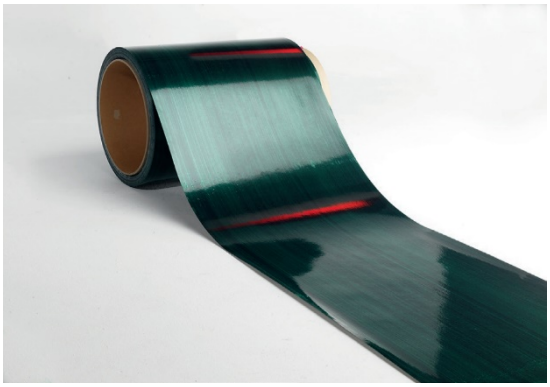
Tenax™ Prepreg Q183 series is a rapid curing carbon fiber prepreg system. The resin formulation allows this prepreg to cure in approximately 20 minutes at a temperature of 160 °C, enabling short cycle out-of-autoclave press molding process for monolithic and sandwich core panel application. The increase in production efficiency due to this rapid processing enables high-rate composite manufacturing capacities. These system is mainly formulated for the aerospace industry to replace standard-cure materials.



Product benefits

- For aerospace applications
- Excellent hot/wet properties
- Low void content
- Good tack and drape
- Typical prepreg shelf life

Process benefits

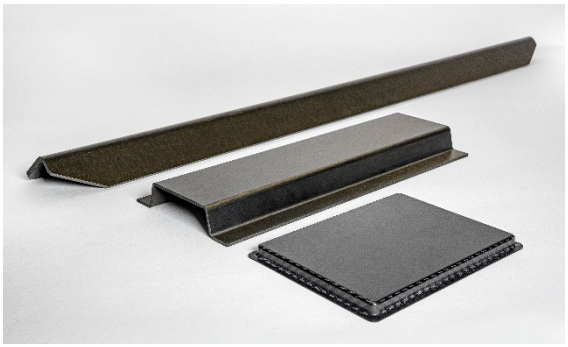
- Focused on high-rate part manufacturing
- Fully cured in 20 min – no post cure
- Designed for press cure but also applicable for autoclave cure
- Applicable for ATL and AFP process
- Cost effective

Physical properties

	Test method	Unit	Typical values
Resin density	ISO 1183	g/cm³	1.21
Volatile content	EN 2558	wt %	<0.5
Resin flow	EN 2560	wt %	6 - 8
Moisture uptake	EN 3615 (70 °C/85 % r.h.)	%	<1.5
DMA-T_G (Dry)	ASTM D7028	°C	182
DMA-T_G (Wet*)	ASTM D7028	°C	151

* Wet conditioning: 70 °C and 85 % r.h.

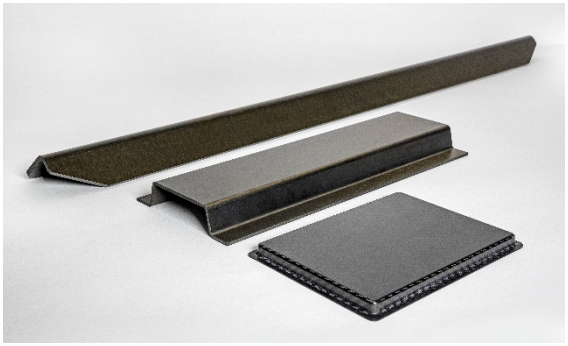
Brand name	**Tenax™**
Product designation	**Q183-UD-194-34/STS-24K**
Style	**UD**
Fiber	**Tenax™-E STS40 E23 24K 1600tex**
Fiber areal weight	**194 g/m²**
Resin	**Q183**
Matrix content	**34 %**



Properties (test direction)		Conditioning	Test temperature	Unit	Typical values
Tensile (0°) EN 2561 B	strength	dry: 23 °C / 50 % r.h.	RT	MPa	2066*
	modulus	dry: 23 °C / 50 % r.h.	RT	GPa	138*
Tensile (90°) EN 2597 B	strength	dry: 23 °C / 50 % r.h.	RT	MPa	72*
		wet: 70 °C / 85 % r.h.	70 °C	MPa	35*
	modulus	dry: 23 °C / 50 % r.h	RT	GPa	8.3*
		wet: 70 °C / 85 % r.h.	70 °C	GPa	7.2*
Compression (0°) EN 2850 A4	strength	dry: 23 °C / 50 % r.h.	RT	MPa	1386
		wet: 70 °C / 85 % r.h.	70 °C	MPa	1155
	modulus	dry: 23 °C / 50 % r.h.	RT	GPa	116
Compression (90°) EN 2850 B	strength	dry: 23 °C / 50 % r.h.	RT	MPa	209
		wet: 70 °C / 85 % r.h.	70 °C	MPa	164
	modulus	dry: 23 °C / 50 % r.h.	RT	GPa	8.3
Poissons ratio (0°/90°) EN 2561 B	-	dry: 23 °C / 50 % r.h.	RT	-	0.29
ILSS EN 2563	strength	dry: 23 °C / 50 % r.h.	RT	MPa	91*
		wet: 70 °C / 85 % r.h.	70 °C	MPa	66*

* Normalized to 57 % Vf%

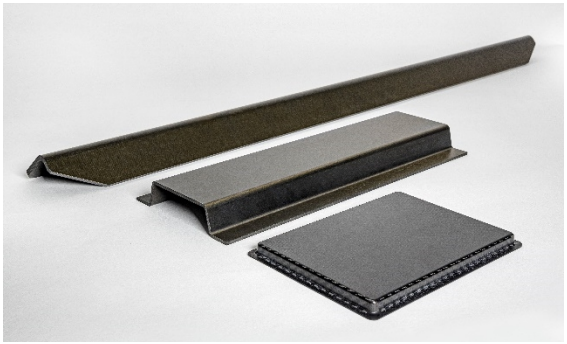
Brand name	**Tenax™**
Product designation	**Q183-UD-268-34/ITS-24K**
Style	**UD**
Fiber	**Tenax™-E ITS55 E23 24K 1600tex**
Fiber areal weight	**268 g/m²**
Resin	**Q183**
Matrix content	**34 %**



Properties (test direction)		Conditioning	Test temperature	Unit	Typical values
Tensile (0°) EN 2561 B	strength	dry: 23 °C / 50 % r.h.	RT	MPa	2690*
		wet: 70 °C / 85 % r.h.	70 °C	MPa	2494*
	modulus	dry: 23 °C / 50 % r.h.	RT	GPa	162*
Tensile (90°) EN 2597 B	strength	dry: 23 °C / 50 % r.h.	RT	MPa	51*
		wet: 70 °C / 85 % r.h.	70 °C	MPa	23*
	modulus	dry: 23 °C / 50 % r.h	RT	GPa	8.0*
		wet: 70 °C / 85 % r.h.	70 °C	GPa	7.4*
Compression (0°) EN 2850 A4	strength	dry: 23 °C / 50 % r.h.	RT	MPa	1310
		wet: 70 °C / 85 % r.h.	70 °C	MPa	951
	modulus	dry: 23 °C / 50 % r.h.	RT	GPa	131
Compression (90°) EN 2850 B	strength	dry: 23 °C / 50 % r.h.	RT	MPa	229
		wet: 70 °C / 85 % r.h.	70 °C	MPa	163
	modulus	dry: 23 °C / 50 % r.h.	RT	GPa	9.4
		wet: 70 °C / 85 % r.h.	70 °C	GPa	8.1
Poissons ratio (0°/90°) EN 2561 B	-	dry: 23 °C / 50 % r.h.	RT	-	0.32
ILSS EN 2563	strength	dry: 23 °C / 50 % r.h.	RT	MPa	81*
		wet: 70 °C / 85 % r.h.	70 °C	MPa	59*

* Normalized to 57 % Vf%

Brand name	**Tenax™**
Product designation	**Q183-PW-193-38/HTS-3K**
Style	**Plain weave**
Fiber	**Tenax™-J HTS40 E13 3K 200tex**
Fiber areal weight	**193 g/m²**
Resin	**Q183**
Matrix content	**38 %**



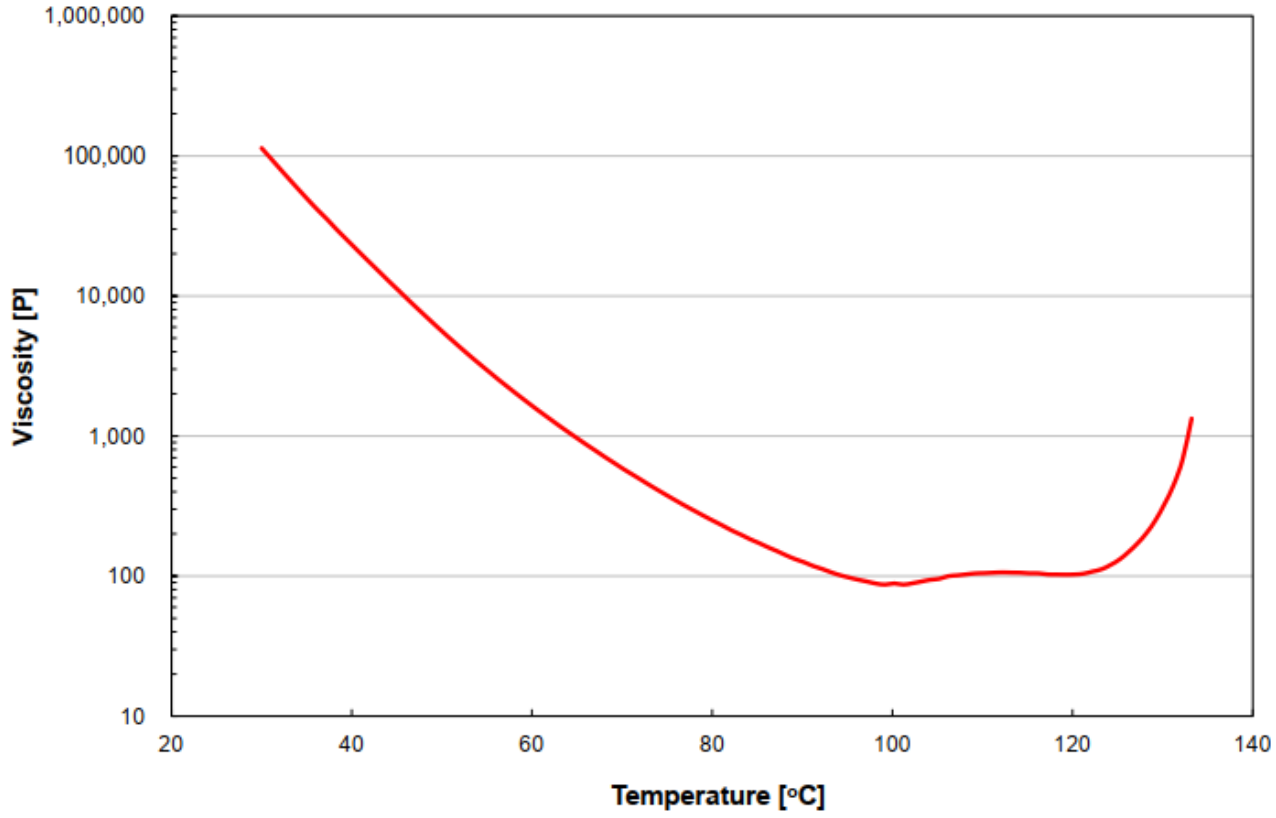
Properties (test direction)		Conditioning	Test temperature	Unit	Typical values
Compression (warp) EN 2850 B1	strength	dry: 23 °C / 50 % r.h.	RT	MPa	782*
		wet: 70 °C / 85 % r.h.	70 °C	MPa	484*
	modulus	dry: 23 °C / 50 % r.h.	RT	GPa	58*
Compression (weft) EN 2850 B2	strength	dry: 23 °C / 50 % r.h.	RT	MPa	789*
		wet: 70 °C / 85 % r.h.	70 °C	MPa	492*
	modulus	dry: 23 °C / 50 % r.h	RT	GPa	58*
ILSS EN 2563	strength	dry: 23 °C / 50 % r.h.	RT	MPa	67*
		wet: 70 °C / 85 % r.h.	70 °C	MPa	46*

* Normalized to 53 % Vf%

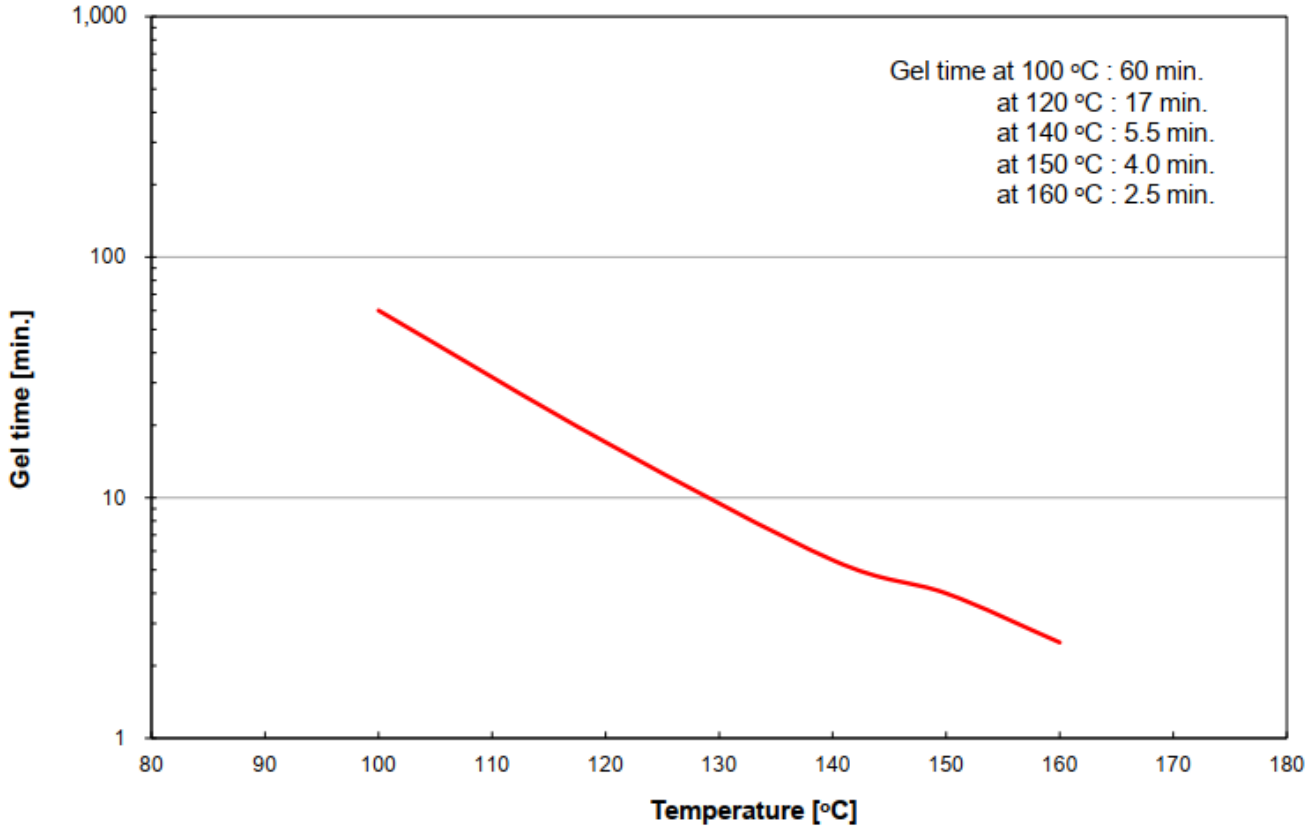
Coefficient of thermal expansion (CTE)

Properties (Test direction)		Material	Test range	Unit	Typical values
CTE ASTM E381	0°	Q183-UD-194-34/ITS-24K	-30 °C – 200 °C	x10^{-5}/°C	0.00
	90°		25 °C – 175 °C	x10^{-5}/°C	3.98
	90°		175 °C – 200 °C	x10^{-5}/°C	7.35
CTE ASTM E381	warp	Q183-2/2TW-285-38/HTS-6K	25 °C – 175 °C	x10^{-5}/°C	-0.21
	warp		175 °C – 200 °C	x10^{-5}/°C	-0.81
	weft		25 °C – 175 °C	x10^{-5}/°C	0.19
	weft		175 °C – 200 °C	x10^{-5}/°C	-0.09

Dynamic viscosity at 2 °C/minute



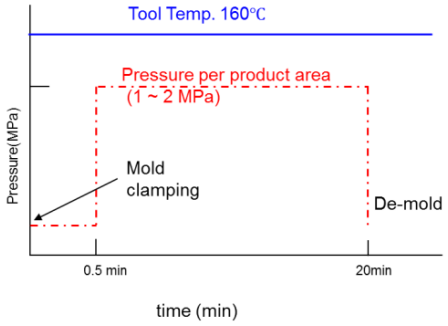
Gel time (Isothermal conditions)



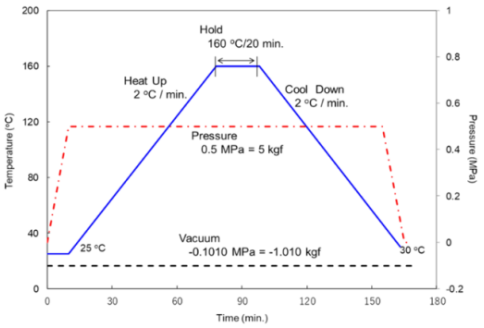
Prepeg curing conditions

Defined heat-up rates will vary depending on the size of the component to be manufactured.

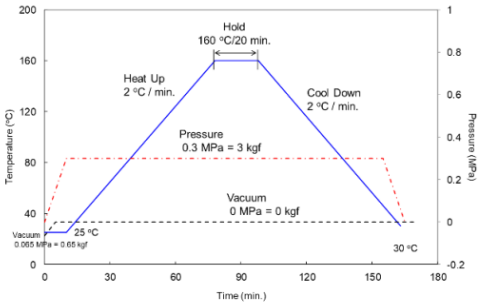
- **Press cure** (compression molding)
  1. Set heat up to 160 °C ± 5 °C with heat-up rate between 50 - 100 °C/minute (depending in mold tooling)
  2. Press pressure at 1 - 2 MPa (= 10 – 20 bar)
  3. Hold at 160 °C ± 5 °C for 20 minutes



- **Autoclave cure** – monolithic parts
  1. Apply minimum vacuum (80 kPa)
  2. Apply typically 0.5 MPa of pressure to the laminate
  3. Set heat up to 160 °C ± 5 °C with heat-up rate between 2 - 5 °C/minute
  4. Hold at 160 °C ± 5 °C for 20 minutes
  5. Cool component to 60°C or below at a cool-down rate of 2 - 5 °C/minute



- **Autoclave cure** – sandwich parts
  1. Apply minimum vacuum (65 kPa)
  2. Apply 0.3 MPa of pressure to the laminate
  3. Vent the vacuum bag to atmospheric pressure once the pressure reaches 0.14 MPa
  4. Set heat-up to 160 °C ± 5 °C with heat-up rate between 2 - 5 °C/minute
  5. Hold at 160 °C ± 5 °C for 20 minutes
  6. Cool component to 60°C or below at a cool-down rate of 2 - 5 °C/minute



Storage condition and shelf life

- Storage at -18 °C: 12 months from date of manufacture
- Storage at 23 °C: 30 days from date of manufacture
- It is recommended that Tenax™ Thermoset Prepregs be stored in a dry cool area. User should allow the prepreg to reach room temperature before opening the sealed bag. The thawing time strongly depends on the amount of material on a single roll. Please contact us for more information.

Product form

- This product is available in a wide range of formats. Please contact us for more information.

Precautions for use

- A product information sheet on safe handling is available. Please contact us.

General Information

- All data shown are typical values representative of the material and cannot be guaranteed. Properties may vary depending on samples preparation and test methods.
- For each shipment an inspection certificate is generated and supplied.
- A detailed customer specification is arranged on request.
- The export or transfer of carbon fiber products can be subject to authorization, depending on end-use and final destination