

| <b>Brand name</b>                            |        | <b>Tenax®</b> | <b>Tenax®</b> | <b>Tenax®</b> | <b>Tenax®</b> | <b>Tenax®</b> |
|--|--------|---------------|---------------|---------------|---------------|---------------|
| <b>Production site</b>                       |        | <b>J</b>      | <b>J / E</b>  | <b>J / E</b>  | <b>E</b>      | <b>E</b>      |
| <b>Fiber family &amp; tensile properties</b> |        | <b>HTA40</b>  | <b>HTA40</b>  | <b>HTA40</b>  | <b>HTS40</b>  | <b>HTS40</b>  |
| Sizing properties                            |        | H15 / F15     | E13           | E13           | F13           | F13           |
| Number of filaments                          |        | 1K            | 3K            | 6K            | 12K           | 24K           |
| Nominal linear density <sup>1)</sup>         | [tex]  | 67            | 200           | 400           | 800           | 1600          |
| Twist  | [t/m]  | 15S           | 0/15Z         | 0/10Z         | 0/10Z         | 0/5Z          |
| Running length per kg                        | [m/kg] | 15000         | 5000          | 2500          | 1250          | 625           |
| Package weight, net                          | [kg]   | 0,5           | 1/2           | 2/4           | 2/4/6         | 2/4/6/8       |

1) without sizing

| <b>Characteristics (typical values)</b> |                        | <b>HTA</b>             | <b>HTS</b>             |
|---|------------------------|------------------------|------------------------|
| Filament diameter                       | [µm]                   | 7                      | 7                      |
| Density                                 | [g/cm <sup>3</sup> ]   | 1,76                   | 1,77                   |
| Tensile strength                        | [MPa]                  | 3950                   | 4300                   |
| Tensile modulus                         | [GPa]                  | 238                    | 240                    |
| Elongation at break                     | [%]                    | 1,7                    | 1,8                    |
| Specific heat capacity                  | [J/kgK]                | 710                    | 710                    |
| Thermal conductivity                    | [W/mK]                 | 17                     | 17                     |
| Coefficient of thermal expansion        | [ 10 <sup>-6</sup> /K] | -0,1                   | -0,1                   |
| Specific electrical resistance          | [Ω cm]                 | 1,6 x 10 <sup>-3</sup> | 1,6 x 10 <sup>-3</sup> |

### Sizing properties for fiber family HTA / HTS

HTA and HTS are the classic Tenax® high performance carbon fiber yarn types. These high tenacity (HT) fibers provide excellent mechanical laminate properties.

- E13 = Type with ca. 1,3 % sizing based on epoxy resin
- F13 = Type with ca. 1,0 % sizing based on polyurethane
- F15 = Type with ca. 2,5 % sizing based on polyurethane
- H15 = Type with ca. 2,5 % sizing based on epoxy resin

Please contact our sales team any time for choosing the right type. The stated numbers are typical values. For design purposes please request fiber specification.

Please note the application (aerospace or industry & sports) on your order.

The export or transfer of carbon fibers can be subject to authorization, depending on end-use and final destination.