

## FIBERGLASS CONTINUOUS YARN FOR POLYVINYL CHLORIDE PLASTISOL COATING PROCESSES

### I. DESCRIPTION

Fiberglass yarn is a natural, lustrous, white, continuous filament yarn that is twisted 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

The yarn is designed for polyvinyl plastisol coating and the subsequent weaving into various fabrics for use in such things as insect screening and solar screening.

### III. YARN NOMENCLATURE

Example Product Name (US Customary System)	Example Product Name (SI System)
ECG 150 1/0 1.3Z	EC 9-33 1X0 Z52
E- High strength glass formulation	E- High strength glass formulation
C- Continuous filaments	C- Continuous filaments
G- Filament diameter (See Table 1)	9- Filament diameter (See Table 1)
150- Yards per pound divided by 100	33- grams per 1000 meters of yarn
1/0- Single yarn end	1X0- Single yarn end
1.3Z- Turn per inch (TPI)	Z52- Twists per meter (TPM)

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 and the tables in section V must be utilized to obtain the actual bare glass yield of a yarn product.

#### IV. GENERAL INFORMATION

Filament Designation US Units	Filament Designation SI Units	Range for Average Filament Diameter			
		Minimum Inches	Maximum Inches	Minimum µm	Maximum µm
DE	6.0	0.00023	0.000269	5.84	6.85
F	8.0	0.00030	0.000349	7.62	8.86
G	9.0	0.00035	0.000399	8.89	10.15

The yarns are twisted onto plastic single flange bobbins with a milk bottle type build, which is suitable for over end removal only. The bobbins are designed to provide a smooth runout, and their geometry is controlled to maintain the desired runout performance. The package build will not extend past the edge of the base. Maximum allowable undercut at the base is 3/16" (5mm). The bobbins have no defects on the nose, which would interfere with the smooth removal of the yarn.

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

Product Name*	Product Name (SI) *	Sizing	Bare Glass Yield						Typical CV**
			Nominal Yds/ lb	Minimum Yds/ lb	Maximum Yds/ lb	Nominal Tex	Maximum Tex	Minimum Tex	
ECDE100 1/0 2.0Z	EC6 50 1X0 Z80	671	10000	9400	10600	49.6	46.8	52.8	2.0
ECF90 1/0 1.6Z	EC8 55 1X0 Z64	671	9000	8500	9500	55.1	58.4	52.2	2.0
ECG150 1/0 1.3Z	EC9 33 1X0 Z52	620	15000	14000	16000	33.1	35.4	31.0	2.2
ECG150 1/0 1.3Z	EC9 33 1X0 Z52	671	15000	14000	16000	33.1	35.4	31.0	2.2
ECG75 1/0 1.0Z	EC9 68 1X0 Z40	620	7300	6884	7716	68.0	72.1	64.3	2.0

\*- Nomenclature used for identification purposes only. Nomenclature may not indicate true yield.

\*\* - CV provided as a reference only. This is not a specified product property.

Additional Comments: See Section VIII for bobbin selections.

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

Product Name	Tex Designation	Sizing	Strand Solids			Average Tensile *		Minimum Tensile	
			Percent Strand Solids	Minimum Percent Strand Solids	Maximum Percent Strand Solids	Lbs	Newtons	Lbs	Newtons
ECDE100 1/0 2.0Z	EC6 50 1X0 Z80	671	0.85	0.75	0.95	5.4	24.0	4.1	18.2
ECF90 1/0 1.6Z	EC8 55 1X0 Z64	671	0.80	0.70	0.90	10.2	45.5	7.7	34.2
ECG150 1/0 1.3Z	EC9 33 1X0 Z52	620	1.38	1.13	1.63	4.6	20.5	3.5	15.3
ECG150 1/0 1.3Z	EC9 33 1X0 Z52	671	0.89	0.78	1.00	5.75	25.6	4.3	19.1
ECG75 1/0 1.0Z	EC9 68 1X0 Z40	620	1.30	1.12	1.48	8.8	39.0	5.7	25.3

**Breaking Strength** - The strength is expressed in pounds (newtons) per end. The minimum strengths will be the average of four breaks per package.

\* The average tensile strength is provided as reference only. This is not a specified product property.

**Moisture** - The maximum moisture for individual packages is 0.75%.

Test Method 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. Ignition Loss - W-07Ea-T\*
3. Breaking Strength - S-01Fm-T\*
4. Twist per Inch (per Meter) - D-15A-T\*.

\* Owens Corning Test Methods. Copies available upon request.

Additional Comments: Physical test methods will soon be changed to ASTM Methods where applicable.

**VII. AVAILABLE PRODUCTS AND VISUAL PROPERTIES**

Product Name	Tex Designation	Sizing	Maximum Individual Broken Filaments (360° Count)	Filament Count*	Approximate Yarn Diameter		Twist Nominal		Twist Tolerance	
					Inches	mm	TPI	TPM	TPI	TPM
ECDE100 1/0 2.0Z	EC6 50 1X0 Z80	671	10	600	0.0098	.249	2.00	80	±0.30	±12
ECF90 1/0 1.6Z	EC8 55 1X0 Z64	671	10	408	0.009	0.224	1.60	64	±0.30	±12
ECG150 1/0 1.3Z	EC9 33 1X0 Z52	620	10	204	0.008	0.203	1.30	52	±0.30	±12
ECG150 1/0 1.3Z	EC9 33 1X0 Z52	671	10	204	0.008	0.203	1.30	52	±0.30	±12
ECG75 1/0 1.0Z	EC9 68 1X0 Z40	620	10	408	0.0106	.269	1.00	40	±0.30	±12

\* The number of filaments and approximate yarn diameter are for reference purposes only. Yarns are controlled according to linear density.

A. The product shall be free of the following internal or external (depending where found) characteristics.

Entrapped Waste	Dirt, Grease or Oil
Ends Out	Mixed Yarns**
Damaged Yarn*	Cut Tubes
Unbalanced Yarn	Cracked Tubes
Sloughed Yarn*	Protruding Ends (start up)
Bad Builds	Loops
Water Spots	Broken Filaments (fuzz)

\* 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.

\*\* 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.

**VII. AVAILABLE PRODUCTS AND VISUAL PROPERTIES – cont'd**

1. Protruding Ends and Loops  
A protruding end or loop resting on the base of the bobbin is permissible.
2. Bad Builds  
The build shall not extend beyond the edge of the bobbin base and undercuts shall not exceed 3/16" (5mm).

**VIII. PACKAGING WEIGHT AND METERING DATA**

- ⇒ Average package weight is for information only.
- ⇒ All metered packages are completely splice-free. Non-metered yarn may or may not contain splices.
- ⇒ Metered and non-metered material is packaged separately

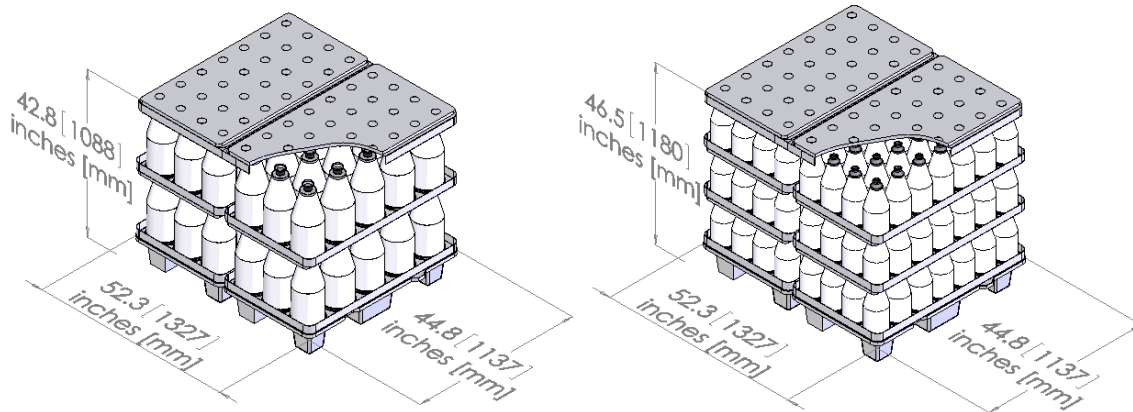
Product Name	Tex Designation	Sizing	Bobbin Type	Average Package Weight		Shipment Makeup		Comments
				Lbs.	Kg	Ratio	Description	
ECG150 1/0 1.3Z	EC9 33 1X0 Z52	620	8542	8.5	4.00	100%	6.0 lb (2.7 kg) to full	1, 2, 3, 4
ECG150 1/0 1.3Z	EC9 33 1X0 Z52	752	8571	17.2	7.80	100%	6.0 lb (2.7 kg) to full	1, 3, 4
ECG150 1/0 1.3Z	EC9 33 1X0 Z52	671	8571	17.2	7.80	100%	6.0 lb (2.7 kg) to full	1, 3, 4
ECF90 1/0 1.6Z	EC8 55 1X0 Z64	671	8571	17.2	7.80	100%	4.0 lb (1.8 kg) to full	1, 3, 4
ECG75 1/0 1.0Z	EC9 68 1X0 Z40	620	8571	18.8	8.50	70%	Mtd 134,500 yds min	1, 2, 3
				13.7	6.20	30%	(123,000 m min)	1, 2, 3
ECDE100 1/0 2.0Z	EC6 50 1X0 Z80	671	8542	8	3.6	100%	5.0 lb (2.3 kg) to full 4.0 lb (1.8 kg) to full	1, 3, 4

**Notes:**

1. Available with transfer tails upon request
2. Available with treatment only
3. Inspected bobbins with no cuts
4. Metered and non-metered bobbins are packed together.

**IX. PACKAGE DESCRIPTION**

The primary form of packaging utilizes a returnable plastic pallet system as shown.



8571 Bobbins

8542 Bobbins

For additional information and details on the various types of packaging that are available, please see AGY Document AGY-PD1 (Packaging for Fiberglass Continuous Yarn).

**X. PREPARATION FOR SHIPMENT**

- A. Package Identification
  - ⇒ Each bobbin will be identified by an identification disc.
  - ⇒ The discs for the various yarn constructions will be per the system of identification set up by AGY.
- B. The bobbins shall be packed in a container suitable to insure adequate protection in transit and stores.
- C. A content label shall adequately identify each carton.

**Document history:**

Date	Description of change	Author
10/11/10	Added DE100 671 product.	Bruce Ogilvie
3/24/11	Changed DE100 671 solids spec lower limit from .70 to .75 and upper limit from 1.0 to .95.	Bruce Ogilvie
11/09/11	Changed G150 671 solids LSL, NOM and USL specs from 0.74, 0.85, 0.96 to 0.82, 0.93, 1.04.	Ward Aston
01/06/12	Changed G150 671 solids LSL, NOM and USL specs from 0.82, 0.93, 1.04 to 0.78-0.89-1.0.	Bruce Ogilvie