

VICTREX[®] PEEK 450FC30

> Product Description:

High performance thermoplastic material, 30% reinforced with carbon fibre / graphite / PTFE **P**oly**E**ther**E**ther**K**etone (PEEK), semi crystalline, granules for injection moulding and extrusion, standard flow, FDA food contact compliant, colour black.

> Typical Application Areas:

Tribological applications for high strength. Excellent wear resistance, very low coefficient of friction, low coefficient of thermal expansion. Chemically resistant to aggressive environments.

> Material Properties

Mechanical Data Break, 23°C ISO 527 MPa 150 Tensile Strength Break, 23°C ISO 527 MPa 150 Break, 175°C 95 55 57 45 Break, 225°C 45 55 57 45 Break, 225°C 45 55 57 42 35 Tensile Longation Break, 23°C ISO 527 % 2.3 55 Tensile Kodulus 23°C ISO 527 GPa 13 55 Flexural Strength 23°C ISO 578 MPa 230 160 175°C ISO 178 MPa 160 175 80 Compressive Strength 23°C ISO 178 GPa 11.5 Compressive Strength 23°C ISO 178 GPa 11.5 Charpy Impact Strength Notched, 23°C ISO 179/10 35 5.0 Load Impact Strength Notched, 23°C ISO 180/A KJ m² 7.0 Unnotched, 23°C ISO 11357 °C <th></th> <th>CONDITIONS</th> <th>TEST METHOD</th> <th>UNITS</th> <th>TYPICAL VALUE</th>		CONDITIONS	TEST METHOD	UNITS	TYPICAL VALUE
Tensile Strength Break, 23°C ISO 527 MPa 150 Break, 175°C Break, 175°C 95 Break, 25°C 45 Break, 25°C 45 Break, 25°C 35 Tensile Elongation Break, 23°C ISO 527 % 2.3 Tensile Modulus 23°C ISO 527 % 2.3 Flexural Strength 23°C ISO 527 % 2.3 Flexural Strength 23°C ISO 527 % 2.3 Flexural Strength 23°C ISO 527 % 2.3 Flexural Modulus 23°C ISO 178 MPa 230 125°C ISO 178 MPa 160 160 275°C ISO 178 GPa 11.5 170 Compressive Strength 23°C ISO 178 GPa 115 Compressive Strength Notched, 23°C ISO 179/16A KJm²² 5.0 Lorontched, 23°C ISO 180/U KJm²² 7.0 35 Izontc	Mechanical Data		1	1	
Break, 125°C 95 Break, 175°C 55 Break, 275°C 45 Break, 275°C 35 Tensile Elongation Break, 23°C ISO 527 % 2.3 Tensile Modulus 23°C ISO 527 % 2.3 Flexural Strength 23°C ISO 527 % 2.3 Flexural Strength 23°C ISO 527 % 2.3 Flexural Strength 23°C ISO 178 MPa 230 Flexural Modulus 23°C ISO 178 GPa 115 Compressive Strength 23°C ISO 604 MPa 170 120°C ISO 604 MPa 170 45 Charpy Impact Strength 23°C ISO 179/10 35 10 Izod Impact Strength Notched, 23°C ISO 180/A KJ m² 7.0 Unnotched, 23°C ISO 11357 °C 343 Glass Transition (Tg) Onset ISO 11357 °C 143 Meting Point ISO 11357<		Break 23°C	180 527	MPa	150
Break, 175°CSeak, 225°C45Break, 225°C3535Tensile ElongationBreak, 23°CISO 527%2.3Tensile Kodulus23°CISO 527GPa13Flexural Strength23°CISO 178MPa230125°C150 178MPa230160125°C150 178MPa230160125°C150 178GPa115160275°C150 178GPa11.5150Compressive Strength23°CISO 178GPa11.5Compressive Strength23°CISO 178GPa11.5Compressive Strength23°CISO 179/14AKJ m²5.0120°C150 179/14AKJ m²5.0160Charpy Impact StrengthNotched, 23°CISO 179/14AKJ m²5.01201000°CISO 179/14AKJ m²5.035120 Impact StrengthNotched, 23°CISO 179/14AKJ m²5.01201000°CISO 11357°C34335120 Impact StrengthOnsetISO 11357°C343120 Impact StrengthAlong flow below TgISO 11357°C143120OnsetISO 11357°C34335120Along flow below TgISO 11357°C143140Along flow below TgISO 11357°C343150Average above Tg2045150140Along flow below TgISO 75.4			100 321	ivii a	
Break, 225°C Heak, 225°C Heak, 275°C Heak, 275°C Heak, 275°C Heak, 275°C Heak, 23°C ISO 527 % 2.3 Tensile Modulus Break, 23°C ISO 527 %Pa 13 Flexural Strength 23°C ISO 527 %Pa 13 Flexural Strength 23°C ISO 178 MPa 230 125°C ISO 178 MPa 230 Flexural Modulus 23°C ISO 178 MPa 230 Compressive Strength 23°C ISO 178 GPa 11.5 Compressive Strength 23°C ISO 178 GPa 11.5 Compressive Strength 23°C ISO 178 GPa 11.5 Compressive Strength Notched, 23°C ISO 179/14A KJ m² 5.0 Izod Impact Strength Notched, 23°C ISO 180/A KJ m² 7.0 Izod Impact Strength Notched, 23°C ISO 180/A KJ m² 7.0 Glass Transition (Tg) Onset ISO 11357 °C 343 <		1	1	1	1
Image: section of the section of th				1	
Tensile Elongation Break, 23°C ISO 527 % 2.3 Tensile Modulus 23°C ISO 527 GPa 13 Flexural Strength 23°C ISO 178 MPa 230 125°C ISO 178 MPa 230 125°C ISO 178 MPa 230 125°C ISO 178 MPa 230 Flexural Modulus 23°C ISO 178 GPa 110 Compressive Strength 23°C ISO 178 GPa 11.5 Compressive Strength 23°C ISO 178 GPa 11.5 Charpy Impact Strength Notched, 23°C ISO 179/14A kJ m² 5.0 Lood Impact Strength Notched, 23°C ISO 180/A kJ m² 7.0 Unnotched, 23°C ISO 180/J kJ m² 7.0 35 Izod Impact Strength Unnotched, 23°C ISO 180/J KJ m² 7.0 Melting Point ISO 11357<'C			1	1	1
Tensile Modulus 23°C ISO 527 GPa 13 Flexural Strength 23°C ISO 178 MPa 230 Flexural Strength 125°C ISO 178 MPa 230 125°C 1SO 178 MPa 230 125°C 275°C 80 160 175°C 45 80 15 Compressive Strength 23°C ISO 178 GPa 11.5 Compressive Strength 23°C ISO 178 GPa 11.5 Compressive Strength 23°C ISO 179/16A MPa 170 120°C 110 35 110 35 Charpy Impact Strength Notched, 23°C ISO 179/10 35 35 Izod Impact Strength Notched, 23°C ISO 180/A KJ m²² 7.0 Izod Impact Strength Notched, 23°C ISO 180/A KJ m²² 7.0 Izod Impact Strength Notched, 23°C ISO 11357 °C 343 Glass Transition (Tg) Onset ISO 11357	Tensile Flongation		180 527	%	1
Flexural Strength23°CISO 178MPa230125°C160160176°C80275°CISO 178GPa11023°CISO 178GPa111.523°CISO 178GPa11023°CISO 178MPa20°C100°C100°C100°C120°C100°C45Charpy Impact StrengthNotched, 23°CISO 179/10AKJ m²120°C1SO 179/103535Izod Impact StrengthNotched, 23°CISO 180/AKJ m²120°CISO 179/103535Izod Impact StrengthNotched, 23°CISO 180/AKJ m²120°LUnnotched, 23°CISO 180/AKJ m²7.0Melting Point100 nosteISO 11357°C343Glass Transition (Tg)OnsetISO 11357°C143Melting Point150115150150Average below TgISO 11359ppm K¹15Average below TgISO 75-f°C315Heat Deflection Temperature1.8 MPaISO 75-f°C315Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow 23°CISO 22007-4W m¹ K¹1.7Average, 23°CISO 22007-4W m¹ K¹1.738Relative Thermal IndexMechanical w/o impactUL 746B°C240	-		1	1	1
125°C 160 175°C 80 275°C 60 275°C 60 23°C ISO 178 6Pa 110 23°C ISO 604 MPa 120°C 110 120°C 110 200°C 150 179/16A KJ m² 5.0 Charpy Impact Strength Notched, 23°C ISO 179/12A KJ m² 5.0 Load Impact Strength Notched, 23°C ISO 179/14A KJ m² 5.0 Unnotched, 23°C ISO 179/14A KJ m² 7.0 Izod Impact Strength Notched, 23°C ISO 180/A kJ m² 7.0 Unnotched, 23°C ISO 180/A kJ m² 7.0 343 Izod Impact Strength Onset ISO 11357 °C 343 Glass Transition (Tg) Onset ISO 11357 °C 143 Glass Transition (Tg) Along flow blow Tg ISO 11359 ppm K⁻¹ 15 Average below Tg ISO 75.4 °C 315 Along flow above Tg <td></td> <td></td> <td></td> <td>1</td> <td>1</td>				1	1
175°C 80 275°C 45 Flexural Modulus 23°C ISO 178 GPa 11.5 Compressive Strength 23°C ISO 604 MPa 170 120°C 120°C 110 45 Charpy Impact Strength Notched, 23°C ISO 179/1eA kJ m² 5.0 Charpy Impact Strength Notched, 23°C ISO 179/1/U 35 35 Izod Impact Strength Notched, 23°C ISO 179/1/U 35 35 Izod Impact Strength Notched, 23°C ISO 180/J kJ m² 7.0 Izod Impact Strength Notched, 23°C ISO 180/J 35 35 Izod Impact Strength Notched, 23°C ISO 180/J 35 35 Izod Impact Strength Notched, 23°C ISO 11357 °C 343 Glass Transition (Tg) Onset ISO 11357 °C 143 Glass Transition (Tg) Along flow below Tg ISO 11359 ppm K¹ 15 Average below Tg Average above Tg 20 <	Thexaral Strength		130 170		1
Image: section of the section of th			1	1	
Flexural Modulus23°CISO 178GPa11.5Compressive Strength23°CISO 604MPa170120°C110120°C110200°CISO 179/1eAKJ m²5.0Charpy Impact StrengthNotched, 23°CISO 179/1eAKJ m²5.0Unnotched, 23°CISO 179/1U3535Izod Impact StrengthNotched, 23°CISO 180/AKJ m²7.0Unnotched, 23°CISO 180/AKJ m²7.035Izod Impact StrengthUnnotched, 23°CISO 180/AKJ m²7.0Melting PointUnnotched, 23°CISO 11357°C343Glass Transition (Tg)OnsetISO 11357°C143Melting PointAlong flow below TgISO 11359ppm K¹15Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K¹15Along flow above TgISO 75-f°C315115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m¹ K¹1.7Average, 23°CISO 22007-4W m¹ K¹1.7Relative Thermal IndexMechanical w/o impactUL 746B°C240				1	1
Compressive Strength23°CISO 604MPa170120°C100°C110200°CS0 179/1045Charpy Impact StrengthNotched, 23°CISO 179/1035Izod Impact StrengthNotched, 23°CISO 179/1035Izod Impact StrengthNotched, 23°CISO 180/AKJ m²7.0Izod Impact StrengthNotched, 23°CISO 180/AKJ m²7.0Izod Impact StrengthNotched, 23°CISO 180/U3535Izod Impact StrengthNotched, 23°CISO 180/U3535Izod Impact StrengthNotched, 23°CISO 1100/U3535Izod Impact StrengthNotched, 23°CISO 11357°C343Glass Transition (Tg)OnsetISO 11357°C143Glass Transition (Tg)OnsetISO 11359ppm K¹150Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K¹150Average below TgISO 75-f°C315115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m¹ K¹1.7Average, 23°C0.850.850.850.85Relative Thermal IndexMechanical w/o impactUL 746B°C240	Elevural Modulus		ISO 178	GPa	1
120°C110200°C45Charpy Impact StrengthNotched, 23°CISO 179/1eAkJ m²5.0Unnotched, 23°CISO 179/1U35Izod Impact StrengthNotched, 23°CISO 180/AkJ m²7.0Unnotched, 23°CISO 180/J3535Thermal Data1SO 11357°C343Glass Transition (Tg)OnsetISO 11357°C143Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K¹15Average below Tg20Average above Tg20115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m¹ K¹1.7Average, 23°C0.85°C240			1	1	1
1200°CISO 179/1eAKJ m²5.0Charpy Impact StrengthNotched, 23°CISO 179/1U35Izod Impact StrengthNotched, 23°CISO 180/AKJ m²7.0Izod Impact StrengthNotched, 23°CISO 180/AKJ m²7.0Immotched, 23°CISO 180/U353535Immotched, 23°CISO 180/U353535Immotched, 23°CISO 180/U353536Immotched, 23°CISO 11357°C34334Glass Transition (Tg)OnsetISO 11357°C143Immotched, 23°CISO 11357°C143150Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K-115Average below TgISO 11359ppm K-11545115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m¹ K⁻11.7Average, 23°C0.85°C240345	Compressive Strength		130 004	lvii a	1
Charpy Impact StrengthNotched, 23°CISO 179/1eAkJ m²5.0Unnotched, 23°CISO 179/1U35Izod Impact StrengthNotched, 23°CISO 180/AkJ m²7.0Unnotched, 23°CISO 180/U3535Thermal DataISO 11357°C343Melting PointOnsetISO 11357°C143Glass Transition (Tg)OnsetISO 11357°C143Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K¹150Average below TgISO 75-f°C315115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal IndexMechanical w/o impactUL 746B°C240			1	1	1
Line LocUnnotched, 23°CISO 179/1U35Izod Impact StrengthNotched, 23°CISO 180/AkJ m²7.0Unnotched, 23°CISO 180/U3535Thermal DataMelting PointISO 11357°C343Glass Transition (Tg)OnsetISO 11357°C143MoginitISO 11357°C143150Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K¹15Average below TgISO 75-f°C315115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m¹ K¹1.7Average, 23°C0.850.85240115	Charny Impact Strength		ISO 170/1eA	k l m ⁻²	1
Izod Impact StrengthNotched, 23°CISO 180/AkJ m²7.0Unnotched, 23°CISO 180/U35Thermal DataISO 11357°C343Melting PointISO 11357°C143Glass Transition (Tg)OnsetISO 11357°C143Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K¹15Along flow below TgISO 11359ppm K¹1545Along flow above Tg201151515Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m¹ K¹1.7Average, 23°CVerage, 23°C0.85240240	Charpy impact Strength		1		1
Thermal DataISO 180/U35Melting PointISO 11357°C343Glass Transition (Tg)OnsetISO 11357°C143MidpointISO 11357°C143150Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K-115Average below TgISO 11359ppm K-11545Average below TgISO 75-f°C315115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m ⁻¹ K ⁻¹ 1.7Average, 23°C0.850.85240145	Izod Impact Strength		1	k l m ⁻²	1
Thermal DataISO 11357°C343Melting PointISO 11357°C343Glass Transition (Tg)OnsetISO 11357°C143MidpointISO 11359°C143150Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K·115Average below TgISO 11359ppm K·11545Along flow above TgAlong flow above Tg20115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m ⁻¹ K ⁻¹ 1.7Average, 23°C0.850.850.85240			1		1
Thermal DataImage: constraint of the system of		Unification 23 C	130 180/0		35
Glass Transition (Tg)OnsetISO 11357°C143MidpointMidpoint150150Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K ⁻¹ 15Average below TgAverage below Tg4545Along flow above Tg2020115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m ⁻¹ K ⁻¹ 1.7Relative Thermal IndexMechanical w/o impactUL 746B°C240					
Glass Transition (Tg)OnsetISO 11357°C143MidpointMidpoint150150Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K·115Average below TgISO 11359ppm K·11545Along flow above Tg2011520Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m ⁻¹ K ⁻¹ 1.7Relative Thermal IndexMechanical w/o impactUL 746B°C240	Melting Point		ISO 11357	°C	343
Coefficient of Thermal ExpansionAlong flow below TgISO 11359ppm K-115Average below TgAverage below Tg45Along flow above Tg20Average above Tg115Heat Deflection Temperature1.8 MPaISO 75-f°CThermal ConductivityAlong flow, 23°CISO 22007-4W m ⁻¹ K ⁻¹ Relative Thermal IndexMechanical w/o impactUL 746B°C240	-	Onset	ISO 11357	°C	143
Average below Tg45Along flow above Tg20Average above Tg115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m ⁻¹ K ⁻¹ 1.7Average, 23°CVerage, 23°C0.850.85Relative Thermal IndexMechanical w/o impactUL 746B°C240		Midpoint			150
Average below Tg45Along flow above Tg20Average above Tg115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m ⁻¹ K ⁻¹ 1.7Average, 23°CVerage, 23°C0.850.85Relative Thermal IndexMechanical w/o impactUL 746B°C240	Coefficient of Thermal Expansion	Along flow below Tg	ISO 11359	ppm K ⁻¹	15
Average above TgISO 75-f°C115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m² K²11.7Average, 23°CVur 1K²10.850.85Relative Thermal IndexMechanical w/o impactUL 746B°C240					45
Average above TgISO 75-f°C115Heat Deflection Temperature1.8 MPaISO 75-f°C315Thermal ConductivityAlong flow, 23°CISO 22007-4W m² K²11.7Average, 23°CVur 1K²10.850.85Relative Thermal IndexMechanical w/o impactUL 746B°C240		Along flow above Tg	1	1	20
Thermal Conductivity Along flow, 23°C ISO 22007-4 W m ⁻¹ K ⁻¹ 1.7 Average, 23°C 0.85 Relative Thermal Index Mechanical w/o impact UL 746B °C 240					115
Average, 23°C 0.85 Relative Thermal Index Mechanical w/o impact UL 746B °C 240	Heat Deflection Temperature		ISO 75-f	°C	315
Average, 23°C 0.85 Relative Thermal Index Mechanical w/o impact UL 746B °C 240	Thermal Conductivity	Along flow, 23°C	ISO 22007-4	W m ⁻¹ K ⁻¹	1.7
Relative Thermal Index Mechanical w/o impact UL 746B °C 240		-			0.85
Mechanical w/impact 180	Relative Thermal Index		UL 746B	°C	240
		Mechanical w/impact			180

www.victrex.com



Flow				
Melt Viscosity	400°C ISO 11443		Pa.s	550
	-			
Miscellaneous				
Density	Crystalline	ISO 1183	g cm⁻³	1.45
Shore D hardness	23°C	23°C ISO 868		83
Water Absorption by immersion	Saturation, 23°C	ISO 62-1	%	0.35
	Saturation, 100°C			0.45
Electrical Properties				
Volume Resistivity	23°C, 1V	IEC 60093	Ωcm	10 ¹⁰
Fire Smoke Toxicity				
Glow Wire Test	2mm thickness	IEC 60695-2-12	°C	960

Typical Processing Conditions				
Drying Temperature / Time	150°C / 3h or 120°C / 5h (residual moisture <0.02%)			
Temperature settings	365 / 370 / 375 / 380 / 385°C (Nozzle)			
Hopper Temperature	Not greater than 100°C			
Mould Temperature	170°C - 200°C			
Runner	Die / nozzle >3mm, manifold >3.5mm			
Gate	>2mm or 0.5 x part thickness			

Mould Shrinkage and Spiral Flow					
Spiral Flow	385°C nozzle, 200°C tool	1mm thick section	Victrex	mm	80
3mm thick section				380	
Mould Shrinkage	385°C nozzle, 200°C tool	Along flow	ISO 294-4	%	0.3
		Across flow			0.7

Important notes:

1) Processing conditions quoted in our datasheets are typical of those used in our processing laboratories

Data for mould shrinkage should be used for material comparison. Actual mould shrinkage values are highly dependent on part geometry, mould configuration, and processing conditions.

Mould shrinkage differs for along flow and across flow directions. "Along flow" direction is taken as the direction the molten material is travelling when it exits the gate and enters the mould.

Mould shrinkage is expressed as a percent change in dimension of a specimen in relation to mould dimensions.

2) Data are generated in accordance with prevailing national, international and internal standards, and should be used for material comparison. Actual property values are highly dependent on part geometry, mould configuration and processing conditions. Properties may also differ for along flow and across flow directions

Detailed data available on our website www.victrex.com or upon request

World Headquarters

Victrex plc, Hillhouse International, Thornton Cleveleys, Lancashire FY5 4QD United Kingdom Tel: + (44) 1253 897700 Fax: + (44) 1253 897701 Email: victrexplc@victrex.com

VICTREX PLC BELIEVES THAT THE INFORMATION CONTAINED IN THIS BROCHURE IS AN ACCURATE DESCRIPTION OF THE TYPICAL CHARACTERISTICS ADD/OR USES OF THE PRODUCT OR PRODUCTS, BUT IT IS THE CUSTOMER'S RESPONSIBILITY TO THOROUGHLY TEST THE PRODUCT IN EACH SPECIFIC APPLICATION TO DETERMINE ITS PERFORMANCE, EFFICACY AND SAFETY FOR EACH END-USE PRODUCT, DEVICE OR OTHER APPLICATION. SUGGESTIONS OF USES SHOULD NOT BE TAKEN AS INDUCEMENTS TO INFRINGE ANY PARTICULAR PATENT. THE INFORMATION AND DATA CONTAINED HEREIN ARE BASED ON INFORMATION WE BELIEVE RELIABLE. MENTION OF A PRODUCT IN THIS DOCUMENTATION IS NOT A GUARANTEE OF AVAILABILITY. VICTREX PLC RESERVES THE RIGHT TO MODIFY PRODUCTS, SPECIFICATIONS AND/OR PACKAGING AS PART THIS DOCUMENTATION IS NOT A GUARANTEE OF AVAILABILITY. VICTREX PLC RESERVES THE RIGHT TO MODIFY PRODUCTS, SPECIFICATIONS AND/OR PACKAGING AS PART THIS DOCUMENTATION IS NOT A GUARANTEE OF AVAILABILITY. VICTREX PLC RESERVES THE RIGHT TO MODIFY PRODUCTS, SPECIFICATIONS AND/OR PACKAGING AS PART TRADEMARK OF VICTREX MANUFACTURING LIMITED LOPMENT. VICTREX PILS A REGISTERED TRADEMARK OF VICTREX MANUFACTURING LIMITED. VICTREX PILS A REGISTERED TRADEMARK OF VICTREX MANUFACTURING LIMITED. VICTREX PILS AND TRADEMARKS OF VICTREX MANUFACTURING LIMITED. PEEK-ESD™, HT™, ST™ AND WG™ ARE TRADEMARK OF VICTREX PILS. VICTREX PILS AND APTIVE ARE REGISTERED TRADEMARKS OF VICTREX MANUFACTURING LIMITED. PEEK-ESD™, HT™, ST™ AND WG™ ARE TRADEMARK OF VICTREX PILS. VICOTE® AND APTIVE ARE REGISTERED TRADEMARKS OF VICTREX PLC. VICTREX PLC.

VICTREX PLC MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR OF INTELLECTUAL PROPERTY NON-INFRINGEMENT, INCLUDING, BUT NOT LIMITED TO PATENT NON-INFRINGEMENT, WHICH ARE EXPRESSL OR IMPLIED, IN FACT OR BY LAW, FURTHER, VICTREX PLC MAKES NO WARRANTY TO YOUR CUSTOMERS OR AGENTS, AND HAS NOT AUTHORIZED ANYONE TO MAKE ANY REPRESENTATION OR WARRANTY OTHER THAN AS PROVIDED ABOVE, VICTREX PLC SHALL IN NO EVENT BE LIABLE FOR ANY GENERAL, INDIRECT, SPECIAL, CONSEQUENTIAL, PUNITVE, INCIDENTIAL OR SIMILAR DAMAGES, INCLUDING WITHOUT LIMITATION, DAMAGES FOR HARM TO BUSINESS, LOST PROFITS OR LOST SAVINGS, EVEN IF VICTREX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, REGARDLESS OF THE FORM OF ACTION.