

STRENGTH+ STIFFNESS

HIGH MODULUS CARBON FIBER REINFORCED LNP[™] THERMOCOMP[™] AND LUBRICOMP[™] COMPOUNDS

High performance compounds for structural healthcare applications



CHEMISTRY THAT MATTERS

SABIC

Founded in 1976, SABIC is today the first public, global multinational enterprise headquartered in the Middle East. Our products range from bulk commodity chemicals to highly engineered plastics for demanding applications. We are a leading producer of polyethylene, polypropylene, glycols, methanol and fertilizers and the world's third largest polyolefin producer.

SABIC's offerings include Chemicals, Polymers, Specialties, Agri-Nutrients and Metals. In Saudi Arabia, the Netherlands, Spain, the USA, India, China and Japan, our dedicated Technology & Innovation centers research ways to meet our customers' needs with excellence.

INNOVATING FOR CUSTOMER SUCCESS

We believe that SABIC customers deserve the full benefit of every advantage our enterprise can offer. After all, our success is defined by our customers' success. And with more than 80 years of experience pioneering advanced engineering thermoplastics, SABIC is positioned to help create new opportunities for growth and breakthrough applications. We offer expertise and experience to our customers in a variety of ways:

- Material solutions to help drive innovation and market leadership.
- Design, logistics and processing expertise to spark new ideas and better efficiencies.
- Unwavering commitment to build longterm relationships with ingenuity, trust and continuous improvement.

It's what we strive for and work to deliver... a mutual benefit.

Excellence and nothing less.

HIGHER STANDARDS...

Through our innovative use of high modulus carbon fiber technology that is creatively compounded with high performance resins, SABIC has developed two new compounds which have shown significant improvement in stiffness versus similar compounds with standard carbon fiber technology.

Medical devices and the materials used to construct them must withstand ever increasing in-service demands due to more complex designs, performance requirements and regulations. In particular, the heightened emphasis on system cost optimization, weight reduction, high strength and stiffness as well as an increasing need to be compatible with use in MRI systems is driving material suppliers to develop innovative thermoplastic solutions to meet these emerging challenges to replace metals. These innovative materials may enable medical device manufacturers to expand their use of injection moldable engineered thermoplastics to replace metal or other fiber filled thermoplastics.



... PROVIDE AN OPPORTUNITY TO SOLVE TOUGH DESIGN PROBLEMS

Among the family of high performance engineered thermoplastic compounds offered by SABIC to help healthcare device manufacturers meet these challenges are two new, high modulus carbon fiber reinforced solutions.

LNP THERMOCOMP EC006AQW COMPOUND

LNP THERMOCOMP EC006AQW compound is a high modulus carbon fiber reinforced PEI resin, an excellent candidate material for demanding applications which require high strength and stiffness, excellent chemical compatibility and mechanical stability in repeated, harsh sterilization environments. Potential applications may include either disposable or re-usable surgical instruments, fixation devices, patient transport devices, medical device housings and other components and hardware where metals have been used.

TABLE 1 – PROPERTIES OF LNP THERMOCOMP EC006AQW COMPOUND

TYPICAL PROPERTIES ¹	TYPICAL VALUE	UNIT	STANDARD
MECHANICAL		0	0111101110
Flexural Modulus, 2 mm/min	23300	MPa	ASTM D 790
Flexural Stress, break	367	MPa	ASTM D 790
Tensile Modulus, 5 mm/min	28660	MPa	ASTM D 638
Tensile Stress, break	265	MPa	ASTM D 638
Tensile Strain, break	1.75	%	ASTM D 638
Compressive Strength	234	MPa	SABIC Method
IMPACT			
Izod Impact, notched, 23 °C	90	J/m	ASTM D 256
lzod Impact, unnotched, 23 °C	761	J/m	ASTM D 256
THERMAL			
HDT, 1.82 MPa, 3.2 mm	198	°C	ASTM D 648
PHYSICAL			
Specific Gravity	1.39	_	ASTM D 792
Mold Shrinkage, flow	0.03 - 0.10	%	ASTM D 955
Mold Shrinkage, xflow	0.1 - 0.6	%	ASTM D 955
PROCESSING PARAMETERS			
INJECTION MOLDING			
Drying Temperature	120 – 150	°C	
Drying Time	4	hrs	
Maximum Moisture Content	0.02	%	
Front- Zone 3 Temperature	390 – 400	°C	
Middle- Zone 2 Temperature	390 - 400	°C	
Rear- Zone 1 Temperature	390 - 400	°C	
Mold Temperature	165 – 180	°C	
Screw Speed	50 – 100	rpm	
Back Pressure	0.3 – 0.7	MPa	
Injection Speed	40 – 70	mm/s	
Cooling time	30 - 50	S	

¹⁾ Typical values only. Variations within normal tolerances are possible for various colors. All values are measured at least after 48 hours storage at 23°C/50% relative humidity. All properties, expect the melt volume rate are measured on injection molded samples. All samples are prepared according to ISO 294.

LNP LUBRICOMP DCI06APW COMPOUND

LNP LUBRICOMP DCI06APW compound combines the benefits of high modulus carbon fiber with a unique high flow, ductile polycarbonate for demanding applications which require high strength and stiffness, internal lubrication and good processability, enabling a balance between design flexibility and manufacturability in disposable medical devices. Potential applications may include disposable surgical instruments, medical device housings and other components where the use of metals or other stiff thermoplastics with poor flow can create design and manufacturing challenges.

TABLE 2 – PROPERTIES OF LNP LUBRICOMP DCI06APW COMPOUND

Flexural Stress, break 260 MPa ASTM D G Tensile Modulus, 5 mm/min 23500 MPa ASTM D G Tensile Stress, break 190 MPa ASTM D G Tensile Stress, break 190 MPa ASTM D G Shear Modulus 3508 MPa ASTM D G Shear Strength 92 MPa ASTM D G Compressive Strength 128 MPa SABIC Met IMPACT 128 MPa SABIC Met Izcol Impact, notched, 23 °C 115 J/m ASTM D G Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D G CTE, 40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D G CTE, 40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D G Surface resistivity 1.30 - ASTM D G PHYSICAL Strest D G % ASTM D G Surface resistivity 1.30 - ASTM D G Mold Shrinkage, flow 0.05 - 0.15 % ASTM D G	TYPICAL PROPERTIES ¹	TYPICAL VALUE	UNIT	STANDARD
Flexural Stress, break 260 MPa ASTM D T Tensile Modulus, 5 mm/min 23500 MPa ASTM D 0 Tensile Stress, break 190 MPa ASTM D 0 Tensile Stress, break 190 MPa ASTM D 0 Shear Modulus 3508 MPa ASTM D 0 Shear Strength 92 MPa ASTM D 0 Compressive Strength 128 MPa ASTM D 0 Ized Impact, notched, 23 °C 1115 J/m ASTM D 0 Instrumented Impact, nontched, 23 °C 16.8 J ASTM D 0 Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D 0 CTE, 40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D 0 CTE, 40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D 0 CTE, 40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D 0 Surface resistivity 1.30 ASTM D 0 PHYSICAL 0.05 - 0.15 % ASTM D 0 Mold Shrinkage, flow 0.05 - 0.15 <t< th=""><th>MECHANICAL</th><th></th><th></th><th></th></t<>	MECHANICAL			
Tensile Modulus, 5 mm/min 23500 MPa ASTM D G Tensile Stress, break 190 MPa ASTM D G Insile Strain, break 1.5 % ASTM D G Shear Modulus 3508 MPa ASTM D G Shear Strength 92 MPa ASTM D G Compressive Strength 128 MPa SABIC Med IMPACT 128 MPa SABIC Med Izod Impact, notched, 23 °C 115 J/m ASTM D G Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D G THERMAL - - - ASTM D G HDT, 1.82 MPa, 3.2 mm 128 °C ASTM D G CTE, 40 °C to 40 °C, flow 9.7 E-6 11 °C ASTM D G Surface resistivity 1E43 - 1E44 Ohm/sq ASTM D G PHYSICAL - - ASTM D G Surface resistivity 1.30 - ASTM D G Mold Shrinkage, flow 0.05 - 0.15 % ASTM D G Mold S	Flexural Modulus, 2 mm/min	20640	MPa	ASTM D 790
Tensile Strais, break 190 MPa ASTM D G Shear Modulus 3508 MPa ASTM D G Shear Modulus 3508 MPa ASTM D G Shear Strength 92 MPa ASTM D G Compressive Strength 128 MPa ASTM D G Ized Impact, notched, 23 °C 115 J/m ASTM D G Ized Impact, nonched, 23 °C 670 J/m ASTM D G Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D G HDT, 1.82 MPA, 3.2 mm 128 °C ASTM D G CTE, 40 °C to 40 °C, xflow 9.7 E-6 1) °C ASTM D G ELECTRICAL Straface resistivity 1E43 - 1E44 Ohm/sq ASTM D G Specific Cravity 1.30 - ASTM D G ASTM D G Mold Shrinkage, flow 0.05 - 0.15 % ASTM D G Mold Shrinkage, flow 0.05 - 0.15 % ASTM D G Mold Shrinkage, flow 0.05 - 0.15 % ASTM D G Mold Shrinkage, flow 0.02 </td <td>Flexural Stress, break</td> <td>260</td> <td>MPa</td> <td>ASTM D 790</td>	Flexural Stress, break	260	MPa	ASTM D 790
Tensile Strain, break 1.5 % ASTM D G Shear Modulus 3508 MPa ASTM D G Shear Strength 92 MPa ASTM D G Compressive Strength 128 MPa SABIC MED IMPACT 128 MPa SABIC MED Izod Impact, notched, 23 °C 115 J/m ASTM D G Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D G THERMAL - - ASTM D G CTE, +40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D G CTE, +40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D G Surface resistivity 1E43 - 1E+4 Ohm/sq ASTM D G PHYSICAL - - ASTM D G Specific Gravity 1.30 - ASTM D G Mold Shrinkage, flow 0.05 - 0.15 % ASTM D G Mold Shrinkage, flow 0.05 - 0.15 % ASTM D G MVR, 300 °C, 5 kg 28 cm³/10 min ASTM D G PROCESSING PRAMETERS - - G INFCTION MOLDING	Tensile Modulus, 5 mm/min	23500	MPa	ASTM D 638
Shear Modulus 3508 MPa ASTM D Shear Strength 92 MPa ASTM D Compressive Strength 128 MPa SABIC Met Izod Impact, notched, 23 °C 115 J/m ASTM D Izod Impact, unnotched, 23 °C 670 J/m ASTM D Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D THERMAL ASTM D Start D CTE, +40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D Start D CTE, +40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D Start D PHYSICAL 115 \$\$300 - ASTM D Specific Gravity 1.30 - ASTM D Start D PHYSICAL ASTM D Start D Specific Gravity 1.30 - ASTM D Start D Mold Shrinkage, flow 0.05 - 0.15 \$\$ ASTM D Start D Mold Shrinkage, flow 0.15 - 0.40 \$\$ ASTM	Tensile Stress, break	190	MPa	ASTM D 638
Shear Strength 92 MPa ASTM D Compressive Strength 128 MPa SABIC Met IMPACT	Tensile Strain, break	1.5	%	ASTM D 638
Compressive Strength 128 MPa SABIC Meth IMPACT Izod Impact, notched, 23 °C 115 J/m ASTM D 2 Isotrumented Impact Total Energy, 23 °C 16.8 J ASTM D 3 THERMAL ASTM D 5 CTE, 40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D 6 CTE, 40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D 6 CTE, 40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D 6 ELECTRICAL C ASTM D 7 Surface resistivity 1E+3 – 1E+4 Ohm/sq ASTM D 7 PHYSICAL ASTM D 7 Specific Gravity 1.30 ASTM D 7 Water Absorption, 24 hrs 0.11 % ASTM D 7 Mold Shrinkage, flow 0.05 – 0.15 % ASTM D 7 Mold Shrinkage, flow 0.15 – 0.40 % ASTM D 7 MVR, 300 °C, 5 Kg 28 cm³/10 min ASTM D 7 PROCESSING PARAMETERS INECTION MOLDING INECTION MOLDING IN	Shear Modulus	3508	MPa	ASTM D 732
IMPACT Izod Impact, notched, 23 °C 115 J/m ASTM D 2 Izod Impact, unotched, 23 °C 670 J/m ASTM D 2 Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D 3 THERMAL	Shear Strength	92	MPa	ASTM D 732
Izod Impact, notched, 23 °C 115 J/m ASTM D 2 Izod Impact, unnotched, 23 °C 670 J/m ASTM D 3 Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D 3 THERMAL	Compressive Strength	128	MPa	SABIC Method
Izod Impact, unnotched, 23 °C 670 J/m ASTM D 2 Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D 3 THERMAL	IMPACT			
Instrumented Impact Total Energy, 23 °C 16.8 J ASTM D 33 THERMAL HDT, 1.82 MPa, 3.2 mm °C ASTM D 43 HDT, 1.82 MPa, 3.2 mm 9.7 E-6 1/ °C ASTM D 53 CTE, -40 °C to 40 °C, folow 9.7 E-6 1/ °C ASTM D 53 ELECTRICAL 4.6 E-5 1/ °C ASTM D 53 Surface resistivity 1E+3 – 1E+4 Ohm/sq ASTM D 53 PHYSICAL - ASTM D 53 ASTM D 53 Specific Gravity 1.30 - ASTM D 53 Water Absorption, 24 hrs 0.11 % ASTM D 53 Mold Shrinkage, flow 0.05 – 0.15 % ASTM D 53 Mold Shrinkage, flow 0.15 – 0.40 % ASTM D 53 Mold Shrinkage, flow 0.15 – 0.40 % ASTM D 53 Mold Shrinkage, stlow 0.15 – 0.40 % ASTM D 54 FLOW - - ASTM D 54 MVR, 300 °C, 5 K g 28 cm³/10 min ASTM D 54 Prying Time 4 Hrs Maximum Moisture	Izod Impact, notched, 23 °C	115	J/m	ASTM D 256
THERMAL HDT, 1.82 MPa, 3.2 mm 128 °C ASTM 0.6 CTE, -40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM 0.6 CTE, -40 °C to 40 °C, flow 4.6 E-5 1/ °C ASTM 0.6 ELECTRICAL - ASTM 0.7 ASTM 0.7 Surface resistivity 1E+3 – 1E+4 Ohm/sq ASTM 0.7 PHYSICAL - ASTM 0.7 ASTM 0.7 Water Absorption, 24 hrs 0.11 % ASTM 0.7 Mold Shrinkage, flow 0.05 – 0.15 % ASTM 0.7 Mold Shrinkage, xflow 0.15 – 0.40 % ASTM 0.7 FLOW - - ASTM 0.7 MVR, 300 °C, 5 Kg 28 cm³/10 min ASTM 0.7 PROCESSING PARAMETERS - - - INJECTION MOLDING - - - - Drying Time 4 Hrs - - - Maximum Moisture Content 0.02 % - - - INJECTION MOLDING - 285 – 300 °C - - Maidle- Zone 3 T	Izod Impact, unnotched, 23 °C	670	J/m	ASTM D 256
HDT, 1.82 MPa, 3.2 mm 128 °C ASTM D 6 CTE, -40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM D 6 CTE, -40 °C to 40 °C, trilow 4.6 E-5 1/ °C ASTM D 6 ELECTRICAL ASTM D 7 Surface resistivity 1E+3 – 1E+4 Ohm/sq ASTM D 7 PHYSICAL ASTM D 7 Specific Gravity 1.30 - ASTM D 7 Water Absorption, 24 hrs 0.11 % ASTM D 7 Mold Shrinkage, flow 0.05 – 0.15 % ASTM D 9 Mold Shrinkage, xflow 0.15 – 0.40 % ASTM D 9 FLOW Maxim D 120 C PROCESSING PARAMETERS 120 °C Orying Temperature 120 °C Drying Temperature 120 °C K K K K K Maximum Moisture Content 0.02 % K K K K K K K K K K K K K K K K <	Instrumented Impact Total Energy, 23 °C	16.8	J	ASTM D 3763
CTE, -40 °C to 40 °C, flow 9.7 E-6 1/ °C ASTM E 8 CTE, -40 °C to 40 °C, xflow 4.6 E-5 1/ °C ASTM E 8 ELECTRICAL - ASTM D 7 Surface resistivity 1E+3 – 1E+4 Ohm/sq ASTM D 7 PHYSICAL - - ASTM D 7 Specific Gravity 1.30 - ASTM D 7 Water Absorption, 24 hrs 0.11 % ASTM D 7 Mold Shrinkage, flow 0.05 – 0.15 % ASTM D 7 Mold Shrinkage, xflow 0.15 – 0.40 % ASTM D 7 FLOW - - ASTM D 7 ASTM D 7 MVR, 300 °C, 5 Kg 28 cm³/10 min ASTM D 7 PROCESSING PARAMETERS - - - INJECTION MOLDING - - - - Drying Time 4 Hrs - - - Maximum Moisture Content 0.02 % - - - Front-Zone 3 Temperature 285 – 300 °C - - - Middle-Zone 2 Temperature 285 – 300	THERMAL			
CTE, -40 °C to 40 °C, xflow 4.6 E-5 1/°C ASTM E 6 ELECTRICAL Surface resistivity 1E+3 – 1E+4 Ohm/sq ASTM D 2 PHYSICAL ASTM D 2 Specific Gravity 1.30 - ASTM D 2 Water Absorption, 24 hrs 0.11 % ASTM D 2 Mold Shrinkage, flow 0.05 – 0.15 % ASTM D 2 Mold Shrinkage, xflow 0.15 – 0.40 % ASTM D 2 FLOW ASTM D 2 ASTM D 2 MVR, 300 °C, 5 Kg 28 cm³/10 min ASTM D 12 PROCESSING PARAMETERS ASTM D 12 INJECTION MOLDING 28 cm³/10 min ASTM D 12 Drying Time 4 Hrs Maximum Moisture Content 0.02 % Kindle- Zone 1 Temperature 285 – 300 °C Maximum Moisture Content 285 – 300 °C Maximum Moisture Content 285 – 300 °C	HDT, 1.82 MPa, 3.2 mm	128	-	ASTM D 648
ELECTRICAL Surface resistivity 1E+3 – 1E+4 Ohm/sq ASTM D 2 PHYSICAL 1.30 — ASTM D 2 Specific Gravity 1.30 — ASTM D 2 Water Absorption, 24 hrs 0.11 % ASTM D 2 Mold Shrinkage, flow 0.05 – 0.15 % ASTM D 2 Mold Shrinkage, sflow 0.15 – 0.40 % ASTM D 2 Mold Shrinkage, sflow 0.15 – 0.40 % ASTM D 2 FLOW	CTE, -40 °C to 40 °C, flow	9.7 E-6	1/ °C	ASTM E 831
Surface resistivity1E+3 - 1E+4Ohm/sqASTM D 2PHYSICAL1.30-ASTM D 2Specific Gravity1.30-ASTM D 2Water Absorption, 24 hrs0.11%ASTM D 2Mold Shrinkage, flow0.05 - 0.15%ASTM D 2Mold Shrinkage, sflow0.15 - 0.40%ASTM D 2FLOWASTM D 2MVR, 300 °C, 5 Kg28cm³/10 minASTM D 2PROCESSING PARAMETERSINIECTION MOLDINGDrying Temperature120°C-Drying Time4Hrs-Maximum Moisture Content0.02%-Front-Zone 3 Temperature285 - 300°C-Middle-Zone 2 Temperature285 - 300°C-Mold Temperature285 - 300°C-Mold Temperature285 - 300°C-Mold Temperature100 - 120°C-Screw Speed40 - 80rpm-	CTE, -40 °C to 40 °C, xflow	4.6 E-5	1/ °C	ASTM E 831
PHYSICAL1.30–ASTM DSpecific Cravity1.30–ASTM DWater Absorption, 24 hrs0.11%ASTM DMold Shrinkage, flow0.05 – 0.15%ASTM DMold Shrinkage, xflow0.15 – 0.40%ASTM DFLOWW28cm³/10 minASTM D12PROCESSING PARAMETERSINIECTION MOLDINGDrying Temperature120°CDrying Time4Hrs0.02%Front- Zone 3 Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CMold Temperature100 – 120°CMiddle- Zone 2 Temperature285 – 300°CMold Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CMold Temperature285 – 300°CYesYesYesMold Temperature285 – 300°CYesYesYesMold Temperature285 – 300°CYesYesYesMold Temperature100 – 120°CYesYesYesScrew Speed40 – 80rpmYesYesYes	ELECTRICAL			
Specific Gravity 1.30 — ASTM D Water Absorption, 24 hrs 0.11 % ASTM D ASTM D Mold Shrinkage, flow 0.05 – 0.15 % ASTM D Mold Shrinkage, flow 0.15 – 0.40 % ASTM D Mold Shrinkage, xflow ASTM D Mold Shrinkage, xflow Mold Shrinkage, xflow 0.15 – 0.40 % ASTM D Mold Shrinkage, xflow MSTM D MSTM D	Surface resistivity	1E+3 – 1E+4	Ohm/sq	ASTM D 257
Water Absorption, 24 hrs 0.11 % ASTM D 5 Mold Shrinkage, flow 0.05 - 0.15 % ASTM D 5 Mold Shrinkage, flow 0.15 - 0.40 % ASTM D 5 Mold Shrinkage, xflow 0.15 - 0.40 % ASTM D 5 FLOW % ASTM D 5 MVR, 300 °C, 5 Kg 28 cm³/10 min ASTM D 5 PROCESSING PARAMETERS INIECTION MOLDING 120 °C Drying Temperature 120 °C Maximum Moisture Content 0.02 % Madile- Zone 3 Temperature 285 - 300 °C Middle- Zone 1 Temperature 285 - 300 °C Mold Temperature 285 - 300 °C Mold Temperature 100 - 120 °C Screw Speed 40 - 80 rpm	PHYSICAL			
Mold Shrinkage, flow 0.05 – 0.15 % ASTM D 9 Mold Shrinkage, xflow 0.15 – 0.40 % ASTM D 9 FLOW 28 cm³/10 min ASTM D 9 MVR, 300 °C, 5 Kg 28 cm³/10 min ASTM D 9 PROCESSING PARAMETERS 28 cm³/10 min ASTM D 9 INJECTION MOLDING 70 70 70 Drying Temperature 120 °C 70 Drying Time 4 Hrs 70 Maximum Moisture Content 0.02 % 70 Middle-Zone 3 Temperature 285 – 300 °C 70 Middle-Zone 1 Temperature 285 – 300 °C 70 Mold Temperature 100 – 120 °C 70 Mold Temperature 40 – 80 rpm 70		1.30	_	ASTM D 792
Mold Shrinkage, xflow 0.15 - 0.40 % ASTM D 5 FLOW 28 cm³/10 min ASTM D 5 MVR, 300 °C, 5 Kg 28 cm³/10 min ASTM D 5 PROCESSING PARAMETERS 120 °C C INJECTION MOLDING 120 °C C Drying Temperature 120 °C C Maximum Moisture Content 0.02 % C Front- Zone 3 Temperature 285 - 300 °C C Middle- Zone 2 Temperature 285 - 300 °C C Mold Temperature 100 - 120 °C C Screw Speed 40 - 80 rpm C	Water Absorption, 24 hrs	0.11	%	ASTM D 570
FLOWMVR, 300 °C, 5 Kg28cm³/10 minASTM D12PROCESSING PARAMETERSINIECTION MOLDINGDrying Temperature120°CDrying Time4HrsMaximum Moisture Content0.02%Front- Zone 3 Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CRear- Zone 1 Temperature285 – 300°CMold Temperature100 – 120°CScrew Speed40 – 80rpm	Mold Shrinkage, flow	0.05 – 0.15	%	ASTM D 955
MVR, 300 °C, 5 Kg28cm³/10 minASTM D12PROCESSING PARAMETERSINJECTION MOLDINGDrying Temperature120°CDrying Time4HrsMaximum Moisture Content0.02%Front- Zone 3 Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CRear- Zone 1 Temperature285 – 300°CMold Temperature100 – 120°CScrew Speed40 – 80rpm	Mold Shrinkage, xflow	0.15 – 0.40	%	ASTM D 955
PROCESSING PARAMETERSINJECTION MOLDINGDrying Temperature120°CDrying Time4HrsMaximum Moisture Content0.02%Front- Zone 3 Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CRear- Zone 1 Temperature285 – 300°CMold Temperature100 – 120°CScrew Speed40 – 80rpm				
INJECTION MOLDINGDrying Temperature120°CDrying Time4HrsMaximum Moisture Content0.02%Front- Zone 3 Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CRear- Zone 1 Temperature285 – 300°CMold Temperature100 – 120°CScrew Speed40 – 80rpm	MVR, 300 °C, 5 Kg	28	cm³/10 min	ASTM D1238
Drying Temperature120°CDrying Time4HrsMaximum Moisture Content0.02%Front- Zone 3 Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CRear- Zone 1 Temperature285 – 300°CMold Temperature100 – 120°CScrew Speed40 – 80rpm	PROCESSING PARAMETERS			
Drying Time4HrsMaximum Moisture Content0.02%Front- Zone 3 Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CRear- Zone 1 Temperature285 – 300°CMold Temperature100 – 120°CScrew Speed40 – 80rpm	INJECTION MOLDING			
Maximum Moisture Content0.02%Maximum Moisture Content0.02%Front- Zone 3 Temperature285 – 300°CMiddle- Zone 2 Temperature285 – 300°CRear- Zone 1 Temperature285 – 300°CMold Temperature100 – 120°CScrew Speed40 – 80rpm	Drying Temperature	120	°C	
Front- Zone 3 Temperature 285 – 300 °C Middle- Zone 2 Temperature 285 – 300 °C Rear- Zone 1 Temperature 285 – 300 °C Mold Temperature 100 – 120 °C Screw Speed 40 – 80 rpm	Drying Time	4	Hrs	
Middle- Zone 2 Temperature 285 – 300 °C Rear- Zone 1 Temperature 285 – 300 °C Mold Temperature 100 – 120 °C Screw Speed 40 – 80 rpm	Maximum Moisture Content	0.02	%	
Rear- Zone 1 Temperature285 – 300°CMold Temperature100 – 120°CScrew Speed40 – 80rpm	Front- Zone 3 Temperature	285 – 300	°C	
Mold Temperature100 – 120°CScrew Speed40 – 80rpm	Middle- Zone 2 Temperature	285 – 300	°C	
Screw Speed 40 – 80 rpm	Rear- Zone 1 Temperature	285 – 300	°C	
	Mold Temperature	100 – 120	°C	
	Screw Speed	40 - 80	rpm	
Dack Hessure 0.2 – 0.5 IML4	Back Pressure	0.2 - 0.3	MPa	

¹⁾ Typical values only. Variations within normal tolerances are possible for various colors. All values are measured at least after 48 hours storage at 23°C/50% relative humidity. All properties, expect the melt volume rate are measured on injection molded samples. All samples are prepared according to ISO 294.

PRODUCT SELECTION

IMPROVED PERFORMANCE OF SABIC'S CARBON FIBER REINFORCED LNP THERMOCOMP AND LUBRICOMP COMPOUNDS

Both LNP THERMOCOMP EC006AQW and LNP LUBRICOMP DCI06APW compounds represent a significant increase in both tensile modulus and impact strength versus standard carbon fiber and glass reinforced thermoplastics as shown in Figure 1.



FIGURE 1 – COMPARISON OF LNP THERMOCOMP EC006AQW AND LNP LUBRICOMP DCI06APW COMPOUNDS

KEY:

HM CF = High Modulus Carbon Fiber CF = Standard Modulus Carbon Fiber GF = Glass Fiber

IMPLANT POLICY

SABIC does not knowingly support or provide resin for applications that remain implanted beyond 29 days.

RESIN BIOCOMPATIBILITY

LNP LUBRICOMP DCI06APW compound and LNP THERMOCOMP EC006AQW compound have been pre-assessed and passed the material related tests from the ISO 10993 "Biological Evaluation of Medical Devices".

SABIC does not knowingly support the use of grades not designated as "biocompatible" in healthcare applications requiring biocompatibility.

While these two new LNP compounds both demonstrate significant increases in strength and stiffness than existing fiber-filled compounds, it is important to consider the broad set of application requirements when choosing a material. Table 3 provides a qualitative comparison of several other key criteria which may be factors to consider in material selection.

GENERIC PERFORMANCE CRITERIA*	LNP THERMOCOMP EC006AQW COMPOUND	LNP LUBRICOMP DCI06APW COMPOUND
Chemical Resistance	++	_
Sterilization Stability	++	+
Processability	+	++
Modulus	++	+
Strength	+	++
Notched Izod Impact	++	+
Heat Resistance	++	+

TABLE 3 – RELATIVE PROPERTIES OF LNP HIGH MODULUS CARBON-FIBER COMPOUNDS

* "++" = excellent, "+" = good, "-" = marginal



CONTACT US

Middle East and Africa

SABIC Global Headquarters

PO Box 5101 Riyadh 11422 Saudi Arabia T +966 (0) 1 225 8000 F +966 (0) 1 225 9000 E info@sabic.com

Americas

2500 CityWest Boulevard Suite 100 Houston, Texas 77042 USA T +1 713 430-2301 E productinguiries@sabic.com

Technical Answer Center T +1 800 845 0600

Europe

Plasticslaan 1 PO Box 117 4600 AC Bergen op Zoom The Netherlands T +31 164 292911 F +31 164 292940

Technical Answer Center

T (0) 0 800 1 238 5060 T2 00 36 1 238 5060 E webinquiries@sabic.com

Asia Pacific

2550 Xiupu Road Pudong 201319 Shanghai China T +86 21 2037 8188 F +86 21 2037 8288

DISCLAIMER: THE MATERIALS, PRODUCTS AND SERVICES OF SAUDI BASIC INDUSTRIES CORPORATION (SABIC) OR ITS SUBSIDIARIES OR AFFILIATES ("SELLER") ARE SOLD SUBJECT TO SELLER'S STANDARD CONDITIONS OF SALE, WHICH ARE AVAILABLE UPON REQUEST. INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS DOCUMENT ARE GIVEN IN GOOD FAITH. HOWEVER, SELLER MAKES NO EXPRESS OR IMPLIED REPRESENTATION, WARRANTY OR GUARANTEE (i) THAT ANY RESULTS DESCRIBED IN THIS DOCUMENT WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN OR APPLICATION INCORPORATING SELLER'S MATERIALS, PRODUCTS, SERVICES OR RECOMMENDATIONS DESCRIBED IN THIS DOCUMENT. Each user is responsible for making its own determination as to the suitability of Seller's materials, products, services or recommendations for the user's particular use through appropriate end-use and other testing and analysis. Nothing in any document or oral statement shall be deemed to alter or waive any provision of Seller's Standard Conditions of Sale or this Disclaimer, unless it is specifically agreed to in a writing signed by Seller's Standard Conditions of Sale or this Disclaimer, unless it is specifically agreed to in a writing signed by Seller or as a recommendation for the use of any material, product, service or design in a manner that infringes any patent or other intellectual property right.

SABIC and brands marked with ™ are trademarks of SABIC or its subsidiaries or affiliates. © 2016 Copyright SABIC. All rights reserved.