Nonwovens for Cut/Stab & Soft Ballistic Protection

- Fragment protection
  - Bomb suits EOD
  - Vests
  - Bomb blankets
- Stab protection
- Anti-Trauma
- Slash protection
- Cut protection
- Puncture protection

Performance Characteristics

- Ballistic properties according to Standard STANAG 2920
- Stab protection according to Standard HOSDB, NIJ, VPAM and more – Protection against knife and spike
- Cut and puncture resistance according to EN388 standards
- Lightweight, high-performance materials available, weight range between 40 - 450 g/m²

End-Uses

- Material modifications possible in order to enhance comfort
- Various after-treatment options: antistatic, water repellent, etc.
- Multilayer solutions incorporating scrims, UD fabrics (free of binders)

Item Number | Standard | Unit | 01837.20 | 00251.99 | 01824.20 | 00462.99 | 01836.20 | 00260.99
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Technique | | | Komanda | Needlepunch | Komanda | Needlepunch | Komanda | Needlepunch
Composition | % | | 100% Dyneema® | 100% Dyneema® | 100% Dyneema® | 100% p-Aramid | 100% p-Aramid | 100% p-Aramid
Color | | | white | white | white | yellow | yellow | yellow
Weight | gsm | | 100 | 200 | 200 | 170 | 170 | 240
Thickness | ISO 9073-2 mm | | 1 | 1,67 | 0,84 | 2,1 | 1,38 | 2,5
MD Tensile Strength | ISO 9073-3 N/5cm | | > 480 | > 700 | > 1000 | > 160 | > 390 | > 250
CD Tensile Strength | ISO 9073-3 N/5cm | | > 700 | > 1800 | > 1650 | > 290 | > 360 | > 400
Cut Resistance | EN 388 | Protection Level | 3 | 4 | 4 | 3 | 3 | min. 3
Tear Resistance | EN 388 | Protection Level | 4 | 4 | 4 | 3 | 4 | min. 3
Puncture Resistance | EN 388 | Protection Level | --- | 3 | 4 | --- | --- | ---
Norafin serves industrial markets offering high-quality, custom engineered spunlaced and needle punched materials targeting a wide range of market segments including law enforcement, police, military or private sector. Norafin’s technical nonwovens used as ballistic material offer important product features answering the market’s requirements for safety, durability and lightweight constructions.

Tests according to STANAG 2920 have shown excellent performance of Norafin Komanda® material against 1,1g fragment. The correlation between protection (V50) and weight of the ballistic panel is demonstrated in the graph below. Compared to existing ballistic solutions in the market (fabrics), V50 is significantly increased by using Norafin Komanda® for fragment applications.

The stability and durability of Norafin Komanda® after the impact is visible in the pictures below.

Strikeface: During the shooting the nonwoven is catching the fragments efficiently due to the high strength in combination with high flexibility and density.

Bodyside: The fragment is stopped in the middle of the ballistic panel.

Abrasion in accordance to ISO 12947

The Martindale-Method simulates natural wear, where the textile sample is rubbed against a standard abrasive surface with a specified force. The results of more than 200,000 cycles for Norafin Komanda® with Dyneema® show good mechanical stability and high strength of the nonwoven product during the life-cycle in a ballistic vest.