

A close-up photograph of a red cable with a white insulation layer and a bundle of metal strands protruding from the end. The cable is set against a yellow background with a large white outline of a cable cross-section.

# HFFR **CROSSLINKABLE** FOR CABLES

HFX - Halogen free flame retardant compounds crosslinkable with addition of specific catalyst (Sioplas method) or with e-beam technology in order to achieve better mechanical properties and higher heat resistance.

# HFFR CROSSLINKABLE FOR CABLES

| Grade             | Description                                     | Classification           |                     |            |  | Density<br>ISO 1183<br>g/cm <sup>3</sup> | Hardness<br>ISO 868<br>Shore D | Tensile<br>Strength**<br>ISO 527<br>N/mm <sup>2</sup> | Elongation<br>at Break**<br>ISO 527<br>% | Oxygen<br>Index<br>ISO 4589<br>% | MFI<br>(150°C/21,6Kg.)<br>ISO 1133<br>g/10' |
|-------------------|---|--------------------------|---------------------|------------|--|--|--------------------------------|---|--|----------------------------------|---|
|                   |   | EN<br>50363              | VDE<br>0207<br>0266 | BS<br>7211 | Others   |  |                                |   |  |                                  |   |
| <b>HFX 500S</b>   | Standard sheathing                              | M2-M18                   | HJ1<br>HX11         |            | EN 50618   | 1,47                                     | 45                             | ≥ 14  | ≥ 200                                    | 31                               | 3   |
| <b>HFX 500P</b>   | Sheathing and insulation                        | M2-M18                   | HJ1<br>HX11         | EI5        | EN 50618<br>SHEATING                                       | 1,49                                     | 46                             | ≥ 12  | ≥ 180                                    | 35                               | 3   |
| <b>HFX 515VHS</b> | Sheathing and insulation                        | M2-M18<br>G10-G18        | HJ1<br>HX11<br>HXM1 | EI5        | EN 50618   | 1,42                                     | 45                             | ≥ 13  | ≥ 250                                    | 33                               | 6,5   |
| <b>HFX 515BG4</b> | Sheathing and insulation                        | M2-M18<br>G10-G18        | HJ1<br>HX11<br>HXM1 | EI5        | EN 50618   | 1,44                                     | 45                             | ≥ 11  | ≥ 260                                    | 38                               | 6,5   |
| <b>HFX 519HS</b>  | Sheathing and insulation<br>Improved processing | M2-M18<br>G10-G18        | HJ1<br>HX11<br>HXM1 | EI5        | EN 50618   | 1,37                                     | 38                             | ≥ 12  | ≥ 270                                    | 30                               | 3   |
| <b>HFX 521</b>    | Sheathing and insulation<br>Oil resistant       | M2-M18<br>G10-G18<br>EM8 | HJ1<br>HX11<br>HM3  | EI5        | EN 50264-1<br>EI 101-104<br>EM101-104<br>IEC 60092<br>SHF2 | 1,46                                     | 50                             | ≥ 12  | ≥ 180                                    | 34                               | 2   |
| <b>HFX 531</b>    | Sheathing and insulation<br>Oil resistant       | M2-M18<br>G10-G18<br>EM8 | HJ1<br>HX11<br>HM3  | EI5        | EN 50264-1<br>EI 101-104<br>EM101-104<br>IEC 60092<br>SHF2 | 1,42                                     | 52                             | ≥ 12  | ≥ 180                                    | 34                               | 3   |
| <b>HFX 5003</b>   | Sheathing and insulation                        | M2-M18                   | HJ1<br>HX11<br>HXM1 | EI5        | EN 50618<br>SHEATING                                       | 1,47                                     | 48                             | ≥ 11  | ≥ 160                                    | 35                               | 3   |
| <b>HFX 900VHS</b> | Flexible insulation                             | G7-G16<br>G8<br>EI4      |                     |            |  | 1,32                                     | 34                             | ≥ 12  | ≥ 450                                    | 22                               | 11  |
| <b>HFX 9091</b>   | Insulation                                      | G7-G16                   |                     |            |  | 1,32                                     | 44                             | ≥ 10  | ≥ 500                                    | 22                               | 13  |
| <b>HFX 529</b>    | Flexible insulation                             | G7-G16<br>G10-G18        | HJ1<br>HX11<br>HXM1 | EI5        |  | 1,40                                     | 44                             | ≥ 11  | ≥ 280                                    | 31                               | 6,5   |
| <b>HFX 076/10</b> | Sheathing and insulation<br>Cca CLASS CPR       | G17                      |                     | EI5        | EN 50618<br>SHEATING                                       | 1,52                                     | 46                             | ≥ 10  | ≥ 140                                    | 43                               | 2,5   |
| <b>HFX 076/12</b> | Sheathing and insulation<br>Cca CLASS CPR       | G17                      |                     | EI5        | EN 50618<br>SHEATING                                       | 1,52                                     | 44                             | ≥ 10  | ≥ 140                                    | 44                               | 3   |
| <b>HFX 5438</b>   | Insulation                                      | G10-G18                  |                     |            |  | 1,55                                     | 45                             | ≥ 9   | ≥ 200                                    | 35                               | 2,5   |

## Catalysts

|            |  |                |  |
|------------|--|----------------|--|
| CAT 115/1  | High reactive catalyst 2-3%                                | CAT 125HCT     | Med. reactivity catalyst 4-5%  |
| CAT119LS   | Low reactive catalyst 4-5%                                 | CAT 033/UV     | Catalyst for extreme ageing tests 6-7% (solar application)                       |
| CAT121LS   | Med. reactivity catalyst 4-5%                              | CAT 1273/UV    | Catalyst for extreme ageing tests 6-7% (solar application)                       |
| CAT 113/UV | Catalyst for extreme ageing tests 6-7% (solar application) | CAT 1275 LS/UV | Catalyst for extreme ageing tests 6-7% (solar application) medium low reactivity |
| CAT 123 HS | medium low reactivity                                      |                |  |

Notes: All catalysts can be additivated with UV stabilizers for outdoor applications

## Processing

The compound must be blended before extrusion with an exact amount of catalyst. Processing of silane grafted compounds with the catalyst is a reactive extrusion, the faster the material is extruded the better the results will be. Time at high temperature should be kept to a minimum to avoid processing issues such as pre-scorch. Processing is made within a range of 120°C-200°C. The extrudate must be cooled down into a water bath, which provides the moisture necessary for crosslinking. The reaction is fast but diffusion of moisture in the material is a limiting factor. For this reason a hot water bath or a low pressure sauna can be used to speed up crosslinking process after extrusion. Generally speaking curing time depends from wall thickness, for example 1 mm wall thickness may crosslink in 4-6 hours in extreme moisture conditions. In case of self curing, time depends on the specific ambient temperature and humidity in which the cable is stored after extrusion.

\*\* These properties are measured on crosslinked specimens

## Storage

All compounds must be stored at ambient temperature (not exceeding 30°C) in closed and unbroken moisture resistant bags, in order to avoid exposure to sunlight and water absorption. Long stocking time may negatively affect the quality of the material. Therefore they shall be used within 6 months from the compounding date and within a few hours if the bags are opened.

## Notes

This is a range of polyolefin based HFFR compounds, crosslinkable by heat and moisture and by addition of a suitable catalyst before extrusion (SIOPLAS method). This solution is suitable for the production of crosslinked insulation or sheathing without the use of specific curing equipment (without a CCV line).

## Packaging

All compounds are available in 25Kg. Bags, big bags or Oktabins on wooden pallet