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## Single Core Conductor BETAtherm® 155

BETAtherm® 155 is a flexible low-voltage conductor consisting of a tinned copper stranded wire insulated with coloured electron-beam cross-linked polyolefine copolymer.

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### Attributes

Due to its electron-beam cross-linked insulation, BETAtherm® 155 achieves a special thermal resistance required for Class F. This results in excellent thermal resistance. However, it cannot even be melted at elevated temperatures. Skinning is simple and also possible at machines. BETAtherm® cables are resistant to common insulating varnishes. They are flame retardant.

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### Application

BETAtherm® 155 can be used for the internal wiring of all electric machines and dry transformers, as well as in apparatus, machine and plant engineering and lighting applications. Due to the high thermal load capacity, it might be possible to reduce the conductor cross section and, therefore, save space and reduce the weight.

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### Standards

- Thermal class F (155 °C) according to IEC
- VDE 0295 / IEC 60228, class 5
- IEC 60216-2, 155 °C/5000 h
- Flame retardant EN/IEC 60332-1-2

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### Delivery forms

Format

| Conductor cross section mm <sup>2</sup> | Length in m on a ring |
|-----------------------------------------|-----------------------|
| 0.25 - 0.75                             | 200                   |
| 1.0 - 10.0                              | 100                   |
| 16.0 - 25.0                             | 50                    |
| 35.0 - 95.0                             | 25                    |

Other cross sections available on request

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### Conductor

Tinned copper wire VDE 0295/ IEC 60228 class 5.

The dimensions specified in the technical datasheet 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 viceversa.

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**Product datasheet**

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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.

Brown, grey, violet, orange and yellow 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           | 0.017       | 0.023       | 0.031       | 0.037       | 0.056       | 0.081       |

| 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              | 1.00          | 1.20              | 1.20               |
| Wall thickness min.    | mm              | 0.62              | 0.62              | 0.80              | 0.80          | 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 | 7.0 ±<br>0.40 | 8.60<br>±<br>0.40 | 10.10<br>±<br>0.40 |
| Thermal load           | kWh/m           | 0.095             | 0.111             | 0.181             | 0.213         | 0.314             | 0.420              |

| 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       | 12.80       |
| 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           | 0.649           | 0.754       | 0.933       |

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| Mechanical           | Value              |
|----------------------|--------------------|
| Bend radius          | 4 x outer diameter |
| Soldering resistance | very good          |

| Thermal                             | Unit of measure | Value          |
|-------------------------------------|-----------------|----------------|
| Thermal class                       |                 | F              |
| Temperature range fixed application | °C              | -55 up to +155 |
| Temperature range short circuit     | °C              | +280           |

| Chemical           | Value                                           |
|--------------------|-------------------------------------------------|
| Insulation         | electron-beam crosslinked polyolefine-copolymer |
| Resistance against | resistant against standard impregnants          |

| Electrical                                           | Unit of measure | Value                                            |
|------------------------------------------------------|-----------------|--------------------------------------------------|
| Rated voltage                                        | V               | $U_0/U \ 300/500 \leq 1 \text{ mm}^2$            |
| Rated voltage                                        | V               | $U_0/U \ 450/750 \geq 1.5 \text{ mm}^2$          |
| Nominal voltage with fixed and protected application | V               | $U_0/U \ 600/1000 \ 1.5 \text{ mm}^2 \text{ AC}$ |

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| Electrical      | Unit of measure | Value |
|-----------------|-----------------|-------|
| Testing voltage | V               | 5000  |

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