

FACTS: YARN PROCESSING 2011

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Culimeta Textilglas-Technologie GmbH & Co. KG

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Culimeta[®]

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A traditional family company with the a drive for innovation

Culimeta is a worldwide market leader in the production of plied glass filament yarns. Our standard range includes combinations with other technical yarns such as aramid, polyester, metal wire and natural fibres made from renewable resources.



In a production area of just 26,000 square metres, five thousand tons of raw material are processed into high-quality glass fibre products each year.

Molten glass is drawn through bushings at precisely defined high speed. Each yarn con-

sists of up to 1600 individual filaments, each so fine its diameter can only be measured in micrometres – that's thousandths of a millimetre. Their low density, minimal dilation and high tensile strength make continuous filament glass fibre products ideal for a vast variety of applications.



High tensile strength, minimal dilation and very low density are the special features which result in extremely favourable strength compared with other materials:

- Good thermal and electrical insulation
- Resistant to most acids, oils, fats and solvents
- Non-combustible; temperature resistant up to 500°C
- Non-hazardous to health
- Non-hygroscopic
- High stability even under elevated temperatures
- Chemical resistant
- Free of asbestos and ceramic fibers

TECHNICAL DATA SHEET

E-, S-2- AND ECR-GLASS

Composition of different fibres

Oxide	E-glass (%)	S-2 Glass® (%)	ECR-glass
SiO ₂	52 - 56	64 - 66	54 - 62
Al ₂ O ₃	12 - 16	24 - 25	9 - 15
B ₂ O ₃	5 - 10	-	-
CaO	16 - 25	0 - 0.2	17 - 25
MgO	0 - 5	9.5 - 10	0 - 4
Na ₂ O + K ₂ O	0 - 2	0 - 0.2	2 - 5
TiO ₂	0 - 1.5	-	-
Fe ₂ O ₃	0 - 0.8	0 - 0.1	0 - 0,8
F ₂	0 - 1	-	-

E-GLASS – TECHNICAL DATA

Physical properties

Properties	Unit	E-glass
Density	g/cm ³	2.60
Hardness (Vickers 50 g - 15 s)	-	5.60
Sound velocity	m/s	5680

Mechanical properties

Properties	Unit	E-glass
Virgin filament	MPa	3400
	ksi	493
Impregnated strand tensile test (calculated on fiber cross section)	MPa	2400
	ksi	348
Tensile modulus	Gpa	73
	msi	10.5
Tenacity (sized yarn)	cN/Text	Min. 50
Elongation at break for sized yarns according to binder system	%	2.2 - 2.5
Elastic recovery	%	100

Electrical properties

Properties	Unit	E-glass
Dielectric constant at 1 MHz	-	6.4
Dielectric constant at 1 GHz	-	6.13
Loss angle at 1 MHz	-	0.0018 to 0.0039
Loss angle at 1 GHz	-	0.0039
Volume resistivity	Ohm.cm	10 ¹⁴ to 10 ¹⁵
Surface resistivity	Ohm.cm	10 ¹³ to 10 ¹⁴
Electrical rigidity	kV/mm	8 - 12

Thermal properties

Properties	Unit	E-glass
Softening point (Littleton)	°C	840
Strain point (Littleton)	°C	617
Linear coefficient of thermal expansion	m/m/°C	5.3 1 ₀₋₆
Specific heat	J/g. °K	0.764 at 20°C
		0.958 at 200°C
Coefficient of thermal conductivity	W/m. °K	1.0

Thermal resistance of E-glass virgin filament

Temperature °C	Residual strength (%) E-glass
-200	100
200	98
300	82
400	65
500	46
600	14

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- ② Culimeta GmbH & Co. KG, Möln (Germany)
- ③ Diedrichs Isolier- und Abschirmtechnik GmbH, Darmstadt (Germany)
- ④ Theobald GmbH, Neunkirchen (Germany)
- ⑤ Culimeta Benelux BVBA, Merelbeke (Belgium, Sales Office)
- ⑥ Nouvelle Tissafil S.a.r.l., La Grand-Croix (France)
- ⑦ Moulinage d`Auberives, Auberives-en-Royans (France)
- ⑧ SIA „Culimeta Baltics“, Valmiera (Latvia)

The production

Our twisting mills in Germany, France and Latvia are able to produce plied yarns with up to 10 strands. As per customers' request, twisting of other yarns such as Aramid, PES, steel or hybrid yarns is also possible. Brand-new computerized machines can guarantee the highest quality level.

The following two processes are available:

Direct cabling method

This process is capable of making 2-ply yarns. Twisting up to 520 tpm/13 tpi is possible. The yarn is presented on BBC bobbins (see page 15)

Ring twisting method

This process is capable of making up to 10-ply yarns. Twisting up to 340 tpm/8.5 tpi is possible. The 100% balanced yarn is presented on bobbins H5, H8 or H9. Tie on tail can be offered according to customers' needs.



Example: EC-9 136 X 3 S135 C1 H8 (According to ISO 2078)

- E** - Type of glass
- C** - Kind of filament (continuous)
- 9** - Filament diameter (µm)
- 136** - TEX Single yarn (g/1000 m)
- X 3** - Number of yarns
- S** - Direction of turns (S/Z)
- 135** - Turns per meter (TPM)
- C1** - Size/Binder (textile/silane)
- H8** - Type of bobbin

Example: ECG 37 1/3 3.4 S C1 H8 (According to ASTM D587)

- E** - Type of glass
- C** - Kind of filament (continuous)
- G** - Filament diameter US Unit
- 37** - Linear density in 100 yards/pounds
- 1/3** - 1st digit: number of identical single yarns twisted together
- 2nd digit: number of plied yarns twisted together
- 3.4** - Final twist in turns/inch
- S** - Final twist direction
- C1** - Size/Binder
- H8** - Type of bobbin

EU-Unit (TEX)	TPM	US-Unit (yd/lb)	TPI	Bobbin
EC-4 33 X 2 X 2	S150	BC 150 2/2	3.8S	H8
EC-4 33 X 2 X 3	S135	BC 150 2/3	3.4S	H8
EC-4 33 X 4 X 3	S150	BC 150 4/3	3.8S	H8
EC-5 2,8 X 2	S180	ECD 1800 1/2	4.5S	7636
EC-5 5,5 X 2	S180	ECD 900 1/2	4.5S	7636/H3
EC-5 11 X 2	S180	ECD 450 1/2	4.5S	7636/H3
EC-6 34 X 2	S150	ECDE 150 1/2	3.8S	H5/BBC
EC-6 34 X 3	S150	ECDE 150 1/3	3.8S	H5
EC-6 68 X 2	S150	ECDE 75 1/2	3.8S	H8/H5/BBC
EC-6 68 X 3	S150	ECDE 75 1/3	3.8S	H8/H5
EC-6 68 X 4	S150	ECDE 75 1/4	3.8S	H8/H5
EC-6 68 X 2 X 2	S120	ECDE 75 2/2	3.0S	H8/H5
EC-6 68 X 2 X 3	S120	ECDE 75 2/3	3.0S	H8/H5
EC-6 134 X 2	S120/135	ECDE 37 1/2	3.0S/3.4	H8/H5/BBC
EC-6 134 X 3	S135	ECDE 37 1/3	3.4S	H8/H5
EC-6 134 X 4	S120/135	ECDE 37 1/4	3.0S/3.4S	H8/H5
EC-6 134 X 5	S120/135	ECDE 37 1/5	3.0S/3.4S	H8/H5
EC-7 22 X 2	S150	ECE 225 1/2	3.8S	H5/BBC
EC-7 22 X 3	S150	ECE 225 1/3	3.8S	H5
EC-9 34 X 2	S150	ECG 150 1/2	3.8S	H5/BBC
SC-9 33 X 2	S150	SCG 150 1/2	3.8S	H5/BBC
EC-9 34 X 3	S150	ECG 150 1/3	3.8S	H8/H5
EC-9 68 X 2	S150	ECG 75 1/2	3.8S	H8/H5/BBC
EC-9 68 X 2 +V4A	S150	ECG 75 1/2 + Steel	3.8S	BBC
SC-9 66 X 2	S150	SCG 75 1/2	3.8S	H5/BBC
EC-9 68 X 3	S150/S260/S300	ECG 75 1/3	3.8S/6.5S/7.5S	H8/H5
EC-9 68 X 4	S150	ECG 75 1/4	3.8S	H8/H5
EC-9 68 X 5	S150	ECG 75 1/5	3.8S	H8
EC-9 110 X 2	S120	ECG 45 1/2	3.0S	H8
EC-9 110 X 3	S120	ECG 45 1/3	3.0S	H8
EC-9 136 X 2	S135	ECG 37 1/2	3.4S	H8/H5/BBC
EC-9 136 X 3	S135/S260	ECG 37 1/3	3.4S/6.5S	H8/H5
EC-9 136 X 4	S135	ECG 37 1/4	3.4S	H8/H5
EC-9 136 X 5	S135	ECG 37 1/5	3.4S	H8/H5
EC-11 51 X 2	S150	ECH 100 1/2	3.8S	H5/BBC
EC-11 51 X 3	S150	ECH 100 1/3	3.8S	H8/H5
EC-13 136 X 2	S135	ECK 37 1/2	3.4S	H8
EC-13 136 X 3	S135	ECK 37 1/3	3.4S	H8
EC-13 136 X 4	S135	ECK 37 1/4	3.4S	H8
EC-13 136 X 5	S135	ECK 37 1/5	3.4S	H8

STANDARD BOBBIN DESIGN FOR TWISTED GLASS YARNS

EU-Unit (TEX)	TPM	US-Unit	TPI	Bobbin
EC-13 272 X 4	S100	ECK	18 1/4	2.5S H8
EC-13 272 X 5	S100	ECK	18 1/5	2.5S H8
EC-13 408 X 2	S100	ECK	12 1/2	2.5S H8
EC-13 408 X 3	S100	ECK	12 1/3	2.5S H8
EC-13 408 X 4	S100	ECK	12 1/4	2.5S H8
EC-13 408 X 5	S100	ECK	12 1/5	2.5S H8
EC-13 544 X 2	S100	ECK	9 1/2	2.5S H8
EC-13 544 X 3	S100	ECK	9 1/3	2.5S H8
EC-13 544 X 4	S100	ECK	9 1/4	2.5S H8
EC-13 544 X 5	S100	ECK	9 1/5	2.5S H8

Binder system:

AGY®	PPG®	Saint Gobain-Vetrotex®
620, 620-1, 622	610, 611, 690	5312
636	207	T6, T8, T30, T32
602	1383	TD24, TD37
		T10, T18
		„C“ = Czech Republic
		„M“ = Mexico

Valmiera Glasfaser AG®

2/4
3/4
302P

Packaging:

	BBC	7636	H5	H8/46
Bobbins/pallet	72	216	92	46
Dim. (m) L, W, H.:	1,00 X 1,20 X 1,30	1,15 x 1,15 x 0,92	1,00 X 1,20 X 0,93	1,00 X 1,20 X 1,00
Max. weight (kg):	720 kg	500 kg	450 kg	350 kg

Available tpm/tpi:

1. Direct cabling process (BBC) up to 520 tpm/13 tpi in „S“ and „Z“ Direction
2. Ring twisting process (H9/H8/H5) up to 340 tpm/8.5 tpi in „S“ and „Z“ Direction

Quality Control:

TEX:	Tensile strength (N)	TPM/TPI
ISO 1889	ISO 3341	ISO 1890

Other constructions available upon request

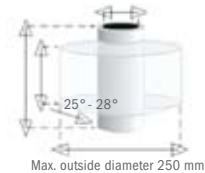
H9, H8, H5, 28

	H9	H8	H5	28	bottle bobbin
Height (mm)	446	446	395	330	
Winding height (mm)	380	377	350	282	
Bottom diameter (mm)	203	190	150	152	
Inside diameter (mm)	83,0	83,0	60,3	60,4	
Max. bobbin weight (kg)	9,0	7,6	4,9	4,9	

BBC, (Bicone)

	BBC	Bicone
Height (mm)	230	
Winding height (mm)	200	
Bottom diameter (mm)	-	
Inside diameter (mm)	69,0	
Max. bobbin weight (kg)	10	

69 mm inside diameter card board sleeve, wall thickness 5 mm



7636

	SI (cm)	Bobbin
Type	Plastic Tube	
Inside Diameter	6,05	
Length	35,56	
Traverse	30,94	
Base Outside Diameter	10,06	
Type Build	Double Taper	
Bare bobbin nom. weight	229,3 g	
Max. Full Package Dia.	11,43	

			Number of filaments (approx.)							
			50	100	200	400	600	800	1200	1600
µm	5	tex	2,8	5,5	11					
US	D	h.y.p.p.	1800	900	450					
µm	6	tex				34		68		136
US	DE	h.y.p.p.				150		75		37
µm	7	tex			22					
US	E	h.y.p.p.			225					
µm	9	tex			34	68	110	136	204	272
US	G	h.y.p.p.			150	75	45	37	25	18
µm	11	tex			51	102		204	340	
US	H	h.y.p.p.			100	50		25	15	
µm	13	tex				136		272	408	544
US	K	h.y.p.p.				37		18	12	9

tex: g/1000 m
 h.y.p.p.: hundred yards per pound
 yard (yd): 0,9144 m
 inch (in): 25,4 mm
 pound: 0,4536 kg

TEX = 4691/h.y.p.p.

Standard Twists Plied Yarns

TPM number of twists per meter
 TPI number of twists per inch (TPM/40)

T/m	Tpi
80	2.0
100	2.5
120	3.0
135	3.4
150	3.8
260	6.6

Culimeta has invented a new system for marking all plied yarns products. The new way of labelling is named Culimeta PICCS. This stands for Product Identification Colour Code System and guarantees that every article has got a unique tab. As the name already indicates, the system is based on different colours which symbolise different characteristics of the product.

ARTICLE CODE

Shows the specific article code which is also indicated in all documents.

COMPANY LOGO

Indicates the company group member who has manufactured the product.

FLAG

Symbolises the country in which the product has been produced.



FILAMENT DIAMETER

The outer colour ring indicates the diameter of the basic glass filament used in this product (f.i. EC-9 = red colour).

TWIST

The colour of the letters indicates the no. of twisted yarns (f.i. X2 = orange colour).

TEX WEIGHT

The ground colour of the first stripe indicates the tex weight of the single yarn (f.i. 68 = yellow colour).

BINDER

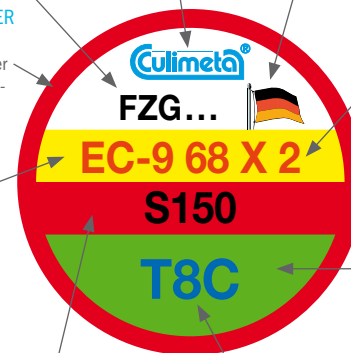
The ground colour indicates the type of binder which has been used in this product (f.i. green = T8C).

URNS PER M (TPM)

The ground colour of the second stripe indicates the final number of turns per meter (f.i. S150 = red colour).

GLASS PRODUCER

The colour of the letters indicates the manufacturer of the raw glass fibres (f.i. blue = Saint-Gobain Vetrotex®).



Culimeta PICCS avoids the mix-up of articles!

The production

Culimeta texturized glass yarns are available from 68 to 4500 tex and are mainly based on 6 or 9µm fibres. They are manufactured according to customer's specifications in an air jet process. Due to their volumes, texturized yarns are able to store more air and have therefore a higher insulating efficiency than smooth yarns. In addition to this, texturized yarns can be used for decorative applications such as wall covering. In principle there are 3 different processes available:

Single yarn texturizing (ET)

A single yarn is delivered with a certain overfeed to the air jet where the filaments are intermingled. (ET-6 70 tex G1)

Parallel texturized yarns (PT)

Two or more yarns are delivered parallel with the same overfeed to the air jet where the filaments are intermingled to a new yarn. (PT-9 1000 tex G7)

Core & Effect texturized yarns (EGT)

One or more core yarns are delivered with a lower overfeed than the effect yarns to an air jet. The result of the intermingling is a very loopy or bulky yarn with excellent insulating properties.



Overspray (LEX and 401)

For special applications, such as wall covering, Culimeta is offering texturized yarns with an additional Overspray. One of the advantages is a higher tensile strength and less filamentation in further textile processes.

TEXTURIZED YARNS WITHOUT OVERSPRAY

"Single texturized yarns"; 6µm (DE) & 9µm (G)

TEX: 70, 140, 280

yd/lb: 75, 37

"EGT" Core and effect yarns; E-Glass and ECR glass; 6µm (DE) & 9µm (G)

TEX: 75, 140, 160, 350, 442, 550, 650, 750, 850

yd/lb: 66.1, 35.5, 31.0, 14.2, 11.2, 9.0, 7.6, 6.6

"Parallel texturized yarns"; 6µm (DE) & 9µm (G)

TEX: 140, 280, 420, 500, 650, 780, 820, 1000, 1100, 1250, 1440, 2000, 2500, 2835, 4510, 5000

yd/lb: 35.5, 17.7, 11.8, 9.9, 7.6, 6.6, 6.0, 5.0, 4.5, 4.0, 3.5, 2.5, 2.0, 1.7, 1.1, 1.0

Suitable for:

Weaving, braiding, tape weaving, knitting, filtration, decorative applications

Standard Bobbin:

Papertube: 290 x 93,1 mm = 11,4 inch x 3,66 inch

Quality Control:

TEX:	Tensile strength (N)	TPM/TPI
ISO 1889	ISO 3341	-

TEXTURIZED GLASS YARNS

With Torsion (TPM / TPI)

EU-Unit (TEX)	TPM	US-Unit	TPI	Bobbin
PT-9 650	S/Z45	ETG 7.7 1/0	S/Z 1.12	H8/H9
PT-9 850	S/Z45	ETG 5.9 1/0	S/Z 1.12	H8/H9
PT-9 1000	S/Z45	ETG 4.9 1/0	S/Z 1.12	H8/H9
PT-9 1250	S/Z45	ETG 4.0 1/0	S/Z 1.12	H8/H9
PT-9 1440	S/Z30	ETG 3.5 1/0	S/Z 0.75	H8/H9
PT-9/13 2000	S/Z45	ETG/K 2.5 1/0	S/Z 1.12	H8/H9
PT-9/13 2500	S/Z30	ETG/K 2.0 1/0	S/Z 0.75	H8/H9
PT-9 650 X 2	S/Z45	ETG 7.7 1/2	S/Z 1.12	H8/H9
PT-9 850 X 2	S/Z45	ETG 5.9 1/2	S/Z 1.12	H8/H9
PT-9 1000 X 2	S/Z45	ETG 4.9 1/2	S/Z 1.12	H8/H9
PT-9 1250	S/Z45	ETG 4.0 1/2	S/Z 1.12	H8/H9
PT-9 1440 X 2	S/Z30	ETG 3.5 1/2	S/Z 0.75	H8/H9
PT-9/13 2000 X 2	S/Z45	ETG/K 2.5 1/2	S/Z 1.12	H8/H9
PT-9/13 2500 X 2	S/Z30	ETG/K 2.0 1/2	S/Z 0.75	H8/H9

Suitable for:

Weaving, braiding, knit braiding, knitting, production of packaging's, ecc.

Packaging:

Type	Bobbins/pallet	Dim. (m) L/W/H	Max. weight
H8/H9	46	1,00 X 1,20 X 1,00	185 kg/407 lbs

Quality Control:

TEX:	Tensile strength (N)	TPM/TPI
ISO 1889	ISO 3341	ISO 1890

LEX & 401 (overspray)

EU-Unit	Overspray	Application	US-Unit	Bobbin
ETL-6 69 tex	401	Vertical blinds	ETDE 72.0	paper tube
ETL-6 70 tex	401	Vertical blinds	ETDE 71.0	paper tube
ETL-6 138 tex	401	Vertical blinds	ETDE 36.0	paper tube
ETL-6 140 tex	401	Vertical blinds	ETDE 35.5	paper tube
ETLEX-6 70 tex	LEX	Industrial use, various	ETDE 71.0	paper tube
ETLEX-6 140 tex	LEX	Industrial use, various	ETDE 35.5	paper tube
ETLEX-6 200 tex	LEX	Industrial use, various	ETDE 25.9	paper tube
ETLEX-6 420 tex	LEX	Industrial use, various	ETDE 11.8	paper tube
ETLEX-9 140 tex	LEX	Industrial use, various	ETG 35.5	paper tube
ETLEX-9 420 tex	LEX	Industrial use, various	ETG 11.8	paper tube
ETLEX-9 500 tex	LEX	Industrial use, various	ETG 10.0	paper tube
ETLEX-9 650 tex	LEX	Industrial use, various	ETG 7.65	paper tube
ETLDS-6 1030 tex	D/S	Industrial use, various	ETDE 4.80	paper tube
ETLDS-6 1460 tex	D/S	Industrial use, various	ETDE 3.40	paper tube
ETLDS-9 550 tex	D/S	Industrial use, various	ETDE 9.00	paper tube
ETLDS-9 1050 tex	D/S	Industrial use, various	ETG 4.70	paper tube

Suitable for:

Weaving, braiding, knit braiding, knitting, production of packaging's, ecc.

Quality Control:

TEX (g/1.000m)	Tensile strength (N)	Kind of Overspay	LEX	D/S
ISO 1889	ISO 3341	TS85	TS75	PL63

TISSMELT twisted yarns are constructed from a high quality combination of E-glass and PES (Thermal class “B”) and produced by our French factory (Nouvelle Tissafil S.a.r.l.).

NB: These plied yarns are well known under the name “DAGLASS®”.

TISSMELT provides excellent flexibility and abrasion resistance with special bonding characteristics for steel, aluminium and copper.

TISSMELT applications include: insulation of aluminium and copper wires for motors, transformers and generators and melting threads on glass fibre fabrics.

TISSMELT E-GLASS/POLYESTER YARNS

DESIGNATION	Tissmelt (EC5 2,8 + PES 22) 5 TEX	Tissmelt (EC5 2,8 + PES 50) 8 TEX	Tissmelt (EC5,5 + PES 50) 11 TEX	Tissmelt (EC5 11 + PES 76) 20 TEX	Tissmelt (EC9 68 + PES HT 1100) 178 TEX
YARN COUNT Average norm : +/- 3%	5 TEX	7,8 TEX	10,5 TEX	18,6 TEX	179 TEX
TENSILE STRENGTH (N) Average norm : +/- 5%	2,1	2,1	4,2	6,6	50,4
TWIST (TPM) Average norm: +/- 8%	S 120	S 120	S 120	S 120	S 80
COMPOSITION	Glass: 56% PES:44%	Glass: 36% PES:64%	Glass: 52% PES:48%	Glass: 59% PES:41%	Glass: 62% PES:38%
PRESENTATION (Make-up)	Tube 0,79 kg	Tube 1,2 kg	Tube 2 kg	Tube 3 kg	Tube 3,1 kg

Sewing threads

Our delivery programme includes sewing threads in the diameter range from 0,30 mm to 0,50 mm. They are available with V4A (stainless steel) or Inconel reinforcement and can be treated with a PTFE coating and oil to ensure easy sewing.

Standard range

Type	tex (g/1000 m)	Tensile strength (N)	Coating	PTFE content	Oil content	Silicone content
Approx. diameter: 0,3 mm						
MN-30	170	>65	PTFE	15 - 20%		
MN-30	190	>65	PTFE / Oil	15 - 20%	8 - 10 %	
MN-30	160	>65	Silicone			8 - 10 %

Type	tex (g/1000 m)	Tensile strength (N)	Coating	PTFE content	Oil content	Silicone content
Approx. diameter: 0,4 mm						
MN-40	250	>95	PTFE	15 - 20%		
MN-40	275	>95	PTFE / Oil	15 - 20%	8 - 10 %	
MN-40	230	>95	Silicone			8 - 10 %
MN-40 V4A (steel)	340	>80	PTFE	15 - 20%		
MN-40 V4A (steel)	400	>80	PTFE / Oil	15 - 20%	8 - 10 %	

Type	tex (g/1000 m)	Tensile strength (N)	Coating	PTFE content	Oil content	Silicone content
Approx. diameter: 0,5 mm						
MN-50	350	>115	PTFE	15 - 20%		
MN-50	385	>115	PTFE / Oil	15 - 20%	8 - 10 %	
MN-50	320	>115	Silicone			8 - 10 %
MN-50 V4A (steel)	430	>105	PTFE	15 - 20%		
MN-50 V4A (steel)	470	>105	PTFE / Oil	15 - 20%	8 - 10 %	
MN-50 Inconel	420	>105	PTFE	15 - 20%		
MN-50 Inconel	460	>105	PTFE / Oil	15 - 20%	8 - 10 %	

The a.m. products are available on 0,5 kg / 1,1 lbs and 1,0 kg / 2,2 lbs king spools.

SEWING THREADS

Beta glass sewing threads (EC-4)

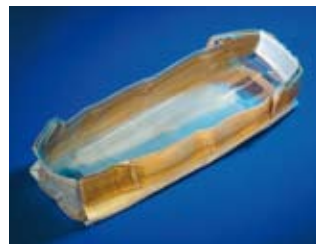
Where absolute high tensile strength is required we recommend our new generation of „Beta glass threads“ that are based on 4µm yarns. The below mentioned threads are ideal for sewing of filtration bags.

Standard range

Type	tex (g/1000 m)	Tensile strength (N)	Coating	PTFE content	Oil content	Silicone content
Approx. diameter: 0,3 mm						
MNB-30	170	>95	PTFE	15 - 20%	8 - 10 %	
MNB-30	190	>95	PTFE / Oil	15 - 20%	8 - 10 %	
MNB-30	160	>95	Silicone			8 - 10 %

Type	tex (g/1000 m)	Tensile strength (N)	Coating	PTFE content	Oil content	Silicone content
Approx. diameter: 0,4mm						
MNB-40	250	>120	PTFE	15 - 20%	8 - 10 %	
MNB-40	275	>120	PTFE / Oil	15 - 20%	8 - 10 %	
MNB-40	230	>120	Silicone			8 - 10 %

The a.m. products are available on 0,5 kg / 1,1 lbs and 1,0 kg / 2,2 lbs king spools.

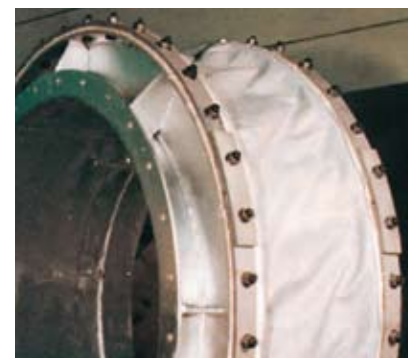


Hand sewing threads for manual use

Culimeta „Hand sewing threads“ are available from diameter 0,80 mm up to 2,00 mm. Like our machine sewing threads, the below mentioned yarns can also be reinforced with stainless steel. A final PTFE or PU coating is available as per standard.

Standard range

Type	Diameter (approx.)	tex (g/1000 m)	Type of coating	Coating content	Approx. bobbin weight
HN 80	0,8 mm	830	PTFE (brown)	15%	7,5 kg
HN-100	1,0 mm	1500	PTFE (brown)	15%	7,5 kg
HN-100	1,0 mm	1570	PTFE + V4A-Steel	15%	8,0 kg
HN-100	1,0 mm	1570	PTFE (grey) + V4A (steel)	15%	8,0 kg
HN-100	1,0 mm	1350	PU	6%	7,5 kg
HN-100	1,0 mm	1420	PU (grey) + V4A (steel)	6%	5,0 kg
HN-100	1,0 mm	1420	PU + V4A (steel)	6%	5,0 kg
HN-150	1,5 mm	2900	PTFE (white)	15%	7,3 kg
HN-150	1,5 mm	2900	PTFE (brown)	15%	7,3 kg
HN-200	2,0 mm	4800	PTFE (brown)	10%	6,0 kg



For special applications Culimeta is manufacturing dyed fibre glass yarns based on acrylic and PTFE colours. Special coatings with temperature resistance up to 400° C are possible.

Almost all common single- (EC-9 68/ECG75) and twisted yarns (EC-9 68 X 2/ ECG75 1/2) can be coated in various colours according to customer's specifications. (See page 13/14)

Culimeta dyed glass yarns are suitable for braiding, knitting and weaving.



The demands of international customers regarding product quality and its documentation increase continually and are an important component of a future-oriented company philosophy. Culimeta took account of this trend and carried out the certifications audit DIN EN ISO 9001:2000 in December 2005 together with See-Berufsgenossenschaft in Hamburg. In the framework of the certification process, Culimeta has brought verification that a quality management system accordant with the norm guidelines has been created and implemented. The BG-PRÜFZERT certificate was issued.

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To protect domestic forests from carry-over wood varmints almost any country has strict quarantine regulations. For unification of the import regulations the IPPC (International Plant Protection Convention) has introduced the ISPM15 (International Standards for Phytosanitary Measures), a new standard for solid wood packaging, transportation and shipment, spelled out in the „Guidelines for Regulating Wood Packaging Material in International Trade“.

The new standard describes provisions to minimize the risk of importing and spreading wood varmints in connection with wood packaging. Permitted procedures are heating treatment, where the wood is heated for 30 minutes to a core temperature of minimum of at least 56 degrees Celsius, and gassing the wood with methyl bromide. The due enforcement of these procedures is supervised by local authorities concerned with plant regulation. Also every package has to be labeled with the standardized IPPC-Code on both sides stating origin, producer and the procedure used to treat the wood (compare graphic).

To avoid the risk of using untreated wood packaging material the Culimeta's board of administration agreed on using treated pallets only.

To every shipment Culimeta will attach an export certificate stating that packaging material is customized to satisfy the ISMP15 standard.

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1 oz/yd ²	=>	33,9057 g/m ²
1 g/m ²	=>	0,0295 oz/yd ²
1 oz	=>	28,35 g
1 g	=>	0,035 oz
1 lb	=>	16 oz
1 lb	=>	0,454 kg
1 kg	=>	2,205 lb
1 N	=>	0,102 kgf
1 kgf	=>	9,81 N
1 lbf	=>	4,4482 N
1MPa	=>	1 N/mm ²
1 GPa	=>	1000 MPa
1 psi	=>	6,89 x 10 ⁻³ MPa
1 ksi	=>	6,89 MPa
1 Tex	=>	9 denier
1 denier	=>	0,111 Tex
1 Tex	=>	496.238 yards/lb
°C	=>	(°F-32) x 5/9
°F	=>	9/5 x °C =32
1 w.m ⁻¹ .k ⁻¹	=>	0,860 kcal.m ⁻¹ .h ⁻¹ .k ⁻¹ = 6,9 btu.in/(ft.hr.°F)
1“	=>	25,4 mm = 2,54 cm
1 lb/ft ²	=>	4,89 kg/m ²
1 lb/ft ³	=>	16,05 kg/m ³
1 yd	=>	0,91 m
1 m	=>	1,09 yd
1 ft	=>	0,3048 m
1 m	=>	3,281 ft
1 cm	=>	0,39 in

