

MANUFACTURING OVERVIEW

OUR SOLUTION: YOUR CABLE.



THE COMPANY

MUCKENHAUPT & NUSSELT focuses on the development and production of cables since its foundation in the year 1926.

We are a specialized cable manufacturer with around 100 employees, working as a development partner for our customers to create tailor-made solutions and consistently implement innovations in practice. This applies to both the materials used and the functions of the cable.

In every project, our work begins by precisely determining the requirements of the customers and their individual applications. Based on this foundation, we can select or develop cables that make no compromises in terms of functionality, quality, and lifespan.

Our solution: your cable.



„Innovation has been ingrained in our region since the 19th century. We carry on this spirit through constant modernization and further development.“

Christian Muckenaupt, Managing Director

APPLICATION AREAS: HIGHLY DIVERSE

Our cables are used in a wide range of applications and across various industries. Whether it's for enduring flexibility, exceptional wear resistance, industry-specific certifications, or custom combinations of data and power lines, we develop and manufacture precisely the cables you need. For example, in the following industries:

- Agricultural Engineering / Forestry
- Elevator / Conveyor Technology
- Automation
- Renewable Energy
- Crane / Lifting Technology
- Robotics
- Event Technology
- Special Applications

PRODUCTION: FLEXIBLE AND FAST

Our cable production in Wuppertal is highly flexible. A diverse range of machinery designed for short setup times enables the rapid production of custom cables and wires in the desired quantity. We manufacture for you both sample quantities (even less than 500 meters) and large orders with short delivery times.

QUALITY AND SUSTAINABILITY

MUCKENHAUPT & NUSSELT operates efficiently and ensures high product quality. In our in-house laboratory and testing field, the cables are tested for the required stress levels.

In addition to maintaining quality in all processes, we prioritize environmentally friendly production, as evidenced by certifications according to DIN EN ISO 9001 and DIN EN ISO 14001.

MUNFLEX® – THIS BRAND REPRESENTS HIGH-QUALITY CABLES

In many projects, we can rely on our long-standing development expertise, drawing from experience with over 50,000 constructions. The cables of our in-house brand are available in numerous variants, including control and data cables, as well as special cables (MUNFLEX®-Special).



MATERIAL

ISOLATION

- **PVC (polyvinyl chloride)**
transparent, abrasion-resistant, oil-resistant, flexible at low temperatures, heat-resistant, various shore hardnesses
- **PE (polyethylene)**
various shore hardnesses and cross-linked if necessary
- **PP (polypropylene)**
various Shore hardnesses
- **TPE-E, PBT (polyester)**
copper-stabilised, various shore hardnesses
- **TPU (polyurethane)**
glossy, low adhesion, flame retardant, halogen free, abrasion resistant, oil resistant, UV resistant, various shore hardnesses
- **TPE-S (styrene block copolymer)**
- **TPE-R (TPV) (thermoplastic rubber)**
heat-resistant, abrasion-resistant, UV-resistant, various shore hardnesses
- **LSFOH**
low smoke, flame retardant, halogen-free, various shore hardnesses, cross-linked if necessary

SHEATH

- **PVC (polyvinyl chloride)**
transparent, abrasion-resistant, oil-resistant, flexible at low temperatures, heat-resistant, UV-resistant, weathering-resistant, various shore hardnesses
- **PE (polyethylene)**
various Shore hardnesses and cross-linked if necessary
- **TPU (polyurethane)**
glossy, low adhesion, flame retardant, halogen free, abrasion resistant, oil resistant, UV resistant, various shore hardnesses
- **TPE-E (polyester)**
copper-stabilised, various shore hardnesses
- **TPE-R (TPV) (thermoplastic rubber)**
heat-resistant, abrasion-resistant, UV-resistant, various shore hardnesses
- **LSFOH**
low smoke, flame retardant, halogen-free, various shore hardnesses, cross-linked if necessary

All extrusion materials are PFA-free, meaning they are free from per- and polyfluoroalkyl substances.

MANUFACTURING OPTIONS

FLAT CABLES

- Width up to 90 mm
- Up to 24 elements arranged in parallel (shielded and unshielded cores or core groups, support elements, tubes)
- Cores or groups of cores separated by bridges
- Surface qualities (glossy, low adhesion, partially or fully with diamond pattern)

ROUND CABLES

- Cable diameter up to 50 mm
- Layer-stranded up to 61-core pair and core group twisting >100-core
- Special designs (support elements, hoses, support braids, various according to customer requirements)

CROSS SECTIONS

- Core cross sections of 0.14 mm² up to 185 mm²
- Total cross-sections for cables up to 200 mm² (including shields)

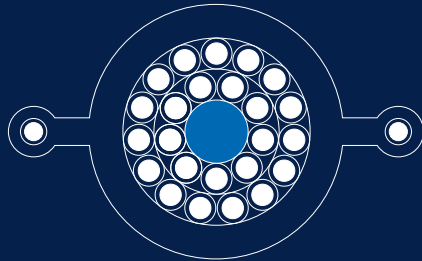


CABLE SHAPES AND TYPES

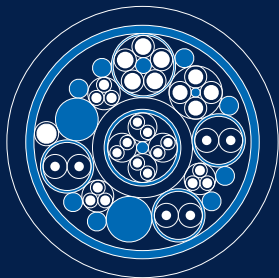
FLAT CABLE



2TY ROUND CABLE



ROUND CABLE



ALL CONFIGURATIONS

In round or flat cable designs, as well as in various special configurations. However, for customer/application-specific system cables, the variability is virtually unlimited.

CONDUCTOR DESIGNS

From coarse-stranded, finely stranded, ultra-fine stranded to highly flexible copper wires in bare, tinned, or other surface finishes, as well as from Cu-Alloy or as mixed strands with steel wires or reinforced with tear-resistant threads. The designs range from simple stranding to special cable constructions.

TAPING / SEPARATION LAYERS

Through various manufacturing processes, foil/strips made of PP, PE, Polyester, PTFE, fabric, non-woven fabric, etc., can be applied. In addition, winding with textile threads is also possible.

SUPPORTING ELEMENTS / SUPPORTING BRAIDS

Supporting elements (Aramid, natural fiber, or steel) are typically centrally positioned in round cables and laterally arranged in flat cables. Supporting braids made of Aramid, natural fibers, or special plastics provide additional strain relief and torsion protection for specific application scenarios (suspended operation or drumable application). There is also the option of integrating the supporting braid into the jacket.

OTHER COMPONENTS

The following can also be installed as components of system cables:

- tubes made of PE, PA, PUR, PTFE, FEP etc.
- coax cables
- special data cables
- optical fiber cables
- supplied cables/elements

SHIELDINGS

As individual, element or overall shielding in the form of

- foil shields (St)
- spirals (D)
- braids (C)
- mixed braids (Ct) (metal with textile threads)

made of bare copper, tin-plated or other special materials.

REINFORCEMENTS

Braidings or wrappings made of, among other things:

- galvanised steel wires
- stainless steel wires
- aramid threads
- or other materials

PRODUCT CERTIFICATION ACCORDING TO NATIONAL AND INTERNATIONAL STANDARDS

As a symbol of product safety and quality, numerous product certifications are in place for both the European and North American markets. Therefore, the manufacturing facility of MUCKENHAUPT & NUSSELT is subject to continuous monitoring by VDE, UL, and KEMA.

HAR

- H03VV-F Flexible PVC cables
- H05VV-F Flexible PVC cables
- H05VV5-F Oil-resistant PVC control cables
- H05VVC4V5-K Shielded oil-resistant PVC control cables
- H05VVH6-F PVC flat cables
- H07VVH6-F PVC flat cables
- H05V3V3H6-F PVC flat cables, resistant to cold

VDE EXPERT OPINION WITH PRODUCTION MONITORING

- VVDE reg. no. 7008:
MUNFLEX®-Y flat cable 450/750V, suitable for outdoor use, application up to -40°C.
- VDE reg. no. 7516:
MUNFLEX®2000 PVC control cables LiYY, LiYYCY, LiYYSY 300/500V with reduced dimensions.

ECOLAB® CERTIFICATION

Material resistance to aggressive cleaning and disinfecting agents. Valid for our jacket materials TPE-R (TPV) flame-resistant and TPE-R (TPV) halogen-free.

ECE R118 IN CONJUNCTION WITH ISO 6722 / ISO 14572

Resistance to flame propagation. Valid for the MUNFLEX®-Special products in the following dimensions: 7x0.75 mm², 18x0.75 mm², 2x1.5 mm², and 1x6.0 mm².

UL-758 AWM (AVLV 2/8)

CORE STYLES

PVC	80°C	300 Volt	1729
PVC	80°C	300 Volt	1007
PVC	80°C	300 Volt	10053
PVC	80°C	600 Volt	1011
PVC	90°C	1000 Volt	10012
PVC	90°C	1000 Volt	10557

TPE	80°C	300 Volt	11883
TPE	90°C	300 Volt	11884
TPE	90°C	600 Volt	11885
TPE	90°C	1000 Volt	11886

PP	80°C	300 Volt	10467
PP	80°C	1000 Volt	10492

TPU	80°C	1000 Volt	10553
TPU	80°C	1000 Volt	10587

SHEATH STYLES

PVC	80°C	300 Volt	2464
PVC	80°C	1000 Volt	2570

TPE	90°C	300 Volt	21529
TPE	90°C	300 Volt	22344
TPE	90°C	300 Volt	22345
TPE	90°C	600 Volt	21530

TPE	90°C	1000 Volt	21387
TPE	90°C	1000 Volt	22021
TPE	90°C	1000 Volt	22022

TPU	80°C	300 Volt	20911
TPU	80°C	300 Volt	20870
TPU	80°C	300 Volt	20233
TPU	80°C	1000 Volt	20234
TPU	80°C	no voltage rating	20235
TPU	80°C	no voltage rating	21897

All core/sheath material combinations are possible for cables with UL marking, whereby the temperature and voltage class of the cores must at least correspond to those of the sheath.

With this "modular system", almost all customised cable solutions with approval for the North American market are possible.

cULus

Material combinations core/sheath possible according to cULus (UL-758 and CSA 22.2):

- PVC/PVC
- PVC/TPU
- PVC/TPE
- PP/PVC
- PP/TPU
- PP/TPE
- TPE/PVC
- TPE/TPU
- TPE/TPE

CONTACT US!

Feel free to contact us:
+49 (0) 202 2605-0
info@munu-kabel.de



Your contact persons:
munu-kabel.de/kontakt

Cable factory

MUCKENHAUPT & NUSSELT

GmbH & Co. KG

Paul-Gerhardt-Str. 25

42389 Wuppertal, Germany

Telephone: +49 (0) 202 2605-0

Fax: +49 (0) 202 2605-200

www.munu-kabel.de/en

vertrieb@munu-kabel.de

