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## Single core conductor BETAtherm 145 halogen free

BETAtherm® 145 is a flexible low-voltage cable with UL recognition consisting of a tinned copper stranded wire and insulated with coloured electron-beam crosslinked polyolefine copolymer.

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### Attributes

Due to its electron-beam cross-linked insulation BETAtherm® 145 achieves extremely high - still class B - thermal resistance. This results in excellent thermal resistance. However, it cannot even be melted at elevated temperatures and has thus to be skinned during processing. Skinning is simple and also possible at machines. BETAtherm® cables are halogen free and flame retardant.

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### Application

BETAtherm® 145 halogen free is suitable for the wiring of electric machines, lamps, heating appliances, switchboards and distributors in apparatus, machine and plant engineering. Usage is also possible at ambient temperatures above 55° C. BETAtherm® 145 halogen free is suitable for laying in pipes, surface and flush installations, as well as in closed installation channels.

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### Standards

- DIN VDE 0295, Class 5

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### Delivery forms

| Conductor cross sect. / mm <sup>2</sup> | Length / m | Make-up       |
|-----------------------------------------|------------|---------------|
| 0.25                                    | 300 m      | cardboard box |
| 0.5                                     | 200 m      | cardboard box |
| 0.75 - 4.0                              | 100 m      | cardboard box |
| 6.0 - 16.0                              | 100 m      | Ring          |
| 25.0 - 95.0                             | on request | on request    |

Other cross sections on request.

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### Conductor

Tinned copper wire VDE 0295/ IEC 60228 class 5.

The dimensions specified in the checklist are regarded as standard values. The actual cross sections may vary. The cables are manufactured according to European standards with a metric conductor cross section, AWG sizes are approximate values and vice-versa. Always observe relevant standards valid for divergent operating conditions when laying for greater limit current loads.

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### Color

Green-yellow, black, light blue, red, white and green.

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Brown, grey, violet, orange, yellow are available on request.

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| Dimension              | Unit of measure |             |             |             |             |             |             |
|------------------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Nominal cross section  | mm <sup>2</sup> | 0.25        | 0.5         | 0.75        | 1           | 1.5         | 2.5         |
| Strands x diameter     | mm              | 14 x 0.15   | 16 x 0.20   | 24 x 0.20   | 32 x 0.20   | 27 x 0.25   | 45 x 0.25   |
| Cu Litz nom. diameter  | mm              | 0.65        | 0.90        | 1.15        | 1.25        | 1.55        | 2.05        |
| Wall thickness desired | mm              | 0.45        | 0.48        | 0.53        | 0.58        | 0.70        | 0.80        |
| Wall thickness min.    | mm              | 0.35        | 0.35        | 0.35        | 0.40        | 0.53        | 0.62        |
| Outer diameter         | mm              | 1.55 ± 0.10 | 1.85 ± 0.20 | 2.20 ± 0.20 | 2.40 ± 0.20 | 2.95 ± 0.20 | 3.65 ± 0.20 |
| Thermal load           | kWh/m           | 0.009       | 0.012       | 0.017       | 0.020       | 0.030       | 0.043       |

| Dimension             | Unit of measure |           |           |           |            |            |            |
|-----------------------|-----------------|-----------|-----------|-----------|------------|------------|------------|
| Nominal cross section | mm <sup>2</sup> | 4         | 6         | 10        | 16         | 25         | 35         |
| Strands x diameter    | mm              | 52 x 0.30 | 78 x 0.30 | 74 x 0.40 | 119 x 0.40 | 181 x 0.40 | 257 x 0.40 |

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| Dimension              | Unit of measure |                   |                   |                   |                   |                   |                    |
|------------------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| Cu Litz nom. diameter  | mm              | 2.55              | 3.10              | 4.10              | 5.0               | 6.20              | 7.70               |
| Wall thickness desired | mm              | 0.80              | 0.80              | 1.00              | 1.1               | 1.20              | 1.20               |
| Wall thickness min.    | mm              | 0.62              | 0.62              | 0.80              | 0.90              | 0.98              | 0.98               |
| Outer diameter         | mm              | 4.15<br>±<br>0.20 | 4.70<br>±<br>0.20 | 6.10<br>±<br>0.40 | 7.20<br>±<br>0.40 | 8.60<br>±<br>0.40 | 10.10<br>±<br>0.40 |
| Thermal load           | kWh/m           | 0.051             | 0.060             | 0.097             | 0.127             | 0.168             | 0.225              |

| Dimension              | Unit of measure |                 |             |             |
|------------------------|-----------------|-----------------|-------------|-------------|
| Nominal cross section  | mm <sup>2</sup> | 50              | 70          | 95          |
| Strands x diameter     | mm              | 371 x 0.40      | 336 x 0.50  | 444 x 0.50  |
| Cu Litz nom. diameter  | mm              | 9.70            | 11.20       | 12.8        |
| Wall thickness desired | mm              | 1.40            | 1.40        | 1.60        |
| Wall thickness min.    | mm              | 1.16            | 1.16        | 1.34        |
| Outer diameter         | mm              | 12.50 ±<br>0.40 | 14.0 ± 0.40 | 16.0 ± 0.60 |
| Thermal load           | kWh/m           | 0.348           | 0.404       | 0.500       |

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| Mechanical          | Unit of measure   | Value |
|---------------------|-------------------|-------|
| Tensile strength    | N/mm <sup>2</sup> | ≥ 12  |
| Elongation at break | %                 | ≥ 150 |
| Stripping           |                   | good  |

| Thermal                             | Unit of measure | Value               |
|-------------------------------------|-----------------|---------------------|
| Thermal class                       |                 | B                   |
| Temperature range fixed application | °C              | -55 up to +145      |
| Temperature range active            | °C              | -35 up to +120      |
| In case of short-circuit            |                 | +280 °C max. 5 sec. |
| Soldering resistance                |                 | very good           |
| Behaviour in fire                   |                 | fire retardant      |

| Electrical                                           | Unit of measure | Value                                                  |
|------------------------------------------------------|-----------------|--------------------------------------------------------|
| Rated voltage                                        | V               | U <sub>0</sub> /U 300/500 ≤ 1 mm <sup>2</sup>          |
| Rated voltage                                        | V               | U <sub>0</sub> /U 470/750 ≥ 1.5 mm <sup>2</sup>        |
| Nominal voltage with fixed and protected application | V               | U <sub>0</sub> / U 600/1000 V ≥ 1.5 mm <sup>2</sup> AC |
| Testing voltage                                      | V               | 5000 - 50 Hz / 2 min.                                  |

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| Electrical            | Unit of measure | Value       |
|-----------------------|-----------------|-------------|
| Insulation resistance | $\Omega$        | $> 10^{15}$ |

| Chemical       | Conditions   | Value                                           | Test method         |
|----------------|--------------|-------------------------------------------------|---------------------|
| Insulation     |              | Electron-beam crosslinked polyolefine-copolymer |                     |
| Oil resistance | 72h / 100 °C | resistant                                       | EN 50264-1. IRM 902 |
| Resistance     | 168h / 70 °C | fuels                                           | EN 50264-1. IRM 903 |

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