



**CUSTOMER  
ACCEPTANCE  
STANDARD**

No.: TP-100  
Date: 23-Jan-12  
Supersedes: 03-Nov-10  
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**E GLASS YARN FOR RUBBER REINFORCEMENT**

**I. DESCRIPTION**

Fiberglass yarn is a natural, lustrous, white, continuous filament yarn, which may be wound on various supply packages. The yarns are smooth, non-cellular and generally cylindrical in form. The yarns are made of glass of high stability and durability and are with the exception of sizing ingredients, inorganic, incombustible and will neither expand nor contract with moisture changes. The glass composition meets the certification for "E" glass as defined by ASTM's D 578-00 Standards Specification for Glass Fiber Strands. The individual glass fibers do not tend to absorb moisture and are extremely flexible. The sizing may be burned off the yarn under certain conditions. Weathering tests have indicated comparatively unlimited stability under repeated cycles of heat, cold, sunlight, dampness and drying. This reinforcement is produced in an ISO 9001-2008 certified production plant.

**II. USE**

These yarns are used as reinforcement in the manufacture of rubber based compounds.

**III. YARN NOMENCLATURE**

Example Product Name

(SI System)

EC 9-134 1X0 Z20

E- Electrical glass formulation  
C- Continuous filaments  
9- Filament diameter (See Table 1)  
134- grams per 1000 meters of yarn  
1X0- Single yarn end  
Z20- Twists per meter (TPM)

(US Customary System)

ECG 37 1/0 0.5Z

E- Electrical glass formulation  
C- Continuous filaments  
G- Filament diameter (See Table 1)  
37- Yards per pound divided by 100  
1/0- Single yarn end  
0.5Z- One-half turn per inch (TPI)

Throughout history, the actual yardage or tex of yarn products has often been shifted from the actual yield provided in the product name. Therefore, the yarn name is only used as a descriptor. The table in section V. must be utilized to obtain the actual bare glass yield of a yarn product.



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**IV. GENERAL INFORMATION**

Reference Textiles Fibers For Industry for more information

Filament Designation		Range for Filament Diameter Average			
US Units (letter)	SI Units (microns)	Minimum (inches)	Maximum (inches)	Minimum (microns)	Maximum (microns)
G	9.0	0.00035	0.000399	8.89	10.15
H	11	0.0004	0.000449	10.16	11.42

- Filament diameter is for reference purposes. Yarns are controlled according to yield/tex.

**V. AVAILABLE PRODUCTS AND BARE GLASS PROPERTIES**

Product Nomenclature*		Sizing	Bare Glass Yield**					
US Customary System	Tex/Metric System (SI)		yd./lb.			TEX		
			Min	Nominal	Max	Min	Nominal	Max
ECG 35.5 1/0 untwisted	EC9-140 1x0 untwisted	762	3375	3550	3725	133	140	147
ECG 46 1/0 untwisted	EC9-108 1x0 untwisted	762	4390	4600	4810	103	108	113
ECG146 1/0 untwisted	EC9-34 1x0 untwisted	762	13400	14400	15500	32.0	34.5	37.0
ECG75 1/0 untwisted	EC9-68 1x0 untwisted	762	6884	7300	7716	64.3	68.0	72.1
ECH15 1/0 untwisted	EC11 330 1x0 untwisted	762	1400	1500	1600	308	330	352

- \* Nomenclature used for identification purposes only. Nomenclature may not indicate true yield.
- \*\* Maximum and minimum yardage/tex limits based on  $\pm 3$  times the typical standard deviation.

**VI. AVAILABLE PRODUCTS AND ADDITIONAL PHYSICAL PROPERTIES**

Product Nomenclature*		Sizing	Strand Solids (%)			Tensile (min) **		**Tensile (avg)	
US Customary System	Tex/Metric System (SI)		Min	Nominal	Max	Lb.	Newtons	Lb.	Newtons
ECG 35.5 1/0 untwisted	EC9-140 1x0 untwisted	762	0.25	0.35	0.45	20.3	90	25.6	114
ECG 46 1/0 untwisted	EC9-108 1x0 untwisted	762	0.25	0.35	0.45	13.5	60	18	80
ECG146 1/0 untwisted	EC9-34 1x0 untwisted	762	0.34	0.42	0.50	4.1	18	5.7	25
ECG75 1/0 untwisted	EC9-68 1x0 untwisted	762	0.30	0.40	0.50	8	36	11.3	50
ECH15 1/0 untwisted	EC11 330 1x0 untwisted	762	0.41	0.48	0.55	38	169	56.2	250

\*\* Tensile values will be based on an average of five breaks per packages. Average tensile strength is given for reference only, this is not a specified product property.



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**TEST METHODS FOR PHYSICAL PROPERTIES**

The physical properties as listed in this specification shall be tested according to the methods as specified in the reference listed below:

1.	Yards per Pound (Linear Density - TEX)	W-07Ea-T*
2.	Strand Solids	W-07Ea-T*
3.	Filament Diameter	D-02C and D-02Ca-T*
4.	Tensile	S01Fc, S01Fm and S01Gb
5.	Twist	D-15A

\* AGY Test Methods available upon request, developed around ASTM standards.

**VII. VISUAL PROPERTIES**

Product Nomenclature		Sizing	Filament Count*	Approx. Yarn Diameter		Twist Tolerance	
US Customary System	Tex/Metric System (SI)			in.	mm	TPI	TPM
ECG 35.5 1/0 untwisted	EC9-140 1x0 untwisted	762	816	0.0159	0.404	untwisted	untwisted
ECG 46 1/0 untwisted	EC9-108 1x0 untwisted	762	612	0.0125	0.317	untwisted	untwisted
ECG146 1/0 untwisted	EC9-34 1x0 untwisted	762	204	0.008	0.203	untwisted	untwisted
ECG75 1/0 untwisted	EC9-68 1x0 untwisted	762	408	0.0106	0.269	untwisted	untwisted
ECH15 1/0 untwisted	EC11 330 1x0 untwisted	762	1600	0.0226	0.575	untwisted	untwisted

\* The number of filaments, nominal filament diameter and yarn diameter are for reference purposes only. Yarns are controlled according to yards per pound (linear density-TEX).

The product shall be free of the following visual defects.

Entrapped Waste	Dirt, Grease or Oil	Ends Out
Damaged Yarn <sup>(1)</sup>	Mixed Yarns <sup>(2)</sup>	Broken Filaments (fuzz)
Sloughed Yarn <sup>(1)</sup>	Cut Tubes	
Loops	Water Spots	

(1) AGY accepts no responsibility for any damaged or sloughed material that is contained in a carton that shows any evidence of physical abuse. Any carton showing evidence of having been opened from the bottom will be considered as having been mishandled by the customer. Such damage or questions of damage is the responsibility of the carrier, as, according to AGY terms of sale, delivery to the carrier constitutes delivery to the customer. AGY accepts no responsibility for any damage occurring in a customer's plant.

(2) In the event that AGY or the customer has reason to suspect that a shipment may contain MIXED YARN, the party first suspecting such condition will notify the other, and AGY assumes responsibility for initiating appropriate action. The use of the suspect material should be discontinued pending an investigation of the facts.



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**VIII. PACKAGING WEIGHT AND METERING DATA**

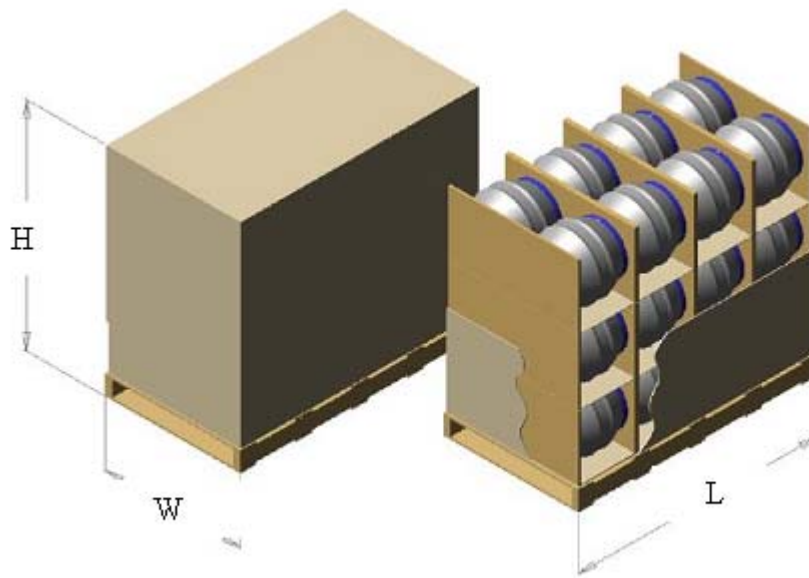
Average package weight is for information only. All packages are completely splice-free.

Product Nomenclature		Sizing	Package Type	Avg. Pkg. Weight		Shipment Makeup	
US Customary System	Metric System (SI)			Lb.	Kg	Description	Pallet Wts.
ECG 35.5 1/0 untwisted	EC9-140 1x0 untwisted	762	4001	22	10	7.7 lbs.(3.5 kg) to full.	400-700
ECG 46 1/0 untwisted	EC9-108 1x0 untwisted	762	4001	22	10	7.7 lbs.(3.5 kg) to full.	400-700
ECG146 1/0 untwisted	EC9-34 1x0 untwisted	762	T1200	9	4.11	4.0 lbs. (1.8 kg) to full	440-500
ECG75 1/0 untwisted	EC9-68 1x0 untwisted	762	4001	22	10	7.7 lbs. (3.5kg) to full	400-700
ECH15 1/0 untwisted	EC11 330 1x0 untwisted	762	4001	20	9.1	7.7 lbs. (3.5kg) to full	400-700

**IX. PACKAGING.**

1. The packages shall be packed in a container suitable to insure adequate protection in transit and stores.
2. The pallets can be stacked two high.
3. Each carton shall be adequately identified by a content label.

Product Nomenclature		Sizing	Package Type	Packaging Dimensions (inches)			Packages per Layer	Layers per Pallet	Packages per Pallet
				Length	Width	Height			
US Customary System	Metric System (SI)								
ECG 35.5 1/0 untwisted	EC9-140 1x0 untwisted	762	4001	53.3	30.0	49.0	8	3	24
ECG 46 1/0 untwisted	EC9-108 1x0 untwisted	762	4001	53.3	30.0	49.0	8	3	24
ECG146 1/0 untwisted	EC9-34 1x0 untwisted	762	T1200	48.0	45.5	39.0	16	3	48
ECG75 1/0 untwisted	EC9-68 1x0 untwisted	762	4001	53.3	30	49	8	3	24
ECH15 1/0 untwisted	EC11 330 1x0 untwisted	762	4001	53.3	30	49	8	3	24



**NOTE:** The above image is typical for pallets with 24-packages. See the preceding table for product specific packaging details.



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**X. STORAGE CONDITIONS AND SHELF LIFE**

- Unless otherwise specified, it is recommended to store glass fiber products in a cool dry area. Glass fiber products must remain in packing material until just prior to its use.
- The packaging system is designed to allow stacking of two pallets. When stacking two high, care should be taken to place correctly and smoothly the top pallet. AGY is not responsible for any damage resulting from stacking pallets higher than two high.
- Assuming that the material is stored as recommended the product shelf life is one year from the date of manufacture.

Document history: This is the recent history for this document.

Date	Description of Change	Author
5/17/10	Changed Bare glass yield yd./lb. Minimum from 13600 to 13703 and TEX Max from 36.5 to 36.2, page 2.	Ogilvie
6/08/10	Added G75/762 and H15/762 products	
6/22/10	Changed H15/762 solids lower, nominal and upper spec limits from .39 .45 .51 to .34 .40 .46.	Ogilvie
7/12/10	Changed G146 yardage specs from 13703-14600-15600 to 13400-14400-15400.	Ogilvie
7/14/10	Changed G146 upper yardage spec to 15500, and changed TEX min from 31.8 to 32.0, nominal from 34 to 34.5 and maximum from 36.2 to 37.0	Ogilvie
11/3/10	Added tensile average to table in section VI and added table to section VII.	Ogilvie
1/23/12	Changed H15/762 solids lower, nominal and upper spec limits from .34 .40 .46. to .41-.48-.55.	Ogilvie