

Quartzel® Yarns

Since 1922, Saint-Gobain Advanced Ceramic Composites formerly known as Saint-Gobain Quartz or Quartz & Silice has been a solution provider to Aeronautic, Defense and Railway industries. Based in Nemours (France) and also in Louisville, KY (US), Saint-Gobain Advanced Ceramic Composites is recognized as the world-wide leader in the production of fused quartz fibers commercialized under the brand name Quartzel®.



Quartzel® fiber is a homogeneous, non-porous, continuous, amorphous, ultra-pure silica glass with a SiO₂ content ≥ 99.95%. Quartzel® yarns are assemblies of either 9µm, 12.5µm or 14µm filaments gathered into strands (forming package), then processed with varying levels of twist and ply.

Applications

Reinforcement material in composite industry

- Radome (weather, fighter, satcom, DBS, UAVs)
- Electromagnetic windows
- Stealth materials with structural performance for all airborne, grounded & marine military application
- Sacrificial ablative component for thermal protection

Heat insulation at elevated temperature

- Fabrics for furnace lining in industrial and semicon applications
- Thermocouple insulation
- High temperature and fireproof cables
- Thermal protection systems (TPS) of space launchers
- Satellite thermal shield
- Filtration at elevated temperature and/or in aggressive environ.
- High temperature seals
- Insulation in automotive exhausts

Fireproof material for cable industry

- Fireproof and thermal protection for aerospace cables

Main properties

- Outstanding electromagnetic properties thanks to the lowest dielectric constant and dielectric loss among mineral materials (resp. 3.74 and 0.0002 at 10 GHz)
- Non pollutant material with SiO₂ content above 99.95%
- Resistant to most acids
- High mechanical strength & virtually no shrinkage at HT
- Low CTE (0.54x10⁻⁶ K⁻¹) & good resistance to thermal shock
- Integrity as insulating material up to 1050°C
- Ablative material above 1600°C

Textile processing

Quartzel® yarns are supplied in H3 bobbins and can be used in a large variety of textile processes :

- Weaving / Beaming
- Braiding
- Multiple winding
- Texturizing / Stretch breaking
- Knitting

TECHNICAL DATA AND YARN NOMENCLATURE

The following table gives details of standard Quartzel® yarns 9 and 14 microns filaments :

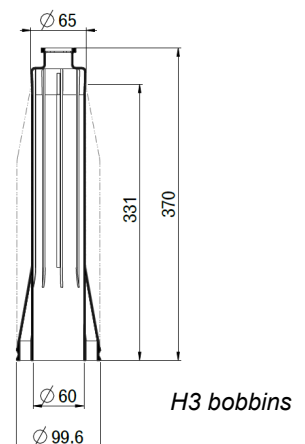
Based on ISO 2078 (Europe)	US customary system	Nominal linear density (ISO 1889/ASTM D1907)**		Tensile strength (ISO 3341/ASTM D2256)**		Modulus Typical values in GPa
		tex	100 x yard/lb	Typical values in daN***		
C9 17 Z20 [sizing*] ¹	300 1/0 [sizing*] 0.5Z ¹	17	300	1.0		72
C9 17x2 S150 [sizing*] ¹	300 1/2 [sizing*] 4Z 3.8S ¹	33	150	2.5		
C9 33 Z20 [sizing*]	300 2/0 [sizing*] 0.5Z	33	150	2.1		
C14 40 Z20 [sizing*] ¹	125 1/0 [sizing*] 0.5Z ¹	40	125	2.0		
C9 33x2 S150 [sizing*]	300 2/2 [sizing*] 4Z 3.8S	67	75	5.3		
C14 80 Z20 [sizing*]	125 2/0 [sizing*] 0.5Z	80	62	3.8		
C9 33x4 S150 [sizing*] ²	300 2/4 [sizing*] 4Z 3.8S ²	133	37	11.5		
C14 80x2 S150 [sizing*]	125 2/2 [sizing*] 4Z 3.8S	160	31	10.5		
C9 33x8 S150 [sizing*] ²	300 2/8 [sizing*] 4Z 3.8S ²	266	18	20.0		

[sizing*]: Available sizing are : QS1318 (Worldwide) / QSCY1 (Worldwide) / QS13-QPC1 (US Only)
 Standard bobbin weight : 1kg (¹:500g;²:2kg). Carton dimension (mm): L 580 x W 580 x H 400. 15 bobbins max. per carton.
 with a slight internal modification to adapt to quartz material *Lbf = 2.25 x daN

- QS1318 and QS13-QPC1 are multipurpose high performance direct sizings, recommended for most textile processes and composite applications. They can be used with thermoset resins and among others : Phenolic, Epoxy, BMI, etc..
- QSCY1 sizing is designed specifically for optimized compatibility with cyanate ester resin systems.

STORAGE

Quartzel® yarns properties are guaranteed for 24 months when properly stored indoors, protected from direct sunlight exposure and in its original packaging. Store preferably at less than 35°C, avoiding humidity consistently higher than 80%.



H3 bobbins

Dual-use disclaimer: Quartzel® products are all classified as a dual-use commodity by the European and US authorities. Therefore, an export license is required to export these goods to some countries. Our team will support you in this process.

The information given in this data sheet is believed to be accurate and reliable. However it is the users responsibility to determine whether the material is suitable for their particular application, process and/or environment. This data sheet may be modified without prior notice. Quartzel® is a registered trademark of Saint-Gobain Quartz S.A.S. Version YA-A4-EN-02/25 - All rights reserved

<https://www.quartz.saint-gobain.com/>

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