1. *Introduction*

The Dyneema® material is an ultra-high-molecular-weight polyethylene (UHMWPE) fibber renowned for its lightness, cut resistance, and unparalleled strength. In the context of protective clothing, it is certified according to the EN 381-5 Class 1 standard. Thus, it is suitable for protection against chainsaws and similar equipment.

1. *Standards and Certifications*

EN 381-5 Class 1

* + Specifies the design requirements and test methods for protective clothing against chainsaws (cut-resistant clothing).
  + Class 1 indicates resistance to chain speeds of up to 20 m/s.

Cut Resistance Level 5

* + Equivalent to the highest level of resistance for textiles (according to EN 388 or ISO 13997 tests).
  + Guarantees optimal protection against cuts in a demanding professional environment.

REACH Compliance

* + Dyneema® fibbers comply with Regulation (EC) No 1907/2006 (REACH) concerning the registration, evaluation, authorization, and restriction of chemical substances.

OEKO-TEX® Label

* + Confirms the absence of harmful substances in the textiles used.

1. Physical and Mechanical Properties

| Characteristic | Value | Comment |
| --- | --- | --- |
| Density | 0.97 g/cm³ | 40% lighter than aramids (Kevlar®, etc.). |
| Tensile Strength | 3.6 GPa | Indicates resistance in traction. |
| Elongation at Break | ~ 3-4% | Low elongation, ensuring great robustness. |
| Moisture Absorption | < 1% | Minimal interaction with water, quick drying. |

Thermal Behaviour

* + Melting temperature: ~144–152 °C
  + The Dyneema® fibber is sensitive to extremely high temperatures. Do not expose directly to open flames or temperatures exceeding the manufacturer's recommendations

1. *Key Advantages*

Thermal Comfort

* + Rapid heat transfer and effective ventilation are integrated into the design of the garments.

High Durability

* + Resistant to multiple intensive professional uses.

Easy Maintenance

* + Machine washable (following the manufacturer’s instructions) due to very low moisture absorption.

Environmental Friendliness

* + Produced with low energy consumption compared to other technical fibbers.

1. *Care Instructions*

Washing

* + Recommended temperature: 30–40 °C.
  + Use a mild detergent without chlorinated bleach.

Drying

* + Preferably air dry.
  + Avoid high-temperature tumble drying.
  + Do not iron directly on the Dyneema® area.

Storage

* + Store in a clean, dry place, away from direct sunlight.
  + Avoid extreme temperatures and excessive humidity.

Regular Inspection

* + Check the condition of the fabric after each use: no visible cuts or excessive wear.
  + In case of tears or visible damage, replace or have it inspected by a professional.

1. *Testing Methodology*
   * Climatic Tests: Observation of the material's behaviour under temperature and humidity variations (from –5 °C to +35 °C)
   * Tear Tests (ISO 13997): Verification of the force required to propagate a tear.
   * Cut Tests (EN 381): Simulation of cutting by a chainsaw at 20 m/s.
   * Abrasion Tests (EN 388): Measurement of resistance to cyclic friction on the fabric.
2. *Contact*

For any questions regarding use or maintenance, please contact our customer service:

* Social Networks: (links available on our official website: tse-project.vercel.app)