



**CUSTOMER
ACCEPTANCE
STANDARD**

No: TP-360 S-1 LD
Date: 14-Jun-04
Supersedes: 07-Nov-00
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**FIBERGLASS YARNS FOR HIGH SILICA FABRICS
AMETEK - HAVEG DIVISION AND SGL CARBON**

I. DESCRIPTION AND USE

Fiberglass Lot Glass yarn is sold to the weaving industry to produce a fabric that is subsequently sold as woven goods to Ametek – Haveg Division and SGL Carbon to produce High Silica Fabrics.

In order to insure the qualification of each individual Lot Glass marble run, it is mandatory that controlled samples of each run be qualified at Ametek - Haveg Division and SGL Carbon.

AGY will certify to Ametek - Haveg Division and SGL Carbon that they will follow the procedure as defined in TP-360 S-1 LD to include fabric samples produced sequentially from marbles produced throughout the run.

AGY will have a distinct tracer element placed in each lot glass run to insure that each run can be identified and separated.

II. PRECISION-CONTROL PROCEDURE

A. Ingredients and Production

Fiberglass yarns for High Silica Fabrics are manufactured in a marble melt process. The marbles are of "E" Glass composition and are produced only from a one tank operation at the Owens Corning, Anderson, South Carolina manufacturing facility.

To better appreciate the exact ingredients, AGY will have a chemical analysis of each lot glass run conducted and will maintain this analysis on file.

B. Sizing

These yarns are manufactured with 620-1 size.



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II. PRECISION-CONTROL PROCEDURE - cont'd

C. Lot Glass Qualification Run

Whenever a new lot is to be qualified, trial quantities of this run shall be qualified for leaching at Ametek - Haveg Division and SGL Carbon. AGY will follow the following procedure for qualifying all future lot glass runs:

1. Customers will be notified at least six months prior to a Lot change.
2. An individual from Owens Corning - Glass Technology will be assigned to oversee the individual lot glass runs. This individual will be part of the certification procedure.
3. AGY will ensure that chemistry checks are made at the beginning, middle and end of the lot glass run.
4. AGY will prepare tapes throughout the total lot glass run. Marbles produced from this run will be utilized to produce yarns that will be made into tapes.

Samples of glass will be run for three (3) dates of the lot run.

	<u>Lehr 1</u>	<u>Lehr 2</u>
First day of marble production run	A	D
Approximate middle of marble production run	B	E
Last day of marble production run	C	F

The yarn will be woven at the AGY Aiken facility. Weaving will be accomplished in the following sequence:



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Each warp will be a 50/50 blend of two distinct dates and/or lehrs of a specific lot. The combination will be as follows:

2 Lehr matrix

	B	C	D	E	F
A	X	X	X	X	X
B		X	X	X	X
C			X	X	X
D				X	X
E					X

1 Lehr matrix

	AB	BC	AC
A	X		X
B	X	X	
C		X	X

The fabric fill will be comprised of the same combination as in the warp direction. Four yards of one fill yarn will be produced then four yards using the second yarn will be produced. This scheme will be repeated to make four (4) separate samples, each eight (8) yards long for each warp mix.

These tapes will represent the maximum variation that could occur throughout the particular lot glass production run.

- 5. SGL Carbon and Amatek-Haveg will receive the sample tapes three months prior to the conversion for their qualification. The terms of qualification will be the new lot having no statistical difference in leach time or leached silica content between the new Lot and the previous Lot.
- 6. AGY will retain a set of tape samples.

D. Lot Glass Leachability Test

The SiO2 content of acid leached lot glass is defined in AGY Test Method S-29-1 (available upon request).



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E. Ametek - Haveg Division and SGL Carbon Certification Procedure

AGY has established a Certification Procedure that guarantees the consistent leachability properties of each lot glass run. Per the following documentation, that certification is AGY's contractual agreement that the individual runs are controlled. AGY will not assume further liability for the leaching properties of the subject lot once Ametek - Haveg Division and SGL Carbon accepts the stated certified product as per this documentation.

This is to certify that AGY has followed the established procedure as per TP-360 S-1 LD CAS and based on your own analysis, Lot _____ is qualified per tape samples sequentially produced during this lot glass run. This is to certify that a distinct tracer has been formulated into this lot to maintain separation identity. AGY will not assume further liability for the leaching properties of the subject lot glass run once Ametek - Haveg Division and SGL Carbon accepts this stated certification.

AGY will also certify to the weaver that this individual lot glass run is separate and sequential control of lot is maintained. This certification will be filed when weavers accept Lot _____.