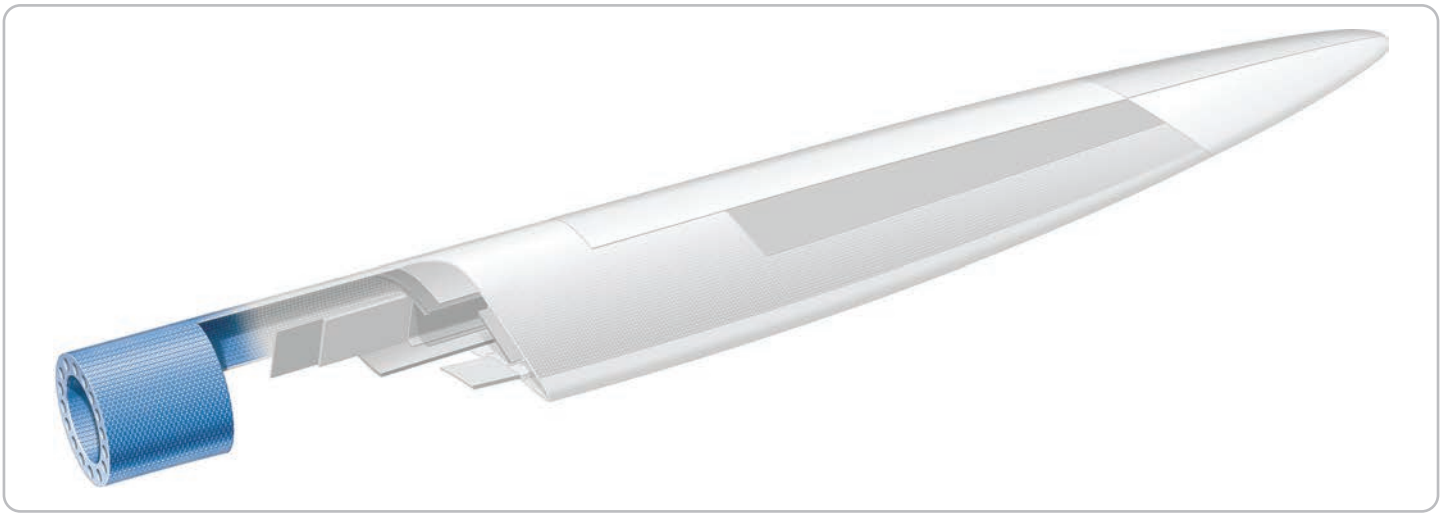
OWENS CORNING®
INNOVATIONS FOR LIVING®

ultrablade™

Ultrablade™ triaxial fabric solutions



ultrablade™

Owens Corning is the leader in glass science responsible for innovations in glass including E, Advantex® brand and high performance glass over a period of more than 70 years.

Our expertise in chemistry enables leading solutions in every product form from continuous roving to non-woven glass chemistry.

Our state of the art facilities allow us to work in partnership with our customers to develop fabric solutions for specific applications.

Owens Corning global manufacturing platform ensures delivery of consistent solutions in all regions.

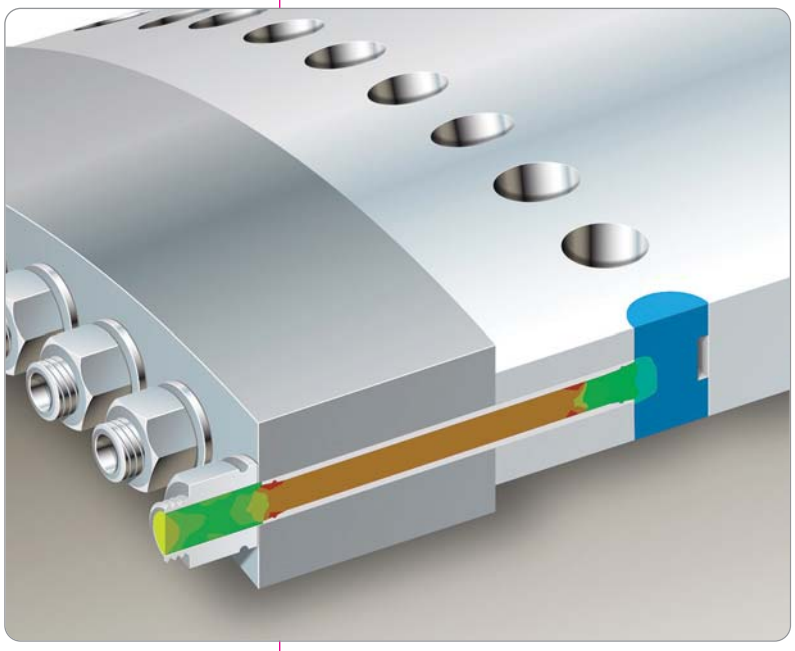
Furnace & glass science

Innovative chemistry

Fabric solutions

Global platform

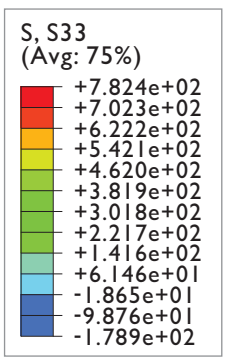
Ultrablade™ triaxial fabrics enable smaller root diameter and blade length extension*



Increases blade root laminate stiffness and strength

Reduces the loading transferred to bolt ($F_b^1 < F_b^2$ as shown in the sketch opposite)

Substantially improves the bolt fatigue life with the reduced bolt loading



*Patent pending

Ultrablade™ triaxial product range

Ultrablade™ triaxial	Type	Application
Ultrablade™ TLX 800-2000 Ultrablade™ TTX 800-2000	Triaxial	Root section

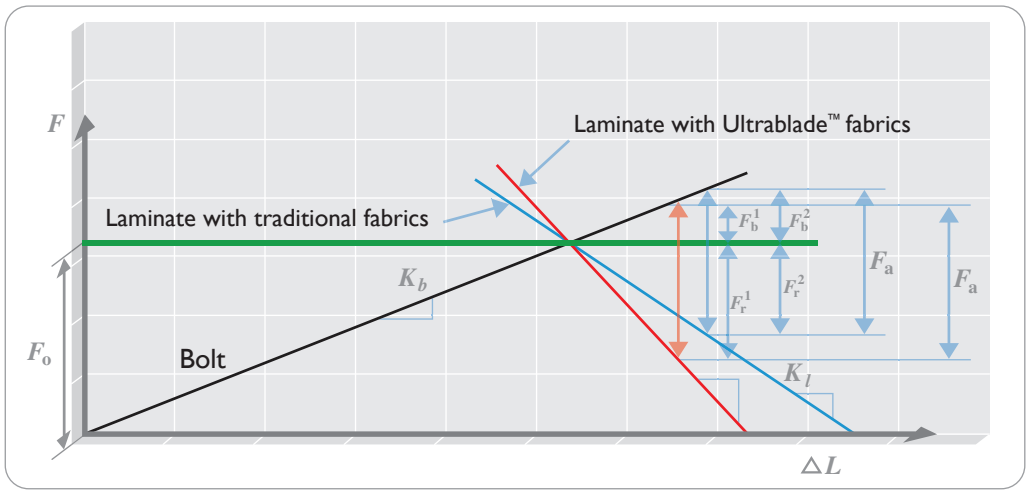
Static property of TTX1500 (as an example)

Laminate fabricated with RIMR035c/RIMH037, testing conducted by Momentive Specialty Chemicals Stuttgart GmbH.

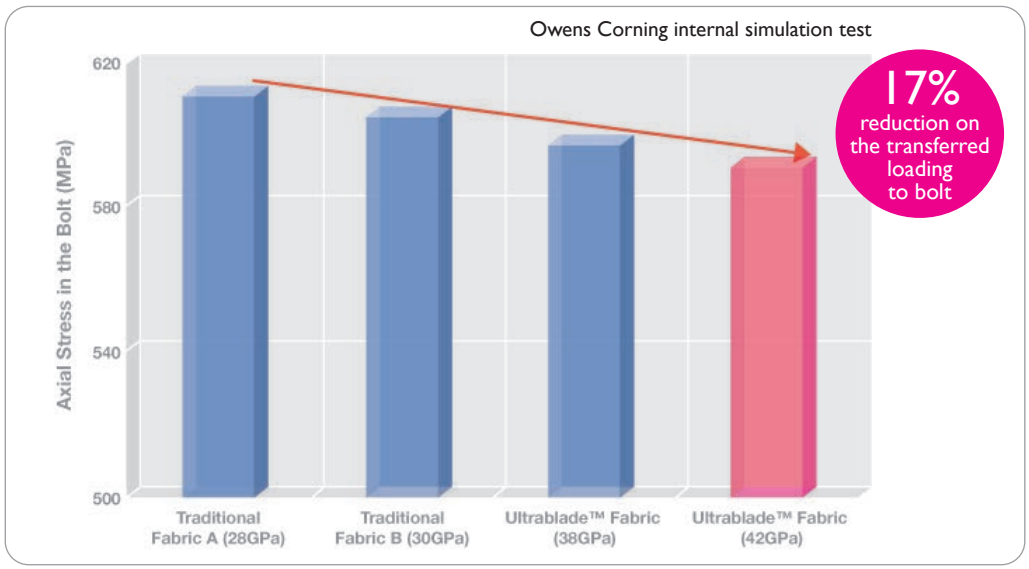
Test	Modulus	[GPa]	Mean strength [MPa]	Characteristic Strength [MPa]	Elongation [%]	FWF [%]
ISO 527-4	Et1	41.10	830.00	770.00	2.23	74.60
ISO 14126	Ec1	39.60	616.00	509.00	1.58	72.50
ISO 527-4	Et2	12.90	53.80	46.90	0.71	72.90
ISO 14129	G12	5.0	26.90	23.60		72.90
ISO 14130			54.60	52.20		

Laminate with Ultrablade™ triaxial fabrics

In the sketch, the red line has a bigger slope due to the higher stiffness of the root laminate fabricated with Ultrablade™ triaxial fabrics. At the same external loading F_a, the load transferred to bolt F_b^1 (for Ultrablade™ triaxial fabrics made root joint) is lower than F_b^2 (for traditional fabrics root joint).



Effect of fabric modulus on the stress in the tension bolt



Impact of fabrics modulus on the bolt loading under same external blade load condition.

With fabrics modulus increased from traditional 28GPa to Ultrablade™ 42GPa, the external loading transferred to the bolt is reduced by 17%.

17% reduction on the transferred loading to bolt will increase the bolt fatigue life substantially.

INNOVATIONS FOR LIVING®

Americas
Owens Corning
Composite Materials, LLC.
One Owens Corning Parkway
Toledo
Ohio 43659
1.800.get.pink™

Brazil
OC Fabrics Brazil
Rodovia Washington Luis,
Km 171
ZIP: 13501-600
Rio Claro - SP - Brazil
+55 19 2111-2602/2606

Europe
European Owens Corning Fiberglas Sprl.
166 Chaussée de la Hulpe
B-1170 Brussels
Belgium
+32.2.674.82.11

China
Owens Corning - OC Asia Pacific
Shanghai Regional Headquarters
Unit 01
02,05, 39/F,
Pudong Kerry Parkside,
1155 Fang Dian Road,
Pudong,
201204,
Shanghai,
China
+86-21-6101 9666
Fax: +86-21-6101 7100

India
Owens Corning (India) Pvt. Ltd.
7th floor, Alpha Building,
Hiranandani Gardens,
Powai,
Mumbai - 400076.
+91 22 6668 1700

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www.owenscorning.com