference between LSF (Low Smoke and Fume) and Halogen Free LSF cables, in the case of data, signal and control cables, are made from a modified version of PVC and can still give off large amounts of black smoke and hydrogen chloride gas when burned. Halogen Free cables are those that, when exposed to fire, emit no more than 0.5% hydrogen chloride. They are not the same as LSF cables.

### Common Terminology

<b>LSOH</b>	Low Smoke Zero Halogen Conform to low smoke propagation & smoke density, as well as Halogen Free standards
<b>LSHF</b>	Low Smoke Halogen Free Conform to low smoke propagation & smoke density, as well as Halogen Free standards
<b>HF</b>	Halogen Free Conforms to Halogen Free Standards
<b>ZH</b>	Zero Halogen



## What specifications are important in Halogen Free Cables?

All halogen free cables manufactured by the Lappgroup, are in accordance with the IEC standards (International Electrotechnical Commission). The toxicity of smoke is of highest concern within enclosed spaces where means of escape by persons are limited ; examples include mass transit rail cars, ships, and Offshore Oil and Gas platforms. There have been several tragic fires that have occurred involving transit vehicles over recent years that have brought heightened concern to this issue.

### 1. Fire Safety - Smoke Toxicity and Flame Propagation

- **IEC60332-1:** applies to single wires (cables) and requires a vertical flame test with a maximum flame climb of 450mm.
- **IEC60332-2:** applies to very thick copper conductors and is not relevant to audio, video, data and low level control cables.
- **IEC60332-3:** applies to “bunched” wires (cables). This part of the specification is intended to apply to large cable bundles.

### 2. Fire Damage Prevention – Severe corrosive effects of halogenated smoke

Smoke damage to electronic equipment can be significantly more extensive than the fire itself. Cable fires are of special concern, which is why it is critical to use Halogen free products around areas where electronics are present. Areas of particular concern include communications and data centres, phone switching stations with large amounts of expensive electronics, As a case in point the fire called "the worst disaster in telecommunications history" occurred on May 8th 1988 in a Hinsdale, IL Central Office facility for Illinois Bell. The fire cut local service to 35,000 suburban Chicago phone customers and was estimated to have cost many millions of dollars in recovery cost. In the after effects of the fire the central processor of the phone switch, which was not directly involved in the fire, had to be replaced due to the effects of acid corrosion.



However - for a cable to be described as “Low Smoke and Halogen Free” (the term expected to be used in future specifications) it must additionally meet the requirements of:

- **IEC 60754-1:** The amount of Halogen Acid Gas
- **IEC 60754-2:** Corrosiveness of combustion gas (degree of acidity)
- **IEC 61034:** Low Smoke Density

### 3. Higher Application temperatures

Beyond fire safety performance, a driver in choosing an alternative to a PVC product in cable management applications can be environmental temperature. This driver is not directly related to the alternative material being halogen-free, but rather related to the maximum continuous use temperature of the product. Environmental temperature can become an issue for a cable in applications such as outdoor utility enclosures, where the ambient temperature can rise above the continuous use temperature of most general purpose PVC products.

### Main Drivers for Halogen Free Products

#### 1. Fire Safety

- Smoke Toxicity/Smoke Propagation

#### 2. Fire Damage Prevention

- Prevent severe corrosive effects to electronics

#### 3. Higher Application Temperatures

- PVC Cables are not suitable





## POWER & CONTROL CABLES

### ÖLFLEX 130H/135CH

For Standard Power & Control Applications



### ÖLFLEX 110H/CH

Highly Oil Resistant cables with increased Mechanical Protection



### ÖLFLEX 130H/135CH BLACK (0.6/1Kv)

UV Resistant Cables for outdoor installations



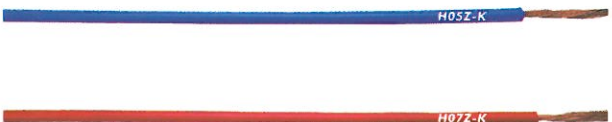
### ÖLFLEX® FD 820H/820CH

Highly Flexible Cables for Robotic Applications



### H05Z-K/H07Z-K

Harmonised single core cables for control systems



## SIGNAL & DATA CABLES

### UNITRONIC LiHH/LiHCH/LiHCH (TP)

For Control and Data Transmissions



### UNITRONIC FD CP (TP)

Highly Flexible Cables for Robotic Applications



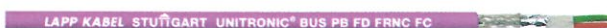
### UNITRONIC BUS HFFR L2/FIP

Profibus Applications



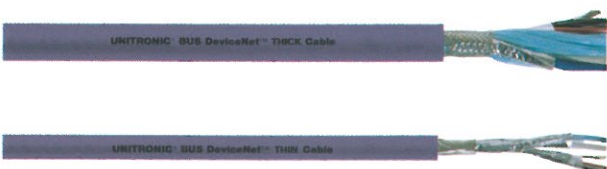
### UNITRONIC BUS PB FD FRNC FC

Highly Flexible Profibus Cables for Robotic Applications



### UNITRONIC DeviceNet Thick + Thin

Fieldbus Applications





## LAPP PRODUCT COMPARISON

	ÖLFLEX 110H	ÖLFLEX 130H	ÖLFLEX FD 855	HO5Z-K HO7Z-K	UNITRONIC LiHH	UNITRONIC FD CP TP	UNITRONIC BUS FRNC
HALOGEN FREE	✓	✓	✓	✓	✓	✓	✓
Oil Resistant	✓	X	✓	X	X	✓	X
Temperature Fixed Range	-40 °C +80 °C	-40 °C +70 °C	-50 °C +80 °C	-15 °C +90 °C	-30 °C +80 °C	-40 °C +70 °C	-30 °C +80 °C
Temperature Range Flexible	-30 °C +70 °C	-15 °C +70 °C	-40 °C +80 °C	N/A	-5 °C +70 °C	-5 °C +70 °C	N/A
Flame Resistance IEC 60332.1	✓	✓	✓	✓	✓	✓	X
Flame Resistance IEC 60332.3	✓	✓	X	X	X	X	✓
Minimum Bend Radius Fixed	x4 OD	x4 OD	x4 OD	x4 OD	x6.5 OD	x7 OD	80mm
Minimum Bend Radius Flexible	x10 OD	x15 OD	x7.5 OD	x2 OD	x15 OD	x7.5 OD	80mm
Hydrolysis Resistant	✓	✓	✓	✓	✓	✓	✓

## LAPP GROUP HALOGEN FREE GLANDS

### SKINTOP® Cable Glands – ST- HF-M

The **SKINTOP® ST-HF-M / STR-HF-M** are metric cable glands produced using a special flame retardant and halogen free compound. These glands are designed for universal use such as public buildings, underground tunnels, aeration systems and industrial installations, in essence any application where public safety is at risk by fire.



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