PYROFIL™ MITSUBISHI RAYON CO.,LTD.

PYROFIL$_{TM}$ HR40

High Modulus Carbon Fiber
Product Data Sheet

Description

PYROFIL$_{TM}$ HR40 is a high modulus carbon fiber with high tensile strength. It is a continuous carbon fiber and has 12k(12,000) and filaments with approximately 6 microns diameter. **PYROFIL$_{TM}$ HR40** is a PAN based carbon fiber, which is made of non-textile precursor designed for high performance applications and suitable for many applications requiring high modulus and tensile strength.

Typical Fiber Properties

	SI Unit	US Unit
Strand Tensile Strength	4410 MPa	640 KSi
Strand Tensile Modulus	395 GPa	57 MSi
Filament density	1.82 g/cm^3	0.066 lb/in^3
Elongation	1.2 %	1.2 %
Filament Count	12k(12,000)	12k(12,000)
Mass Per Unit Length	600 mg/m(12K)	0.0336 lb/in
Filament Diameter	6.0	6.0
Thermal Conductivity	45 W/mK	
Coefficient Thermal Expansion (Vf 60%)	-0.4 x 10^{-6} m/m/K	
Specific Heat (Vf 60%)	0.75 J/gK	

Sizing Agent

Epoxy compatible sizing is available.

Typical Spool Properties

		SI Unit	US Unit
Spool Weight		1.5 kg (12k)	3.31 lbs
Fiber Length per Spool		2500 m	2734 yds
Core Size	Inner Diameter	76.5mm	3 in
	Outer Diameter	82.5 mm	3.2 in
	Core Length	280 mm	11 in
Standard Number of spools per package		12	12

PYROFIL™ MITSUBISHI RAYON CO.,LTD.

Typical Mechanical Properties

Mechanical Properties		SI Unit	US Unit
Unidirectional Tension	Strength	2920 MPa	430 ksi
	Modulus	228 GPa	33.6 Msi
Unidirectional Compression	Strength	1340 MPa	197 ksi
	Modulus	197 GPa	29.0 Msi
Unidurectional Flexure	Strength	1350 MPa	199 ksi
	Modulus	209 GPa	30.8 Msi
Interlaminar Shear Strength	Strength	76 MPa	11 ksi
Fiber Volume		60%	60%

The matrix resin used for this data package is #350, standard epoxy resin of Mitsubishi Rayon Co., Ltd that mainly applies to general purpose prepreg.
The data cited above are typical and not guaranteed. Mechanical properties are strongly affected by the processing and the resins capabilities customer chooses.

Safety Precautions

It is recommended that customers notice precautions for handling Carbon Fibers. Operators should read and understand Material Safety Data Sheet (MSDS) before handling carbon fibers. Material Safety Data Sheets (MSDS) are prepared for all MITSUBISHI RAYON products and are available if required.

For More Information

MITSUBISHI RAYON CO., LTD.
Carbon Fiber & Composite Materials Division
6-41 Konan 1-Chome,
Minato-Ku, Tokyo 108-8506, Japan
Phone: +81-(0)3-5495-3048, 3050, 3046
Fax: +81-(0)3-5495-3206, 3207

GRAFIL INC.
Head Office
5900 88th Street
Sacramento, CA 95828,USA
Phone: +1-800-365-5533
Fax: +1-916-386-0347

Europe Office
6 Orchard Court
Binley Business Park
Harry Weston Road
Binley, Coventry CV3 2TQ England
Phone: +44 (0) 2476 447272
Fax: +44 (0) 2476 449565