

PROTECTIVE LINE

Norafin ®  
*materials for life*

For your  
**SAFETY**





## *Heat & Flame Protection*

Norafin's nonwovens offer protective solutions for the most demanding requirements in personal protective equipment.

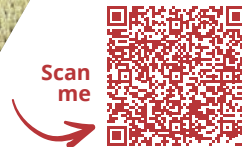
Our nonwovens are designed to be lightweight, durable, protection against heat and flame while providing improved end-user comfort.

- ✓ according to EN 469 respectively NFPA 1971
- ✓ comfort to enhance enduser performance
- ✓ inherently flame resistant
- ✓ improved thermal protective insulation against heat and flame
- ✓ durability

## Enhanced safety for different fields of application!

Norafin's engineered materials offer enhanced safety to a wide range of industry professionals, help protect fire fighters and make dangerous workplaces less threatening.

PROPERTY	TEST METHOD	VALUES	UNITS
Weight	ISO9073-1	50 - 100	g/m <sup>2</sup>
Thickness	ISO9073-2	0.7 - 1.03	mm
Tensile strength	ISO9073-3	MD 130-340 CD 80-230	N/5 cm
Shrinkage	DIN EN ISO 6330:2013	MD/CD ±5	%
	according ISO 17493 (180°C / 5 min.)	MD/CD <5	%
Flame resistance	DIN EN 15025	MD/CD <2	s
Charlength	DIN EN 15025	MD/CD <102	mm





## *Feel always safe and secure on your way*

We are specialized in fireblockers that comply with current EU norms.

- ✓ fireblocking and flame retardant capabilities according to EN 45545-2, FAR 25-853 or 16 CFR Part 1633 and more
- ✓ protection against vandalism according to NF F31 118 (anti laceration test method NF F 00 201)
- ✓ high fire resistance, low smoke toxicity and opacity
- ✓ stab protection, slash-resistance
- ✓ lightweight, long lasting

Norafin   
GUARDIAN

## NEW PRODUCT

PROPERTY	TEST METHOD	<b>S64-02709</b> 50 % PYR 33 % MAR 17 % PAR	<b>S63-00058</b> Preox / Kynol blending	<b>N52-01897</b> 100% Aramid	<b>N52-01970</b> 100% Aramid
Weight (g/m <sup>2</sup> )	ISO 9073-1	<b>190</b>	175	150	250
Thickness (mm)	ISO 9073-2	<b>2,2</b>	1.5	2.7	4
Martindale (cycles)	ISO 12947-2 (12kPA)	<b>180.000</b>	4.000	150.000	250.000
Smoke toxicity	NF F 16101	<b>conform<sup>2</sup></b>	-	F1	F1
MAHRE <sup>1</sup> (kW/m <sup>2</sup> )	ISO 5660-1	-	22.2	19.4	19

<sup>1</sup> tested with PU FR foam glued to FBL

<sup>2</sup> not tested yet

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# *We provide safety and protection for your clothing*

Norafin's high-performance nonwovens offer improved protection at lower basis weights enhancing the wearers comfort in protective applications.

- ✓ ballistic properties according to Standard STANAG 2920
- ✓ stab protection according to Standard HOSDB, VPAM, EN388 and more - protection against knives and spikes; cut and puncture resistance
- ✓ lightweight, high performance material
- ✓ durability
- ✓ high material strength, extreme density, and homogenous fabric surface



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PROPERTY	TEST METHOD	<b>K50-01837</b> 100% Dyneema® white	<b>N50-00251</b> 100% Dyneema® white	<b>K50-01824</b> 100% Dyneema® white	<b>N51-00462</b> 100% p-Aramid yellow	<b>N50-00251</b> 100% p-Aramid yellow	<b>K50-01824</b> 100% p-Aramid yellow
Weight (g/m <sup>2</sup> )		100	200	200	170	170	240
Thickness (mm)	ISO 9073-2	1	1.67	0.84	2.1	1.38	2.5
MD Tensile strength (N/5cm)	ISO 9073-3	>480	>700	>1000	>160	>390	>250
CD Tensile strength (N/5cm)	ISO 9073-3	>700	>1650	>1800	>290	>360	>400
Cut resistance (Protection Level)	EN 388	3	4	4	3	3	min. 3
Tear resistance (Protection Level)	EN 388	4	4	4	3	4	min. 3
Puncture resistance (Protection Level)	EN 388	-	3	4	-	-	-



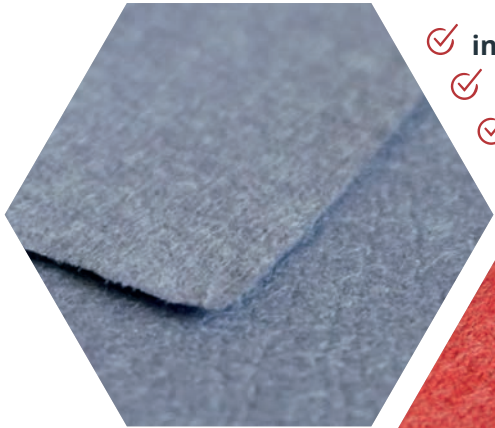
Norafin  <sup>®</sup>  
KOMANDA

## *Norafin Nonwovens Optimized for Protection*

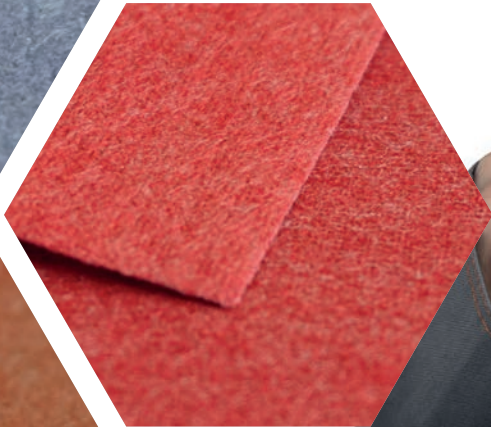
Norafin KOMANDA<sup>®</sup> nonwovens are a range of high-performance fabrics that answer the market's needs for a lightweight, durable, and breathable material applied in thermal protective clothing and accessories.

- ✓ **Inherently flame resistant (Test to EN 11612, EN 11611, EN IEC 61482-1-2, to NFPA 2112)**
- ✓ **FR protection for multi-layer and single-layer solutions**
- ✓ **durability to repeated washing and field use**
- ✓ **lightweight and comfortable**





- ✓ industrial FR work wear
- ✓ arc flash protective clothing
- ✓ motorsports, fire departments
- ✓ industry



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## *Protection against the elements*

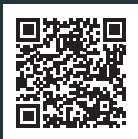
Our specialty nonwovens offer reliable protection against weather conditions such as rain, splash water, or wind as well as wet working environments to industrial workers combined with a high protection against flames and arc flash.

- ✓ **windproof and water repellent, durable materials**
- ✓ **chemical resistance against acids, oils, alkalis etc.**
- ✓ **weldable**
- ✓ **high-visibility effect for excellent daytime visibility (according to EN ISO 20471 respectively ANSI/ISEA 107)**
- ✓ **flame retardant, protection against flash fire (according to EN ISO 14116 respectively ASTM F2733)**
- ✓ **protection against arc flash**
- ✓ **enhanced wearing comfort through lightweight materials**
- ✓ **good processing attributes for tailoring**

*materials for life*  
**Additional  
solutions available**



*Your contact for protective nonwoven solutions.*



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