



## Automatic bundling

Clips to fix cables and harnesses in the automotive and white goods industries.

### Features and benefits

- Optimized for use automatic cable tying systems
- Easy to apply
- The fixing elements can be tied automatically with Autotool 2000 family and Autotool System 3080



**Material specification**  
please see page 26.



Fixing elements for automatic bundling.

### Fir tree clips for automatic cable tying systems

| TYPE      | Drawing | Hole Ø<br>(FH) | Material  | Colour     | Article-No. |
|-----------|---------|----------------|-----------|------------|-------------|
| ATSFT5LG  |         | 4.5 - 5.0      | PA66HIRHS | Black (BK) | 102-67050   |
| ATSFT6    |         | 6.3 - 7.0      | PA66HIRHS | Black (BK) | 102-67067   |
| ATSFT6LG  |         | 6.5 - 7.1      | PA66HIRHS | Black (BK) | 102-67062   |
| ATSFT8GSD |         | 8.0 - 8.5      | PA66HIRHS | Black (BK) | 102-67081   |

All dimensions in mm. Subject to technical changes.



**Can be used with Automatic Cable Tying Systems on page 538.**

### Fir tree clips for oval holes for automatic cable tying systems

| TYPE             | Drawing | Hole Ø<br>(FH) | Material  | Colour     | Article-No. |
|------------------|---------|----------------|-----------|------------|-------------|
| ATS62x122-2DOP90 |         | 6.2 x 12.2     | PA66HIRHS | Black (BK) | 102-67040   |
| ATS62x122-2DOP   |         | 6.2 x 12.2     | PA66HIRHS | Black (BK) | 102-67042   |

All dimensions in mm. Subject to technical changes.



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[www.HT.click/9-115](http://www.HT.click/9-115)



## Material Specification Overview

| MATERIAL                                                    | Material Shortcut | Operating Temperature                                | Colour**                 | Flammability | Material Properties*                                                                                                                                                                                                                              | Material Specifications |
|-------------------------------------------------------------|-------------------|------------------------------------------------------|--------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Aluminium alloy                                             | AL                | -40 °C to +180 °C                                    | Natural (NA)             |              | <ul style="list-style-type: none"> <li>Corrosion resistant</li> <li>Antimagnetic</li> </ul>                                                                                                                                                       | RoHS                    |
| Chloroprene Rubber                                          | CR                | -20 °C to +80 °C                                     | Black (BK)               |              | <ul style="list-style-type: none"> <li>Weather resistant</li> <li>High yield strength</li> </ul>                                                                                                                                                  | RoHS                    |
| Ethylene Tetrafluoroethylene (Tefzel®)                      | E/TFE             | -80 °C to +170 °C                                    | Blue (BU)                | UL 94 V0     | <ul style="list-style-type: none"> <li>Resistance to radioactivity</li> <li>UV resistant, not moisture sensitive</li> <li>Good chemical resistance to acids, bases, oxidizing agents</li> </ul>                                                   | RoHS                    |
| Polyacetal                                                  | POM               | -40 °C to +90 °C, (+110 °C, 500 h)                   | Natural (NA)             | UL 94 HB     | <ul style="list-style-type: none"> <li>Limited brittleness sensitivity</li> <li>Flexible at low temperature</li> <li>Not moisture sensitive</li> <li>Robust on impact</li> </ul>                                                                  | RoHS                    |
| Polyamide 11                                                | PA11              | -40 °C to +85 °C, (+105 °C, 500 h)                   | Black (BK)               | UL 94 HB     | <ul style="list-style-type: none"> <li>Bio-plastic, derived from vegetable oil</li> <li>Strong impact resistance at low temperature</li> <li>Very low moisture absorption</li> <li>Weather resistant</li> <li>Good chemical resistance</li> </ul> | HF<br>RoHS              |
| Polyamide 12                                                | PA12              | -40 °C to +85 °C, (+105 °C, 500 h)                   | Black (BK)               | UL 94 HB     | <ul style="list-style-type: none"> <li>Good chemical resistance to acids, bases, oxidizing agents</li> <li>UV resistant</li> </ul>                                                                                                                | HF<br>RoHS              |
| Polyamide 4.6                                               | PA46              | -40 °C to +130 °C, (+150 °C, 5000 h; +195 °C, 500 h) | Natural (NA), Grey (GY)  | UL 94 V2     | <ul style="list-style-type: none"> <li>Resistance to high temperatures</li> <li>Very moisture sensitive</li> <li>Low smoke sensitivity</li> </ul>                                                                                                 | HF<br>LFH<br>RoHS       |
| Polyamide 6                                                 | PA6               | -40 °C to +80 °C                                     | Black (BK)               | UL 94 V2     | <ul style="list-style-type: none"> <li>High yield strength</li> </ul>                                                                                                                                                                             | RoHS                    |
| Polyamide 6, high impact modified                           | PA6HIR            | -40 °C to +80 °C                                     | Black (BK)               | UL 94 HB     | <ul style="list-style-type: none"> <li>Limited brittleness sensitivity</li> <li>Higher flexibility at low temperature</li> </ul>                                                                                                                  | RoHS                    |
| Polyamide 6.6                                               | PA66              | -40 °C to +85 °C, (+105 °C, 500 h)                   | Black (BK), Natural (NA) | UL 94 V2     | <ul style="list-style-type: none"> <li>High yield strength</li> </ul>                                                                                                                                                                             | HF<br>RoHS              |
| Polyamide 6.6, glass-fibre reinforced                       | PA66GF13          | -40 °C to +105 °C                                    | Black (BK)               | UL 94 HB     | <ul style="list-style-type: none"> <li>Good resistance to lubricants, fuels, salt water and solvents</li> </ul>                                                                                                                                   | HF<br>RoHS              |
| Polyamide 6.6, heat and UV-stabilised                       | PA66HSUV          | -40 °C to +105 °C                                    | Black (BK)               | UL 94 V2     | <ul style="list-style-type: none"> <li>High yield strength</li> <li>Modified elevated maximum temperature</li> <li>UV resistant</li> </ul>                                                                                                        | HF<br>RoHS              |
| Polyamide 6.6, heat stabilised                              | PA66HS            | -40 °C to +105 °C                                    | Black (BK), Natural (NA) | UL 94 V2     | <ul style="list-style-type: none"> <li>High yield strength</li> <li>Modified elevated maximum temperature</li> </ul>                                                                                                                              | HF<br>RoHS              |
| Polyamide 6.6, high impact modified                         | PA66HIR           | -40 °C to +80 °C, (+105 °C, 500 h)                   | Black (BK)               | UL 94 HB     | <ul style="list-style-type: none"> <li>Limited brittleness sensitivity</li> <li>Higher flexibility at low temperature</li> </ul>                                                                                                                  | RoHS                    |
| Polyamide 6.6, high impact modified, heat and UV-stabilised | PA66HIRHSUV       | -40 °C to +110 °C                                    | Black (BK)               | UL 94 HB     | <ul style="list-style-type: none"> <li>Limited brittleness sensitivity</li> <li>Higher flexibility at low temperature</li> <li>Modified elevated maximum temperature</li> <li>High yield strength, UV resistant</li> </ul>                        | RoHS                    |
| Polyamide 6.6, high impact modified, heat stabilised        | PA66HIRHS         | -40 °C to +105 °C                                    | Black (BK)               | UL 94 HB     | <ul style="list-style-type: none"> <li>Limited brittleness sensitivity</li> <li>Higher flexibility at low temperature</li> <li>Modified elevated maximum temperature</li> </ul>                                                                   | RoHS                    |
| Polyamide 6.6, high impact modified, scan black)            | PA66HIR(S)        | -40 °C to +80 °C, (+105 °C, 500 h)                   | Black (BK)               | UL 94 HB     | <ul style="list-style-type: none"> <li>Limited brittleness sensitivity</li> <li>Higher flexibility at low temperature</li> </ul>                                                                                                                  | RoHS                    |
| Polyamide 6.6, UV-resistant                                 | PA66W             | -40 °C to +85 °C, (+105 °C, 500 h)                   | Black (BK)               | UL 94 V2     | <ul style="list-style-type: none"> <li>High yield strength</li> <li>UV resistant</li> </ul>                                                                                                                                                       | HF<br>RoHS              |

| MATERIAL                                                                                        | Material Shortcut | Operating Temperature                 | Colour**                    | Flammability           | Material Properties*                                                                                                                                                  | Material Specifications |
|-------------------------------------------------------------------------------------------------|-------------------|---------------------------------------|-----------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Polyamide 6.6,</b><br>with metal particles                                                   | PA66MP            | -40 °C to +85 °C,<br>(+105 °C, 500 h) | Blue (BU)                   | UL 94 HB               | • High yield strength<br>• Metal and X-Ray detectable                                                                                                                 | HF<br>RoHS              |
| <b>Polyamide 6.6,</b><br>with metal particles                                                   | PA66MP+           | -40 °C to +85 °C                      | Blue (BU)                   | not flame<br>retardant | • High yield strength<br>• Metal and X-Ray detectable                                                                                                                 | HF<br>RoHS              |
| <b>Polyamide 6.6 V0</b>                                                                         | PA66V0            | -40 °C to +85 °C                      | White (WH)                  | UL 94 V0               | • High yield strength<br>• Low smoke emission                                                                                                                         | HF<br>LFH<br>RoHS       |
| <b>Polyester</b>                                                                                | SP                | -50 °C to +150 °C                     | Black (BK)                  |                        | • UV resistant<br>• Good chemical resistance to most<br>acids, bases and oils                                                                                         | HF<br>LFH<br>RoHS       |
| <b>Polyetheretherketone</b>                                                                     | PEEK              | -55 °C to +240 °C                     | Beige (BGE)                 | UL 94 V0               | • Resistance to radioactivity<br>• Not moisture sensitive<br>• Good chemical resistance to acids,<br>bases, oxidising agents                                          | HF<br>LFH<br>RoHS       |
| <b>Polyethylene</b>                                                                             | PE                | -40 °C to +50 °C                      | Black (BK),<br>Grey (GY)    | UL 94 HB               | • Low moisture absorption<br>• Good chemical resistance to most<br>acids, bases, alcohol, oils                                                                        | HF<br>RoHS              |
| <b>Polyolefin</b>                                                                               | PO                | -40 °C to +90 °C                      | Black (BK)                  | UL 94 V0               | • Low smoke emissions                                                                                                                                                 | HF<br>LFH<br>RoHS       |
| <b>Polypropylene</b>                                                                            | PP                | -40 °C to +115 °C                     | Black (BK),<br>Natural (NA) | UL 94 HB               | • Floats in water<br>• Moderate yield strength<br>• Good chemical resistance to acids,<br>bases and solvents                                                          | HF<br>RoHS              |
| <b>Polypropylene,<br/>Ethylene Propylene<br/>Diene Terpolymer</b><br>rubber free of Nitrosamine | PP, EPDM          | -20 °C to +95 °C                      | Black (BK)                  | UL 94 HB               | • Good resistance to high temperature<br>• Good chemical and abrasion<br>resistance                                                                                   | HF<br>RoHS              |
| <b>Polypropylene</b><br>with metal particles                                                    | PPMP              | -40 °C to +115 °C                     | Blue (BU)                   | UL 94 HB               | • Metal and X-Ray detectable<br>• Heat resistant<br>• Moderate yield strength<br>• Good chemical resistance                                                           | RoHS                    |
| <b>Polypropylene</b><br>with metal particles                                                    | PPMP+             | -40 °C to +85 °C                      | Blue (BU)                   | not flame<br>retardant | • High yield strength<br>• Metal and X-Ray detectable                                                                                                                 | HF<br>RoHS              |
| <b>Polyvinylchloride</b>                                                                        | PVC               | -10 °C to +70 °C                      | Black (BK),<br>Natural (NA) | UL 94 V0               | • Low moisture absorption<br>• Good chemical resistance to acids,<br>bases, salts, alcohol, oils                                                                      | RoHS                    |
| <b>Stainless Steel,<br/>Stainless Steel</b>                                                     | SS304, SS316      | -80 °C to +538 °C                     | Natural (NA)                | non-burning            | • Corrosion resistant<br>• Antimagnetic<br>• Weather resistant<br>• Chemical resistance<br>• SS316 also resistant against seawater,<br>salt spray and anorganic acids | HF<br>LFH<br>RoHS       |
| <b>Thermoplastic<br/>Polyurethane</b>                                                           | TPU               | -40 °C to +85 °C                      | Black (BK)                  | UL 94 HB               | • High elasticity<br>• Good chemical resistance to acids,<br>bases and oxidising agents                                                                               | HF<br>RoHS              |

Tefzel® is a registered trademark of DuPont. General linguistic usage for cable ties made from raw material E/TFE is Tefzel®-Tie. In addition to Tefzel® from DuPont HellermannTyton also uses equivalent E/TFE raw material from other suppliers.

\*\*Further colours available on request.

\*These details are only guide values. They should not be regarded as a exhaustive material specification and are no substitute for suitability tests. Please see our datasheets for further details.

HF = Halogenfree

LFH = Limited Fire Hazard

RoHS = Restriction of Hazardous Substances



= Minimum Loop Tensile Strength  
for Cable Ties (newton)