

Sustainability in the life cycle of electrical cables

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Relevant standards (related to the product, not to the factory)



- **EN 50693:2019-08**

Product category rules for life cycle assessments of electronic and electrical products and systems
(CLC/TC 111X Environment)

- **IEC 62125:2019-09:**

Environmental considerations specific to insulated electrical power and control cables
(IEC/TC 111 Environmental Standardization for electrical and electronic products and systems)

- **NWI TC20/Sec2097/CD**

Environmental declaration: Product specific rules for life cycle assessment of insulated conductors, cables and flexible cords and their accessories
(Draft from TC 20 collaboration partner Europacable)

The environmental impact shall consider all stages in the life of a cable



- Resources manufacturer has to rely on supplier information
- **Production** **completely in the hands of the manufacturer**
- Distribution acc. to EN 50693
- Installation depends on cable type and use
- **Use stage** **unknown for manufacturer**
- **End of life** **recommendations from manufacturer**

- Reference to Environmental Management System
- Avoidance of hazardous or restricted materials
- Easily separable materials/components?
- Use of recycled materials without affecting the cable safety.
For electrical insulation high-purity virgin materials are needed.
- Waste during a process reincorporated into the same process
- Packaging and technical documentation

- Cables can be used in a wide area under various conditions
- Only the user can calculate the total cable impact acc. to his use scenario
- For cables the impact is solely due to the energy loss in the conductor:
 - cable length [km]
 - conductor resistance [Ohm/km]
 - current intensity [A]
 - reference lifetime [Y]
 - use rate [%]
- Functional unit as reference with reduction of the data to 1 km, 1 Ampere for an assumed number of years and use rate as a base for the end user
- Especially for long lifetime the use stage includes the highest impact

- Deinstallation expenditure (exposed, subsea, under ground...)
- Waste processing, separation metal and plastics by shredding
Difficult to separate remaining small metals parts from plastics
- Metal components are totally recoverable
- Thermoplastic material might be remelted
Cross linked material grinded for a blend with new material
- Use of the materials for non-electrical products as cable drums, pipes or similar.
- Future technologies not known. End of life will be in 20 to > 40 years.

Environmental Product Declaration (EPD)



- For Communication of environmental impacts
- Based on Life cycle assessment acc. to ISO 14040/44 and more specific standards as EN 15804 (construction products)
- Total cable impact calculated by EPD user acc. to use scenario
- Extrapolation to homogenous product family
- ISO 14025 Environmental labels and declarations - Type III environmental declarations – Principals and procedures .
- Examples for cable EPDs can be found in the Internet.

Thank you for your attention!

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