



HELUKABEL®

**CLEANROOM QUALIFICATION
FROM FRAUNHOFER IPA**



CLEANFLEX

Cleanroom Approved, Data & Control Drag Chain Cables

CLEANFLEX® HF

**A clean cable
for cleanrooms**

A clean cable for a cleanroom –

In a cleanroom environment even the smallest amount of contamination can have damaging results on production. Particles, such as dust, can contaminate and negatively affect product quality or functionality so strongly that without suitable measures in place an inefficient production process can be expected, characterized by high scrap rates and quality losses. To prevent such issues from occurring, HELUKABEL® offers the appropriate cables for cleanroom manufacturing environments. The CLEANFLEX® cable series

is built to maintain the highest levels of cleanliness in order to provide customers with cables that will consistently perform under such tight manufacturing conditions.

CLEANFLEX® HF Data and Control Cables are certified by Fraunhofer IPA, guaranteeing optimum quality for use in cleanrooms. The advantage of the CLEANFLEX® product series is their ability to be used in cable track applications.

CLEANFLEX® HF Power Cable



- Core identification: black numbered cores + green/yellow
- Cores cabled in torsion-free layers with optimal lay-length

CLEANFLEX®-HF-C Power Cable



- Core identification: black numbered cores + green/yellow
- Cores cabled in torsion-free layers with optimal lay-length
- Screened with tinned copper wire braiding, incl. tinned copper drain wire

CLEANFLEX®-HF Data Cable



- Cores colour coded according to DIN 47100
- Cores cabled in torsion-free layers with optimal lay-length

CLEANFLEX®-HF-TP-C Data Cable



- Cores colour coded according to DIN 47100
- Cores cabled into pairs
- Pairs stranded in torsion-free layers with optimal lay-length
- Screened with tinned copper wire braiding, incl. tinned copper drain wire



Technical Data

- **Temperature range**
flexing: -20°C up to +80°C
fixed: -40°C up to +80°C
- **Nominal voltage**
 U_0/U 300/500 V
- **Insulation resistance**
min. 100 MΩ x km
- **Minimum bending radius**
flexing: 7,5 x cable-Ø
fixed: 4 x cable-Ø
- **Radiation resistance**
up to 100x10⁶ cJ/kg (up to 100 Mrad)

Approbation

- UL-Style 20233
- CSA AWM I/II A/B

Cleanroom qualification

- IPA

Cable structure

- Bare copper, extra fine wire stranded to DIN VDE 0295 cl. 6, column 5 and IEC 60228 cl. 6, column 5
- Core insulation TPE
- Outer sheath full polyurethane TPU according to DIN VDE 0281 part 10, annex A and according to UL standard 1581 Tab. 50227 80°C
- Colour of outer sheath: black, RAL 9004, dull

Properties

- Flame retardant
- Oil resistant
- IEC 60092-350
- Halogen free
- Weather, ozone and UV resistant
- Chemical resistance to solvents, acids, alkalis and hydraulic fluids
- Low adhesion

Dimensions and specifications may be changed without prior notice.

A Fraunhofer Tested Device - it has been tested!

Fraunhofer approval is an internationally recognized certification for products that have been objectively qualified in accordance with recognized standards and guidelines in terms of their cleanroom compatibility. In an extensive testing process, CLEANFLEX® cables passed the following tests:

- Emission measurements (particles)
- Outgassing

All the tests were carried out at the Fraunhofer IPA test center for semiconductor products. The measurements were made under cleanroom conditions. Pure air was introduced into the room in a vertical laminar flow through the ceiling. The temperature was maintained at a constant 22°C ($\pm 0.5^\circ\text{C}$) with a relative humidity of 45% ($\pm 5\%$).



Testing HELUKABEL® CLEANFLEX® cables under cleanroom conditions

Want to know more?

Download the CLEANFLEX® HF data sheets at www.helukabel.de/cleanflex-hf





NANOFLEX® - clean cables and wires thanks to the Lotus Effect

Permanently clean cable Cables and wires with the Lotus Effect

Using our innovative nanotechnology process we are improving all our cables for you - even retrospectively with the cables already in our extensive standard program. This surface finishing process uses an antimicrobial effect to create an easy-to-clean surface on our cables and wires, making them suitable for use in the medical, food and beverage industries. Even if your cable is contaminated with oil, paint, grease or mud, it can be easily cleaned by simply using water.

Properties

- ✓ Easy cleaning
- ✓ No aggressive cleaning agents required
- ✓ Suitable for use with high pressure and steam cleaners
- ✓ Food safe
- ✓ Very good non-stick properties
- ✓ Antimicrobial effect

Nanotechnology

Today, nanotechnology refers to the research areas of chemistry, which includes cluster physics, surface physics, surface chemistry and semiconductor physics. The common term for these various areas of nano-research comes from the fact that they are concerned with the same order of magnitude, from individual atoms to a structure size of 100 nanometres (nm). A nanometre is one billionth of a metre.

The Lotus Effect

Many applications of nanotechnology focus on problems of everyday life. An example is the Lotus Effect, adapted from nature, which makes it possible for surfaces to be self-cleaning.

Fax reply to: 07150 9209-5501

What can we do for you?

- Cable Catalogue
- Cable Accessories Catalogue
- Data, Network & Bus Technology Catalogue
- Media Technology Catalogue
- Wind Power Catalogue
- Photovoltaic Brochure
- Call back
- Field visit

Want to order catalogues online?

Simply go to www.helukabel.de/publication-order



Company

First name, surname

Customer number (if applicable)

Street, No.

Zip, City

Telephone / Fax

E-mail

Your message

Yes, please include me in the mailing list for the HELUKABEL® e-mail newsletter.
(please check)