

Technical Fibers

EMS-GRILTECH





EMS-GRILTECH at a glance

The business unit EMS-GRILTECH is part of EMS-CHEMIE AG which belongs to the EMS-CHEMIE HOLDING AG. EMS-GRILTECH's corporate offices with research laboratory, technical service centre and production facility are located at Domat / Ems, Switzerland. We also have further production plants and technical service centers located at Neumünster (Germany). In Japan and Taiwan we have sales offices. EMS-GRILTECH is present worldwide either with its own sales companies or represented by agents.

GRILON® EMS

EMS-GRILTECH focuses on the production of specialty fibers based on PA6, PA12, PA610, CoPA, CoPES and other thermoplastics. Spun yarns or nonwovens manufactured from these staple fibers are used in: Paper machine clothing, battery separators, apparel interlinings, technical and textile fabrics, carpets and in composites as binder or matrix.

NEXYLON® EMS

Nexylon stands for technical and textile staple fibers based on PA66. The product range includes very fine fibers for light weight interlinings or high tenacity spun yarns and coarse fibers used in household and industrial abrasives. Flame retardant fibers support safety in work wear, uniforms and in carpets for public transport. Because of it's high abrasion resistance, Nexylon FR can also extend the lifetime of any application.

NEXYLENE® EMS

Nexylene is a high performance fiber made from polyphenylene sulfide (PPS) and primarily used for hot gas and fluid filtration. The amorphous PPS fiber type helps to form a homogenous, thermobonded nonwoven that can be produced in one step.
Other applications include automobiles, airplanes and composites.

CONFIDENCE IN TEXTILES
Tested for harmful substances
according to Oeko-Tex® Standard 100
BMM 11769 TESTEX

The results of the inspection made according to Oeko-Tex® Standard 100, product class I for baby articles, have shown that Grilon fibers and yarns, raw or black, meet the human-ecological requirements of the standard presently established.





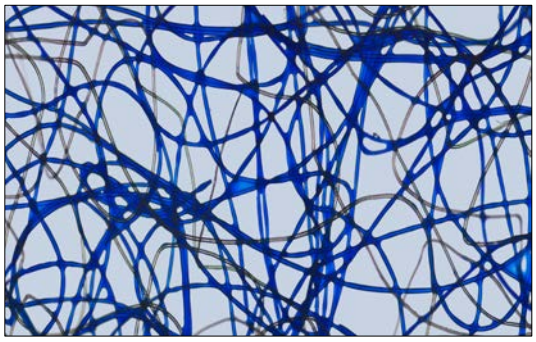
GRILON Fibers for Paper Machine Clothing

The polyamide fibers TM5000 and RX145 for paper machine clothing are characterized by their excellent chemical, thermal and mechanical wear resistance, thereby increasing the performance and lifetime of a felt.



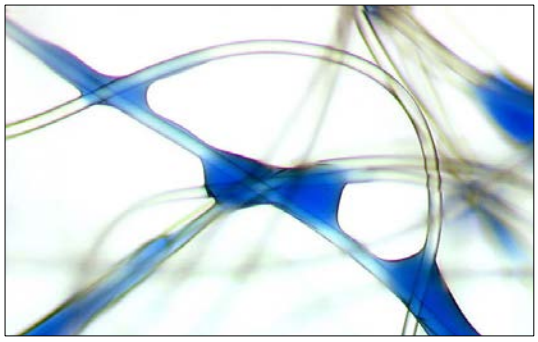
GRILON Bicomponent Fusible Adhesive Fibers

The bicomponent fusible adhesive fiber BA140 improves the application properties of nonwovens and felts. Due to strong fiber bonding, technical products obtain a higher tenacity and fiber loss will be reduced.



GRILON Full Profile Fusible Adhesive Fibers

The fusible adhesive fiber KA140 is used to enhance the technical performance of nonwovens and yarns or forms the matrix for lightweight, dimensionally stable composites.





GRILON and NEXYLON Fine Count

The fine count fibers P300 (PA6) and N200 (PA66) from 1.0 - 3.3 dtex are particularly suitable for thermobonding of light, soft interlinings and for cotton yarns. Coarser counts from 3.3 - 6.7 dtex are used for voluminous nonwovens and wool yarns.



NEXYLON FR Flame-Retardant

Using NEXYLON FR, the lifetime of flame-resistant protective work wear can be significantly increased and provides a high wearing-comfort. The carpet industry is another interesting field of application.



NEXYLON HT for Textile Spun Yarns

NEXYLON HT is used because of its high tenacity for a better process-performance of spun yarns and the improved durability of mixed cotton fabrics (Cotton / Polyamide). For this reason the lifetime of the fabric is much longer and wearing comfort is better.







NEXYLON Fibers for Abrasives

NEXYLON fibers (PA66) are highly abrasion resistant and are used in nonwoven abrasives for cleaning, polishing and deburring. Mainly coarse counts of 17 - 220 dtex in different staple lengths are used.



GRILON Fibers for Carpets / Spun Dyed fibers

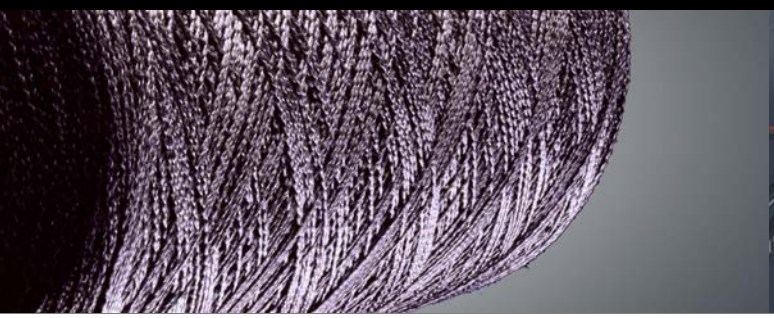
TM 2300 fibers are not only used for carpets in black and white but also all other kinds of colors are available. Color matching can be made from customized hand samples.



NEXYLENE Fibers for Technical Textiles

NEXYLENE is a high temperature resistant fiber made from polyphenylene sulfide (PPS). Outstanding characteristic is the chemical stability against nearly all solvents and most acids and alkali. An important application is hot gas filtration.







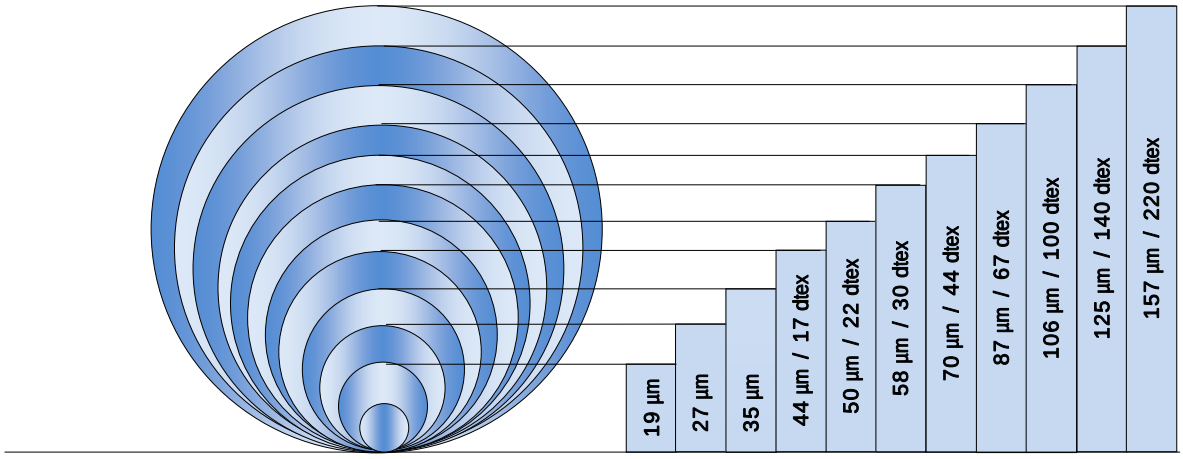
Polymers for Technical Fibers

EMS-GRILTECH can process into fibers practically all thermoplastic polymers with a melting point < 320°C. With special additives and processes the chemical and physical properties of the fiber can be optimized to the particular demand of customers' need. We offer with our flexible pilot plants prompt, tailor-made solutions and an efficient transfer to larger-scale production plants.



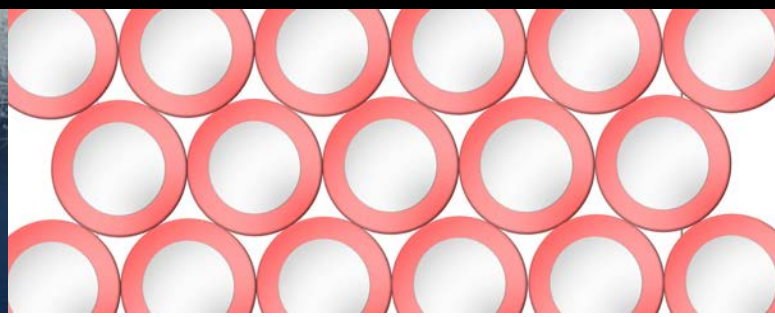
Polymers		Melting point [° C]	Density [kg / dm3]
PA6	Polyamide 6	222	1.14
PA66	Polyamide 66	260	1.15
PA610	Polyamide 610	220	1.07
PA12	Polyamide 12	178	1.01
CoPA	Copolyamide	115, 135	1.07
CoPES	Copolyester	150, 170	1.20
PPS	Polyphenylene sulfide	285	1.35
BICO	Combination of polymers	Bicomponent fiber	-

Fiber Diameter / Count for PA6

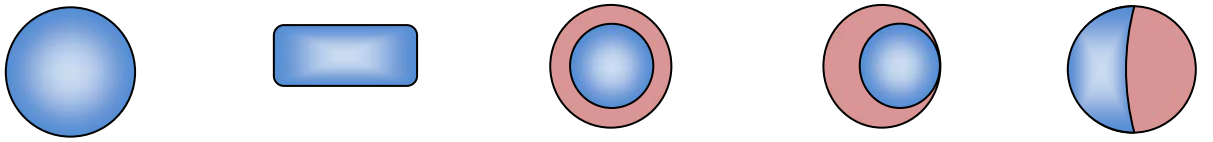


The count range goes from 0.9 dtex up to 220 dtex.





Fiber Profile Cross Section



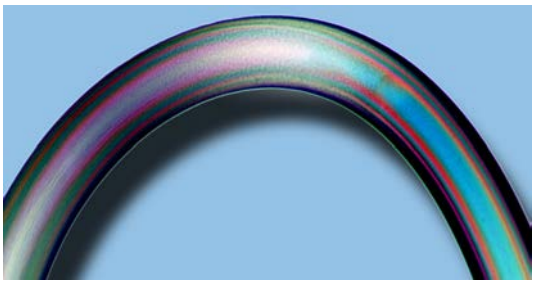
round *flat* *concentric* *eccentric* *side by side*

In addition to full profile fibers also various bicomponent profiles are available.

3D Crimp

The 3D-fiber has a round shape, a high fiber / fiber friction and strong entanglement.

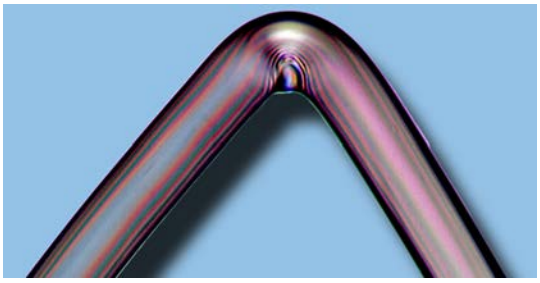




2D Crimp

The 2D-fiber has a sharp peak, is easy to process and gives a uniform nonwoven.

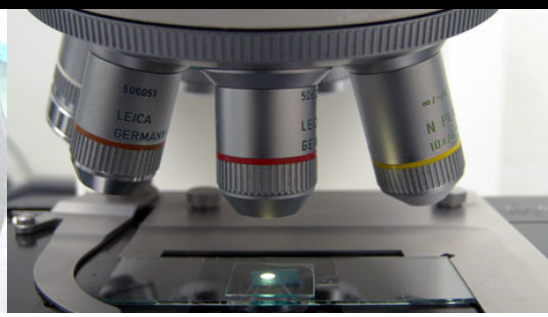




Heat Settings

Heat setting	Hot air shrinkage	Felt behavior
non set	6 - 12 %	compact felts
medium set	< 3.5 %	good recovery
super set	< 2.5 %	excellent recovery

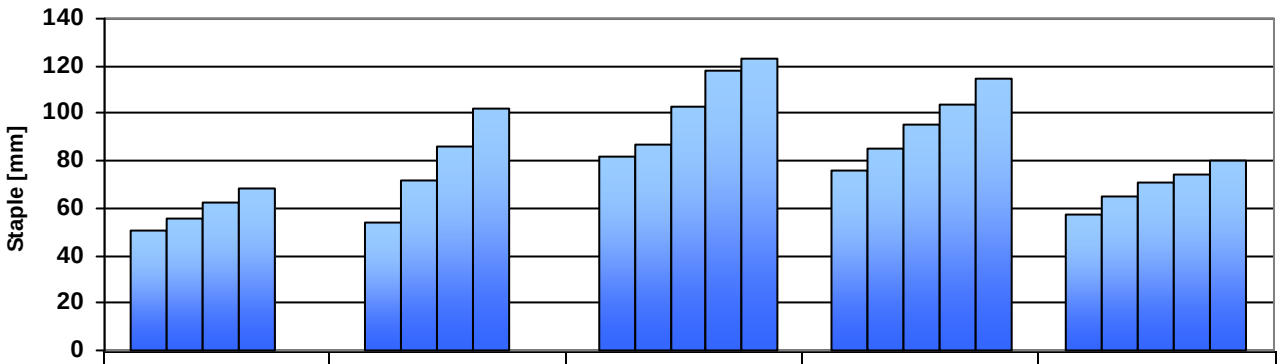




Staple Length

Our fiber is not only available in the vario cuts as presented below, but also in all rectangular staple lengths of 6 - 100 mm. For other staple length please contact our sales staff.

Fiber Length Vario Cut

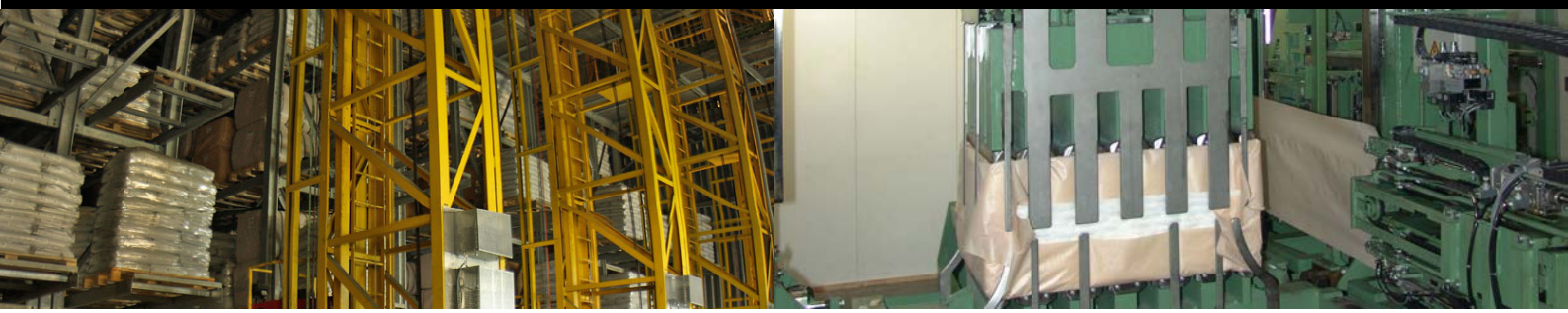


	Vario 2	Vario 3	Vario 4	Vario 4.1	Vario 4.2
[mm]	51	54	82	76	57
[mm]	56	72	87	85	65
[mm]	62	86	103	95	71
[mm]	68	102	118	104	74
[mm]			123	115	80

Standard Staple Lengths

	Rectangular Staple [mm]								Vario Cut				
[dtex]	6	12	40	50	60	80	85	100	v2	v3	v4	v4.1	v4.2
1.0 / 1.7 / 3.1 / 4.2 / 6.7	x	x	x	x	x	x		x	x	x	x	x	x
8 / 11 / 14					x	x		x		x			x
17 / 22 / 30 / 44 / 67			x	x	x	x	x	x			x	x	
100 / 140 / 200 / 220			x	x	x	x	x	x			x		

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Bale Dimensions and Weight

The bale weight is in the range of 170 kg - 210 kg and depends on the product.

Product / Application	Height [cm]	Width [cm]	Length [cm]
Fine and coarse counts, PPS in black film	65	100	112
PMC, abrasives ST, fine counts, PPS in black film	71	95	115
Abrasives MT, HT	73	100	116



Distribution

Truck



78 – 84 bales / ~16 t

40 ft. container



70 bales / ~14 t

20 ft. container



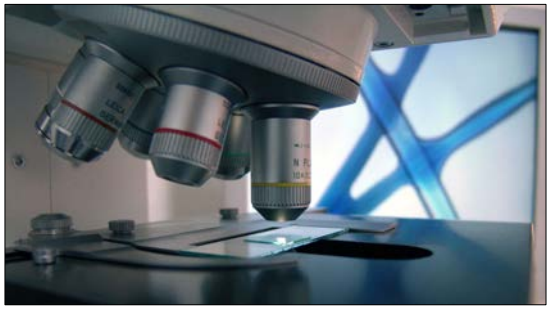
34 bales / ~7 t





Technical Service in the Laboratory

Our customers benefit from a large infrastructure and profound know-how of our worldwide operating company. In the various laboratories all important equipment for textile testing, extensive physical and chemical analysis and modern picture analyzing tools are on hand.



Research and Development Partner

Our Research and Development is working constantly to meet the newest and ever challenging demands of the market. With the most modern pilot plants for polymerizing and spinning, new innovations can be realized and in time produced on our flexible production plants.



Technical Application Support

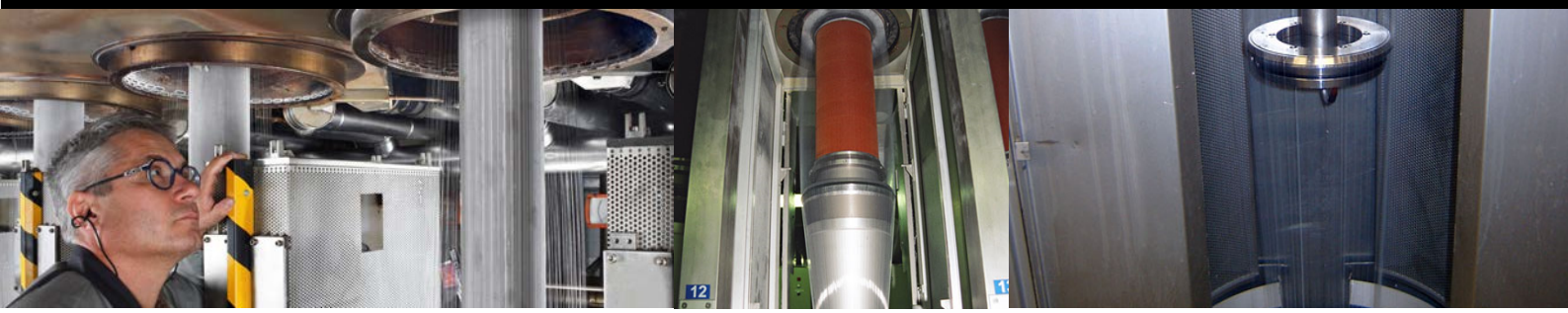
In the technical fiber center state of the art equipment for fiber processing can be used by our customers. Under practical conditions, trials to process fibers into nonwovens, felts or yarns can be performed. Our application engineers support customers worldwide at their location.



Environmental Efforts

The results of the inspection made according to Oeko-Tex® Standard 100, product class I for baby articles, have shown that Grilon fibers and yarns, raw or black, meet the human-ecological requirements of the standard presently established.

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Diameter < = > Count	f(T,ϱ,d)	Count, ⍉ < = > Running length	f(L,T,ϱ,d)
$T = d^2 * 10^4 * \pi * \varrho / 4$	$d = \sqrt{[T / (10^4 * \pi * \varrho / 4)]}$	$L = 10'000 / T$	$L = 4 / (d^2 * \pi * \varrho)$

Force < = > Tenacity	f(t,F,d)	Force < = > Tenacity	f(T,F,t_c)
$t = F / (d^2 * \pi / 4)$	$F = t * d^2 * \pi / 4$	$t_c = (100 * F) / T$	$F = (t_c * T) / 100$

Tenacity (t < = > t_c)	f(t,t_c,ϱ)	Temperature (°C < = > °F)	f(°C,°F)
$t = 100 * t_c * \varrho$	$t_c = t / (100 * \varrho)$	°F = 1.8 * °C+32	°C = (°F-32) / 1.8

ϱ [g / cm³]	PA6: 1.14	PA66: 1.15	PA610: 1.07	PA12: 1.01	PP: 0.91	PET: 1.38

Symbol	Unit	Description
T	dtex	Count, Linear Density
d	mm	Diameter
ϱ	g / cm³	Density
π	-	Pi (3.14)
L	m / g	Running Length
F	N	Force (Breaking Force)
t	N / mm²	Tenacity (Breaking Tenacity)
t_c	cN / dtex	Tenacity (Breaking Tenacity)
°C	°C	Temperature in Centigrade
°F	°F	Temperature in Fahrenheit

1 lb = 0.454 kg	1 in = 2.540 cm	1 gal = 3.785 lt (US)	1 N = 0.102 kg
1 kg = 2.205 lb	1 cm = 0.394 in	1 lt = 0.264 gal (US)	1 kg = 9.81 N
1 dtex = 1.111 den	1 den = 0.900 dtex	1 dtex = 0.1 tex	1 tex = 10 dtex

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EMS-GRILTECH worldwide

www.emsgriltech.com

EMS-GRILTECH is a Business Unit of EMS-CHEMIE AG, which belongs to the EMS-CHEMIE HOLDING AG (www.ems-group.com).

We manufacture and sell Grilon, Nexylon and Nexylene fibers, Griltex thermoplastic adhesives, Grilbond bonding agents, Primid crosslinkers for powder coatings and Grilonit reactive diluents. We have developed these materials and additives into outstanding specialty products for technically demanding applications. In this manner we create added value for our customers who enjoy success in their own markets through continuous improvement.

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