FACTS:
YARN PROCESSING
2011
TEXTURIZED GLASS YARNS

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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_2O_3	12 - 16	24 - 25	9 - 15
B_2O_3	5 - 10	-	-
CaO	16 - 25	0 - 0.2	17 - 25
MgO	0 - 5	9.5 - 10	0 - 4
$Na_2O + K_2O$	0 - 2	0 - 0.2	2 - 5
TiO_2	0 - 1.5	-	-
Fe_2O_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/cm³	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	MPa	2400
(calculated on fiber cross section)		
	ksi	348
Tensile modulus	Gpa	73
	msi	10.5
Tenacity (sized yarn)	cN/Tex	Min. 50
Elongation at break for sized yarns	%	2.2 – 2.5
according to binder system		
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 regidity	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 $1_{0\text{-}6}$
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	144

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TEXTURIZED GLASS YARNS

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 401	LEX	D/S
ISO 1889	ISO 3341	TS85	TS75	PL63