CONSISTENCY+ CAPABILITY

Specialized materials for the Healthcare industry

CHEMISTRY THAT MATTERS™

SABIC

Founded in 1976, SABIC is 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 a global leader in the production of polyolefins.

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 long-term relationships with ingenuity, trust and continuous improvement.

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

Excellence and nothing less.

MATERIALS INNOVATION FOR TOMORROW'S HEALTHCARE DESIGNS

A world leader in engineering thermoplastics and specialty compounds, SABIC shares your commitment to innovation, quality and consistency. We are dedicated to enabling healthcare solutions that will help improve quality of life.

CONTENTS

LATEST INNOVATIONS FOR THE HEALTHCARE INDUSTRY

To support customers with changing requirements in the healthcare industry, SABIC continues to develop new materials and processing expertise.

Our recent innovations address important trends including higher autoclave temperatures and new, emerging sterilization methods such as low temperature hydrogen peroxide gas; needs for improved infection control; enhanced processing for parts with challenging design geometries; and extended offerings for compliance with environmental regulations. Examples of these innovations include:

NEW MATERIALS

- **LEXAN™ HPH4504H PC RESIN**
  high heat autoclave capability at 134 °C
- **THERMOCOMP™ EC006AQW AND LUBRICOMP™ DCI06APW**
  Biocomaptible high modulus carbon fiber compounds for demanding structural applications
- **THERMOCOMP™ LDS COMPOUNDS**
  Laser direct structuring compounds allowing circuit-path integration
- **THERMOTUF™ NMT COMPOUNDS**
  Nano-molding technology compounds enabling adhesion to metal surfaces
- **ULTEM™ HU1004 PEI RESIN**
  high strength dutile for demanding sterilizing environments

TURNING HEALTHCARE DESIGNS INTO CUSTOMER SUCCESSES

SABIC offers a breadth and depth of resources that are a vital ingredient to customer success. Our network of global Manufacturing, Technology & Innovation and Application Development Centers stands ready to support our customers' programs.

WORLD-CLASS TECHNOLOGY, SUPPORT AND MATERIALS

Our emphasis on Six Sigma for over a decade enables us to achieve and maintain a track record of enhanced quality and improved productivity. This assists our customers with superior products and access to years of successful Six Sigma implementation – experience we are pleased to share.

Ongoing investment in people, technologies and processes, including state-of-the-art manufacturing and application development, is aimed at helping customers solve their design and manufacturing challenges.

SABIC invented most of the high-performance materials that we sell, from polymers to blends and copolymerized solutions, and pioneered many more capabilities in polymer science.

Innovation continues to drive our culture throughout all industries that we serve, including healthcare. If the right material doesn't exist already, we may be able to custom-compound a solution to help meet your application's precise demands.

HEALTHCARE INDUSTRY SUPPORT

MATERIALS EXPERTISE FOR DIVERSE HEALTHCARE SEGMENTS

Drug delivery
Surgical instruments
Cardiovascular and blood care
Fluid delivery and IV therapy
Orthopedics
Respiratory and sleep therapy
Monitoring and imaging
Lab ware and clinical diagnostics
Medical lighting
Medical trays
Mobile healthcare
Pharmaceutical manufacturing

PERFORMANCE MATERIALS TO SUPPORT A RANGE OF REQUIREMENTS

TYPICAL HEALTHCARE REQUIREMENTS

STERILIZATION DIVERSITY

- Gamma, E-beam, autoclave, EtO and increasingly, the use of low temperature hydrogen peroxide gas

BIOCOMPATIBILITY[A]

- ISO 10993 or USP Class VI

FOOD CONTACT COMPLIANCE

- US FDA, European Union food contact, others

CHEMICAL RESISTANCE

- Disinfectants, cleaners, lipids and IV solutions

MATERIAL CONSISTENCY HEALTHCARE PRODUCT POLICY

- Formulation Lock
- Management of Change: strict policy for healthcare products
- Surety of supply

GENERAL MATERIAL CONSIDERATIONS

OPTICAL CLARITY, COLORABILITY

- View fluids/contents, rapid identification and visual appeal

IMPACT RESISTANCE

- Ductility for practical use conditions
- Low- and high-temperature performance

DIMENSIONAL STABILITY

- Tight tolerance/low creep

HIGH FLOW AND ENHANCED RELEASE

- Complex designs, low draft angles, thin wall and flow length capability

HIGH-PERFORMANCE SPECIALIZATION

- Added strength, lubricity, shielding and anti-stat

FLAME RETARDANCE

- UL 94 - HB, V2, V1, V0, 5VB, 5VA
- No bromine/no chlorine flame-retardant systems for compliance with environmental standards such as Blue Angel and TCO'99

A Biocompatibility: material evaluated based on ISO 10993 or USP Class VI protocol; supporting information available by Type I or Type II letter. Reference page 8.

APPLICATION, POLYMER AND PROCESS DEVELOPMENT ASSISTANCE

SABIC application development specialists guide customers through the breadth of available materials and processing options to enhance application design and manufacturability. Specialists also connect customers to our technical and commercial innovation teams for novel solutions.

SABIC COLORXPRESS™ centers offer an innovative setting to explore the power of color and effects in bringing new dimensions to applications and affecting how they are perceived.

Global Application Technology (GApT) teams lead centers of excellence worldwide to serve our customers in the advancement of new product technologies from assisting in new design concept development through manufacturability and commercialization.

INDUSTRIAL DESIGN

- Application tear-downs
- Concept designs

PREDICTIVE ENGINEERING

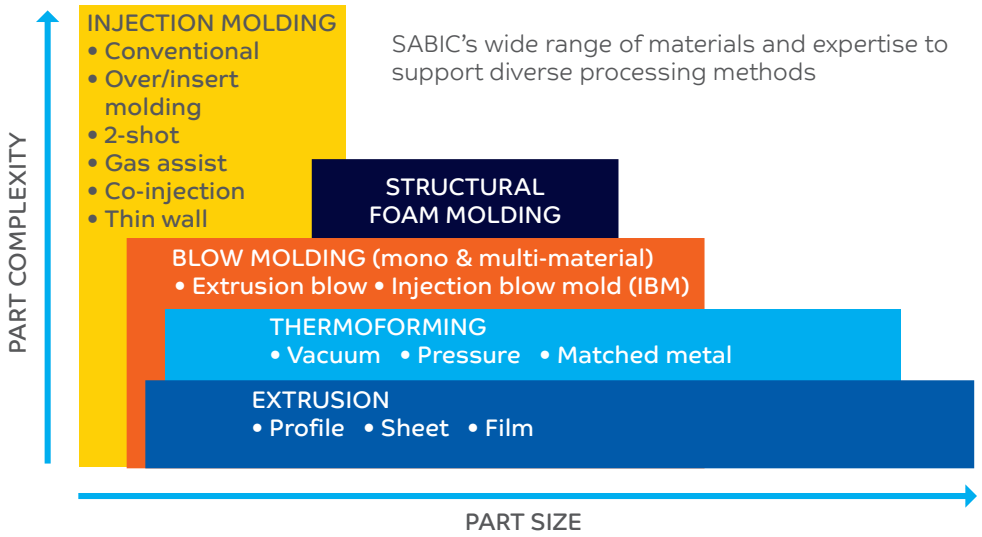
- Computer-Aided Engineering (CAE)
- Computer-Aided Design (CAD)

PROCESS DEVELOPMENT

- Most conversion methods
- Productivity improvements
- Troubleshooting

APPLICATION REVIEW

- Material selection support
- Controlled laboratory part testing
- Secondary operations



SABIC's wide range of materials and expertise to support diverse processing methods

SUPPORTING DATA AND REGULATORY COMPLIANCE

THE SABIC HEALTHCARE PRODUCT POLICY

- Easily identifiable "healthcare product" nomenclature
  - CYCOLAC™ HM resins
  - CYCOLOY™ HC resins
  - LEXAN HP™ resins
  - NORYL™ HN resins
  - ULTEM™ HU
  - VALOX™ HX resins
  - XYLEX™ HX resins
- SABIC healthcare compounds are available (ask your SABIC representative for more details)
- Biocompatibility assessed (according to ISO10993 or USP Class VI)
- Food contact compliance for most healthcare products
- FDA Drug Master File and/or device master file listing (letter of authorization provided as needed)
- SABIC healthcare products are subject to formula lock and stringent management of change process (ask your SABIC representative for more details)

IMPLANT POLICY

SABIC does not support applications that remain implanted beyond 29 days.

RESIN BIOCOMPATIBILITY

Typically, a set of tests performed on a resin to determine if the resin or its extractables will cause potential harm to the human body.

SABIC biocompatible grades have been tested and passed either USP/USP Class VI biological tests or tests from the ISO 10993 “Biological Evaluation of Medical Devices”, or similar grades have been so tested and passed.

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

FOOD CONTACT COMPLIANCE

U.S. FDA (Food and Drug Administration): FDA grades comply with the requirements of the U.S. Food, Drug and Cosmetic Act, as amended, and the regulations put forth by the FDA, covering substances for use as basic components of food contact surfaces.

European Union (EU): EU FC grades comply with the compositional requirement of EU Regulation No. 10/2011, and subsequent amendments, for plastics used in food contact applications.

FDA DRUG MASTER FILE (DMF) AND/OR DEVICE MASTER FILE (MAF)

SABIC maintains U.S. FDA Drug Master Files and/or Device Master Files within the FDA’s documentation centers for our “healthcare products”. A Letter of Authorization (LoA) for customer’s reference of our Master Files and for the FDA’s review of our Master Files can be provided upon customer request.

WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) — EU DIRECTIVE 2012/19/EU

WEEE requires OEMs and component and sub-assembly producers providing electrical/electronics (E/E) products to the EU to collect, recover and treat these products at the end of life.

Plastics using brominated flame retardants must be removed and treated separately. To help customers simplify recovery and recycling at end of life, SABIC offers materials that are inherently flame-retardant or that do not contain brominated or chlorinated flame retardants.

RESTRICTION OF HAZARDOUS SUBSTANCES (ROHS 2) — EU DIRECTIVE 2011/65/EU AS AMENDED INCLUDING EU DIRECTIVE 2017/2102/EU

RoHS mandates the “restriction of the use of certain hazardous substances in electrical and electronic equipment,” which include lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs), except deca-bromine, for E/E products and components placed into the European market after July 1, 2006.

SABIC offers materials that allow manufacturers to avoid the use of these hazardous substances.

UL 94, IEC 60695-11-10/20

The most widely accepted flammability performance standards for plastic materials are UL 94 ratings. These are intended to identify a material’s ability to extinguish a flame, once ignited. Several ratings can be applied based on the rate of burning, time to extinguish, ability to resist dripping and whether or not drips are burning.

Each material tested may receive several ratings based on color and/or thickness. When specifying a material for an application, the UL rating should be applicable for the thinnest wall section in the plastic part. The UL rating should always be reported with the thickness. Just reporting the UL rating without mentioning the thickness is insufficient. IEC 60695-11-10/20 is the international equivalent of UL 94.

UNIQUE DEVICE IDENTICATION (UDI)

The US FDA and EU Medical Device Regulation require marking and labeling of medical devices with Unique Device Identification (UDI). Benefits are expected to include improved device traceability and easier recall in the case of a safety risk or adverse event. Direct Part Marking (DPM) is a requirement for permanent marking directly on the re-usable device in both the US (21 CFR 801.45) and the EU (Regulation EU 2017/745 Annex VI Part C 4.10). DPM is an option for all devices.

SABIC materials allow for the use of laser marking to achieve DPM requirements on devices.

THE SABIC RESINS PORTFOLIO

The broad and deep SABIC portfolio delivers diverse performance properties to support key healthcare requirements. The range of our materials and representative applications are shown below.

ULTEM™ HU (PEI) RESIN
- Heat resistance
- Excellent mechanical properties
- Excellent chemical resistance

SABIC SPECIALTY COMPOUNDS
- Inherent lubricity, strength, stiffness or conductivity in a wide range of polymers

■ = MANUFACTURED BY SABIC

	AMORPHOUS	CRYSTALLINE
HIGH PERFORMANCE	PEI, PES, PPSU	LCP, PEEK, PPS
ENGINEERING THERMOPLASTICS	PC COPOLYMERS, PPE/PA, PSU, m-PPE, PC/PBT, PC/PET, PC, PC/ABS, PC/ASA, ABS, ASA	PPA, PBT, POM, PA
COMMODITY	PS, PVC	PP, HDPE, PET, LDPE

VALOX™ HX (PBT) RESIN
- Good dielectric strength
- Excellent chemical resistance

LEXAN™ HP (PC) RESIN
- Excellent processability
- Transparency
- Excellent impact resistance

XYLEX™ HX (PC/PET) RESIN
- Good processability
- Good chemical resistance
- Transparency

CYCOLOY™ HC (PC/ABS) RESIN
- Excellent processability
- Colorability and aesthetics
- Good impact resistance

SABIC® PCG (PP AND PE) GRADES
- Cost effectiveness
- Versatility
- Processability

CYCOLAC™ HMG (ABS) RESIN
- Cost effective offering good mechanical properties

NORYL™ HN (M-PPE) RESIN
- Good impact resistance
- Hydrolytic stability
- Broad chemical resistance

HEALTHCARE PRODUCTS SUMMARY

CHEMICAL CATEGORY, PRODUCT FAMILY, RESIN SERIES AND GRADE	BIOCOMPATIBLE SUPPORTED (I) HEALTHCARE PRODUCT (J)	LIGHT TRANSMISSION %	CLARITY / GENERAL COLOR	STERILIZATION					
				STEAM AUTOCLAVE (L)		GAMMA AND E-BEAM[2,3]		ETO[2] RETENTION OF MECHANICALS AND COLOR"	LOW TEMPERATURE HYDROGEN PEROXIDE
				AUTOCLAVE (TEMP °C)	EXPOSURE (CYCLES)[1]	RETENTION OF MECHANICALS	COLOR STABLE[4]		RETENTION OF MECHANICALS AND COLOR
PC (POLYCARBONATE) BASED									
LEXAN PC resins									
HP series	✓	88	clear	121	Limited	✓		✓	
HPS series	✓	88	clear / gamma blue	121	Limited	✓	✓	✓	
HPX series	✓	82	clear / slight blue	121	Medium			✓	
HPH series	✓	85	clear	134	Medium	✓		✓	
XYLEX PC/Polyester resins									
HX8300HP	✓	88	clear			✓		✓	
HX7409HP	✓	79	clear / slight blue			✓	✓	✓	
HX7509HP	✓	88	clear			✓	✓	✓	
CYCOLOY PC/ABS resin									
HC1204HF	✓	N/A	opaque			✓	✓-O	✓	
ABS (ACRYLONITRILE BUTADIENE STYRENE) BASED									
CYCOLAC ABS resins									
HMGxxMD	✓	N/A	opaque			✓	✓-O	✓	
PEI (POLYETHERIMIDE) BASED									
ULTEM PEI resins									
HU1xx0	✓	75	clear / amber	134	Extended	✓	✓-O	✓	✓
HU1xx4	✓	65	clear / amber	134	Extended	✓	✓-O	✓	✓
HU2xx0	✓	N/A	opaque	134	Extended	✓	✓-O	✓	
PPE (MODIFIED POLY(PHENYLENE ETHER)) BASED									
NORYL PPO™ resins									
HNA033	✓	N/A	opaque	134	Medium	✓	✓-O	✓	
HNA055	✓	N/A	opaque	134	Extended	✓	✓-O	✓	✓
HN731A	✓	N/A	opaque			✓	✓-O	✓	
HN731SE	✓	N/A	opaque	134	Extended	✓	✓-O	✓	
PBT AND/OR PET (POLYBUTYLENE TEREPHTHALATE AND/OR POLYETHYLENE TEREPHTHALATE) RESINS									
VALOX resins									
HX215HP	✓	N/A	opaque			✓	✓-O	✓	
HX420HP	✓	N/A	opaque	134	Limited	✓	✓-O	✓	
HX30x1HP	✓	N/A	opaque	134	Limited	✓	✓-O	✓	
SABIC SPECIALTY COMPOUNDS (>20 DIFFERENT BASE RESINS) Due to wide range of base resins and additives used, capabilities will vary.									
COLORCOMP™ compounds – small lot molded-in-color		varies	varies	121 and 134 available; Limited-to-Extended available		options available		options available	
LUBRICOMP™ compounds – internally lubricated	options may be available	N/A	opaque	121 and 134 available; Limited-to-Extended available		options available		options available	
THERMOCOMP™ compounds – internally reinforced	options may be available	N/A	opaque	121 and 134 available; Limited-to-Extended available		options available		options available	options available

N/A - Not Applicable

1 Retention of impact resistance after exposure to autoclave
Limited L = 1-10 cycles
Medium M = 1-350 cycles
Extended E = 1-2500 cycles

2 Gamma radiation; E-Beam (electron beam) radiation; EtO or EO (ethylene oxide).

3 After exposure to gamma radiation – general (80% or better) maintenance of mechanical properties; data available upon request.

4 Noted LEXAN grades contain special color-stable package to support enhanced color stability for reduced YI or YI shift.

✓- O Typically, the influence of radiation on color of opaque grades is limited.

Additional footnotes listed on page 34.

PRODUCT PORTFOLIO OVERVIEW

LEXAN PC AND COPOLYMER RESINS

- Polycarbonate resins[+, ++]
- Water-clear and colorable
- Excellent toughness and dimensional stability
- Clear, flame-retardant and high flow/release grades
- Chlorine, bromine, phosphorous and Teflon® free technologies available
- Healthcare options
  - Biocompatible[A]
  - Sterilization: EtO, γ-Ray, γ-Ray LC, A-121-M and A-134-M

XYLEX PC/POLYESTER RESIN BLENDS

- Polycarbonate/amorphous polyester resin blends
- Water-clear and colorable
- Balance of chemical resistance and toughness
- Dimensional stability
- Healthcare options
  - Biocompatible[A]
  - Sterilization: EtO, γ-Ray, and γ-Ray LC
  - Lipid resistance

CYCOLOY PC/ABS RESIN BLENDS

- Polycarbonate/acrylonitrile-butadiene-styrene resin blends[+, ++]
- Excellent aesthetics colorable and UV-stable options
- Good balance of toughness/flow and chemical resistance
- Flame-retardant and high flow/release grades
- Healthcare options
  - Biocompatible[A]
  - Enhanced resistance to certain disinfectants/cleaners

XENOY PC/PET, PC/PBT RESIN BLENDS

- Polycarbonate/semi-crystalline polyester resin blends[++]
- Outstanding aesthetics: high gloss and colorable
- UV-stable options
- Good chemical resistance
- Excellent impact resistance and toughness

CYCOLAC ABS RESINS

- Acrylonitrile-butadiene-styrene resins[++]
- Excellent aesthetics - high-gloss options
- Good processability and practical impact
- Flame-retardant grades
- Healthcare options:
  - Biocompatible[A]
  - Sterilization: EtO, γ-Ray, and γ-Ray LC

ULTEM PEI RESINS

- Polyetherimide resins[+, ++]
- Transparent and colorable
- High tensile and compressive strength
- Stiffness and dimensional stability
- Inherent FR, high heat stability, and chemical resistance
- Healthcare options
  - Biocompatible[A]
  - Sterilization: EtO, γ-Ray, and A-134-E, and low temperature hydrogen peroxide gas

NORYL MODIFIED PPE RESINS

- Modified poly(phenylene ether) resin blends[+, ++]
- Good impact and resistance to acids and bases
- Thermal and electrical resistance
- Excellent hydrolytic stability
- Balanced strength, stiffness, and dimensional stability
- Healthcare options
  - Biocompatible[A]
  - Sterilization: EtO, γ-Ray, A-134-E, and low temperature hydrogen peroxide gas

VALOX PBT AND/OR PET RESINS AND BLENDS

- Polybutylene terephthalate (PBT) and/or polyethylene terephthalate (PET) resins[++]
- Outstanding electrical properties
- Chemical and high-heat resistance
- Healthcare options
  - Biocompatible[A]
  - Formaldehyde-free
  - Sterilization: EtO, γ-Ray, and A-134-L

ULTEM PEI AND LEXAN PC FILAMENTS FOR ADDITIVE MANUFACTURING

- SABIC's healthcare resin grades
- Biocompatible[A]
- Sterilization compatible

STAT-LOY, STAT-KON AND FARADEX COMPOUNDS

- Electrically active compounds (>20 amorphous and crystalline base resins)
- Anti-stat (STAT-LOY), conductive (STAT-KON), and EMI/RFI shielding (FARADEX)
- Healthcare options - Sterilization: EtO, γ-Ray and A-134-E

LUBRICOMP AND LUBRILOY COMPOUNDS

- Internally lubricated thermoplastics (>20 amorphous and crystalline base resins)
- Improved wear resistance and no need for external lubrication
- Friction management: reduced 'slip-stick', efficiency loss, and heat build-up
- High-modulus, high-strength options
- Silicone- and PTFE-free options (LUBRILOY)
- Healthcare options - Sterilization: EtO, γ-Ray and A-134-E

THERMOCOMP COMPOUNDS

- Internally reinforced thermoplastics (>20 amorphous and crystalline base resins)
- Improved tensile strength and flexural modulus
- Heat and creep resistance
- Laser direct structuring compounds available for circuit integration
- Healthcare options
  - Sterilization: EtO, γ-Ray, and A-134-E
  - Biocompatible high modulus carbon fiber compounds available

COLORCOMP COMPOUNDS AND VISUAL**FX** RESINS

- Addition of wide selection of pigments and effects to >20 amorphous and crystalline resins

KEY

+	FR (flame-retardant) package available without bromine or chlorine additives
++	RoHS-compliant options available
EtO	Ethylene Oxide
γ-Ray	Gamma / E-Beam radiation
γ-Ray LC	Gamma / E-Beam with clear Low Color Shift option
A-121-M	Steam Autoclave @ 121 °C; options within 1-350 cycles
A-134-M	Steam Autoclave @ 134 °C; options within 1-350 cycles
A-134-E	Steam Autoclave @ 134 °C; options within 1-2500 cycles

A Biocompatibility: material evaluated based on ISO 10993 or USP Class VI protocol; supporting information available by Type I or Type II letter. Reference page 8.

REPRESENTATIVE HEALTHCARE SEGMENTS

CARDIOVASCULAR AND BLOOD CARE

This area encompasses handling and management of blood, such as during cardiovascular and orthopedic surgeries, blood donations and kidney dialysis treatments. Applications include devices to support extracorporeal systems, blood collection and separation, as well as equipment to move, filter and hold blood.

FLUID DELIVERY AND IV THERAPY

This segment includes handling and management of fluids for use in IV (intravenous) therapy and enteral (gastrointestinal) fluid delivery systems. These systems often include various pumps to facilitate fluid delivery to the patient and connection devices that integrate the fluid bag/bottle, pump and tubing into a single system.

DRUG DELIVERY

Drugs come in diverse forms, requiring delivery devices to span a broad set of formats from injection to inhalation. Safety and patient compliance issues have led to needle-less techniques, improved accuracy/efficiency in drug transfer, as well as aesthetic, miniaturized, ergonomic designs for drug-type identification and consumer appeal/use.

SURGICAL INSTRUMENTS

Due to the breadth of surgical techniques, a variety of tools have been developed to support specific procedures. These range from access devices to hand/mechanical and powered instruments for open and minimally invasive surgeries. As devices become smaller and more complex, the need for miniaturized components calls for specialized materials to achieve strength, durability and freedom of design.

CASE STUDY

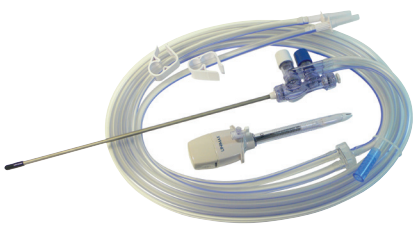
UNIMAX MEDICAL SYSTEMS, INC.

- Auto-locking trocar and suction irrigation set

Challenge: Upgrade to impact resistant and gamma-stable PC; optimize manufacturing system cost

Solution: LEXAN HPS resins for biocompatibility[A], clarity, gamma sterilization, impact-resistance, high flow and release for manufacturing complex part design

Benefits: Gamma-sterilizable instruments, faster production and reduced system costs



A Biocompatibility: material evaluated based on ISO 10993 or USP Class VI protocol; supporting information available by Type I or Type II letter. Reference page 8.

TYPICAL APPLICATIONS

- Blood oxygenators and reservoirs
- Blood collection and separation bowls
- Filters (leukocyte/arterial)
- Renal dialyzers
- Blood filter and membrane media

PERFORMANCE CONSIDERATIONS

- Biocompatible[A] (devices and membranes)
- Clarity (devices)
- EtO, gamma/E-beam and autoclave sterilization (devices and membranes)
- Good flow for processing (devices and membranes)
- Chemical resistance (membranes)

RESIN SOLUTIONS

- LEXAN HFD resins
- LEXAN HP and HPS resins (devices)
- LEXAN HPH resins (devices)
- VALOX HX30x1HP resins (membranes)

TYPICAL APPLICATIONS

- Stopcocks, luers, Y-sites and check valves
- Fluid filters
- Infusion sets
- Infusion and syringe pumps
- Enteral feeding pumps

PERFORMANCE CONSIDERATIONS

- Biocompatible[A] (disposables)
- Clarity (disposables)
- EtO and gamma/E-beam sterilization (disposables)
- Chemical resistance (disposables and pumps)
- Impact resistance (pumps)

RESIN SOLUTIONS

- LEXAN HFD resins
- LEXAN HPS and HPX resins (disposables)
- XYLEX HX resins (disposables and pumps)
- CYCOLOY CXxxxxME resins (pumps)
- ULTEM HU resins (disposables)
- VALOX HX resins (disposables)

TYPICAL APPLICATIONS

- Inhalers
- Insulin delivery devices
- Needle-less injection devices
- Nebulizers
- Syringes, bottles, tubes and vials

PERFORMANCE CONSIDERATIONS

- Biocompatible[A]
- Clarity and colorability
- EtO, gamma and autoclave sterilization
- Impact and wear resistance
- Formaldehyde-free valves

RESIN SOLUTIONS

- LEXAN HFD resins
- LEXAN HP, HPS, and HPX resins
- CYCOLOY HC resins
- CYCOLAC HM resins
- VALOX HX resins
- LUBRICOMP compounds
- LUBRILOY compounds
- NORYL HN resins

TYPICAL APPLICATIONS

ACCESS DEVICES

- Trocars, retractors and speculums

HAND INSTRUMENTS

- Staplers, forceps and clip appliers

POWERED INSTRUMENTS

- Electrosurgical, thermal ablation and directed energy devices

PERFORMANCE CONSIDERATIONS

- Biocompatible[A]
- EtO, gamma and autoclave sterilization
- Strength and stiffness
- Ductility and toughness
- Precision fit and high dimensional tolerance
- Smooth part interaction and low wear

RESIN SOLUTIONS

- LEXAN HFD resins
- LEXAN HP, HPS, HPX and HPH resins
- CYCOLAC HM resins
- ULTEM HU resins
- LUBRICOMP compounds
- THERMOCOMP compounds
- LUBRILOY compounds

CASE STUDY

INCISIVE SURGICAL, INC.

- INSORB®|20 subcuticular skin stapler

Challenge: Ergonomic, lightweight design (metal replacement) and disposable

Solution: ULTEM HU resins for biocompatibility[A], compressive strength, custom colors, EtO and gamma sterilization

Benefits: High performance, parts consolidation and award-winning design

A Biocompatibility: material evaluated based on ISO 10993 or USP Class VI protocol; supporting information available by Type I or Type II letter. Reference page 8.

REPRESENTATIVE HEALTHCARE SEGMENTS

ORTHOPEDICS

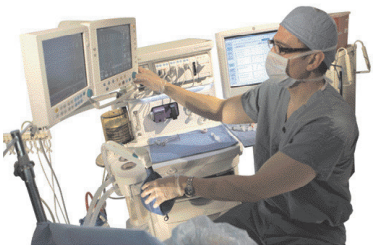
Orthopedic devices support surgical and non-surgical techniques to preserve and/or restore the musculoskeletal system, limbs, etc. They include external fixators to immobilize the position of bones throughout the healing process, as well as short-term joint implant test devices (trial heads) to determine correct size for long-term joint implants[C].

RESPIRATORY AND SLEEP THERAPY

These devices and supporting equipment are used for treating respiratory-related illnesses in hospitals, clinics and at home. Respirators, ventilators, positive airway pressure devices and respiratory masks assist a growing number of patients with ongoing therapy needs.

MONITORING AND IMAGING

Monitoring and imaging devices comprise a very diverse range of applications from hand-held and small devices such as pulse oximeters, blood pressure and other patient monitors to larger transportable devices such as anesthesia delivery and ultrasound, to very large stationary equipment such as x-ray, CT, MRI and PET imaging machines.



LAB WARE AND CLINICAL DIAGNOSTICS

The segment encompasses instruments and accessories for the analysis and diagnosis of patient samples, as well as for pharmaceutical and biopharmaceutical research. They range from disposable vials and containers for sample collection, to hand-held instruments, such as pipettors, for sample preparation, to clinical diagnostic equipment for rapid processing/evaluation of many samples.

CASE STUDY

GE HEALTHCARE

- Voluson® E8 OB/GYN ultrasound system

Challenge: One-third smaller and lighter, balance of performance, aesthetic and chemical resistance for >30 components

Solution: CYCOLOY CX2244ME resins for impact-resistant thin-wall FR enclosures

Benefits: Weight/system cost benefits of thin-wall molding with molded-in custom colors and effects; FR system meeting chlorine- and bromine-free standards

C Implant Policy: SABIC does not support applications that remain implanted beyond 29 days.

TYPICAL APPLICATIONS

- Knee and hip trials
- External bone fixation devices
- Instrument handles
- Bone cement mixers
- Trays and cases

PERFORMANCE CONSIDERATIONS

- Biocompatible[A]
- EtO, gamma and autoclave sterilization
- Impact and chemical resistance
- Dimensional stability
- Colorability

RESIN SOLUTIONS

- LEXAN HFD resins
- LEXAN HPS and HPX resins
- ULTEM HU resins
- NORYL HNA resins
- LUBRICOMP compounds
- THERMOCOMP compounds

TYPICAL APPLICATIONS

- Respirators and ventilators
- Positive Airway Pressure (PAP) devices
- Humidifier tanks
- Oxygen concentrators
- Respiratory masks and valves

PERFORMANCE CONSIDERATIONS

- Biocompatible[A] (airflow pathways)
- Clarity (masks)
- EtO and autoclave sterilization (masks and tanks)
- Impact and chemical resistance (masks and equipment)
- Flame retardance and EMI/RFI shielding (equipment)

RESIN SOLUTIONS

- LEXAN HFD resins
- LEXAN CFR resins
- LEXAN HP, HPX and HPH resins (masks)
- LEXAN EXL resins (equipment)
- CYCOLOY CXxxxxME resins (equipment)
- FARADEX and STAT-LOY compounds (equipment)

TYPICAL APPLICATIONS

- Imaging equipment (MRI, CT, PET and x-ray)
- Anesthesia delivery and monitoring
- Patient monitors
- Blood glucose meters
- External defibrillators

PERFORMANCE CONSIDERATIONS

- Durability and impact resistance with light weight
- Chemical resistance to cleaners/ disinfectants
- WEEE and RoHS compliance
- Flame retardance and EMI/RFI shielding
- Colorability and indoor UV stability

RESIN SOLUTIONS

- LEXAN HFD resins
- LEXAN 9x5, EXL and CFR resins
- CYCOLOY resins
- ULTEM HU and 2xxx resins
- FARADEX and THERMOCOMP compounds (equipment)

TYPICAL APPLICATIONS

- Vials, tubes
- Diagnostic vial transport trays
- Pipettors
- Diagnostic machines
- Cassettes, centrifuges and covers

PERFORMANCE CONSIDERATIONS

- Biocompatible[A] (disposables)
- Clarity (disposables)
- Gamma and/or autoclave sterilization
- Impact and chemical resistance
- Light weight (equipment)

RESIN SOLUTIONS

- LEXAN HP and HPS resins (disposables)
- LEXAN EXL and HFD resins (equipment)
- CYCOLOY CXxxxxME resins
- ULTEM HU resins (equipment)
- LUBRICOMP, LUBRILOY and THERMOCOMP compounds (equipment)

CASE STUDY

GE HEALTHCARE

- Aisys® Carestation® anesthesia delivery system

Challenge: Durability, light weight, chemical resistance, and cost-effectiveness

Solution: ULTEM HU resins for autoclavable and chemically resistant gas reservoir

NORYL resins for panels and doors with structural stiffness with lightweight

VALOX resins for work surfaces with resistance to cleaning chemicals

Benefits: Maintain structural integrity over life of system with easy maneuverability throughout hospital; resistance to wear and tear

A Biocompatibility: material evaluated based on ISO 10993 or USP Class VI protocol; supporting information available by Type I or Type II letter. Reference page 8.

REPRESENTATIVE HEALTHCARE SEGMENTS

MEDICAL LIGHTING

Focused lighting is critical in healthcare areas from general examination rooms to surgical theaters to dental offices. The generation or avoidance of heat from light sources is important in areas such as an operating room. In other cases, such as infrared therapy lighting, heat generation is desired. Lighting systems utilize a wide variety of components including housings, reflectors, handles and covers.

MEDICAL TRAYS

Trays are used to transport instruments after surgery and to hold them during sterilization. In manufacturing, trays are used to transport vials and other items throughout the facility. Common to all types of trays is impact resistance to withstand unintended drops.

MOBILE HEALTHCARE

Devices and equipment allowing connectivity to enable remote patient monitoring. This equipment must be portable and durable enough to be worn on a patient's body for continuous monitoring.

PHARMACEUTICAL MANUFACTURING

Devices and equipment such as connectors, filtration housings and filtration media are used in the manufacturing and processing of pharmaceuticals, including biopharmaceuticals. Many such devices are being created in disposable formats.

CASE STUDY

MERIVAARA OY

- Merilux X1 examination lamp

Challenge:	Reduce excessive heat from surgical lamp
Solution:	ULTEM 1000 resins combined with dichroic coating for heat management and lighter-weight reflector
	VALOX resins for heat and chemically resistant housing; parts consolidation
Benefits:	Improved patient and staff comfort from irradiation of IR heat upwards vs. into surgical area. Simplified housing design for manufacturability and improved appearance

TYPICAL APPLICATIONS

- Luminaire housings
- IR transparent housings
- Reflectors
- Handles
- Light source covers

PERFORMANCE CONSIDERATIONS

- Heat management
- Lightweight
- Durability and reliability
- Flame and chemical resistance
- Biocompatible[A] and autoclave sterilization (handles)

RESIN SOLUTIONS

- LEXAN CFR resins (lens covers)
- ULTEM 10x0 resins (reflectors)
- NORYL HNA055 resins (handles)
- VALOX resins (housings)

TYPICAL APPLICATIONS

- Dental instrument trays
- Surgical instrument trays
- Microsurgery and scope trays
- Vial transport and storage trays

PERFORMANCE CONSIDERATIONS

- Biocompatible[A]
- Autoclave sterilization
- Impact, crack, and craze resistance
- Chemical resistance
- Colorability
- Low temperature hydrogen peroxide gas sterilization

RESIN SOLUTIONS

- LEXAN HPX and HPH resins
- ULTEM HU resins
- NORYL HNA resins
- COLORCOMP compounds

TYPICAL APPLICATIONS

- Continuous Glucose Monitoring
- Insulin pumps

PERFORMANCE CONSIDERATIONS

- Impact resistance
- Colorability
- Chemical resistance
- Thinwall capable
- Durability

RESIN SOLUTIONS

- THERMOCOMP LDS compounds
- VALOX resins
- LEXAN copolymer resins
- XYLEX resins

TYPICAL APPLICATIONS

- Connectors, couplings, and fittings
- Filtration and cassette housings
- Melt-blown membrane media

PERFORMANCE CONSIDERATIONS

- Gamma/E-beam and autoclave sterilization
- Advanced protein compatibility (housings and membranes)
- Clarity and low haze post-sterilization (housings)
- Chemical resistance (housings and membranes)

RESIN SOLUTIONS

- LEXAN HPH, HPX4, and HPS resins
- LEXAN HFD resins
- ULTEM HU resins
- NORYL HNA resins
- VALOX HX30x1HP resins

CASE STUDY

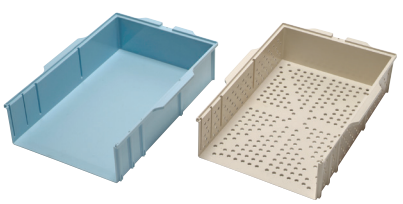
HURST CORP.

- Terminal sterilization vial tray

Challenge: Eliminate creation of ferrous, talc, resin, and glass particles from wear of fiberglass and metal trays

Solution: NORYL HNA resins for extended-duty, high-heat autoclave sterilization, impact resistance, colorability, and biocompatibility[A]

Benefits: Reduced opportunity for particles to contaminate vials during transport and sterilization. Repeat-use trays, rigidity for reliable stacking



A Biocompatibility: material evaluated based on ISO 10993 or USP Class VI protocol; supporting information available by Type I or Type II letter. Reference page 8.

SEGMENT AND MATERIAL SELECTION CONSIDERATIONS

PRODUCT FAMILY	BLOOD MANAGEMENT	FLUID DELIVERY AND IV THERAPY	DRUG DELIVERY	SURGICAL INSTRUMENTS	ORTHOPEDICS
LEXAN PC resins++	**Disposables** **HP and HPS resins :** clarity, impact resistance, EtO, γ-ray LC, A-121-L	**Disposables** **HPS7 resin:** clarity, lipid resistance, EtO, γ-ray LC, A-121-L **HPX resins:** clarity, impact resistance,improved processing, EtO, A-121-M **Pump housings** **HP resins:** clarity, impact resistance, colorability, A-121-L	**Disposables** **HP and HPS series resins:** clarity, impact resistance, EtO, γ-ray (HPS-LC), A-121-L **HPX resins:** clarity, impact resistance, improved processing, EtO, A-121-M **Device housings** **HP resins:** clarity, colorability, impact resistance, A-121-L	**Instrument handles** **HP and HPS series resins:** clarity, impact resistance, EtO, γ-ray (HPS-LC), A-121-L **HPX resins:** clarity, impact resistance, improved processing, EtO, A-121-M **HPH resins:** clarity, A-134-M	**External fixation** **HPS resins:** clarity, impact resistance, EtO, γ-ray LC, A-121-L **HPX resins:** clarity, impact resistance, improved processing, EtO, A-121-M
LEXAN CFR PC resins	**Device Housings** flame resistance, impact strength			**Scopes, Covers, Instrumental Panels** clarity, flame resistance, impact strength	
XYLEX PC/ Polyester resin blends++		**Disposables** **HX7509HP resin:** clarity, EtO, γ-ray LC **Pump housings** **XYLEX HX and X series resins:** clarity, enhanced chemical resistance	**Device Housings** **XYLEX HX resins:** clarity, enhanced chemical resistance		**Cement mixer bowls** **XYLEX HX resins:** clarity, enhanced chemical resistance
CYCOLOY PC/ ABS resin blends++		**Pump housings** **CXxxxxME and CY6xxx series resins:** for balance of impact resistance and enhanced chemical resistance	**Device housings** **HC biocompatible resins:** for impact resistance, colorability		
XENOY PBT, PET/PC resin blends++	**Device Housings** chemical resistance, impact strength	**Pump housings** **XENOY X series resins:** balance of impact resistance and enhanced chemical resistance			

In the chart below, only materials listed with nomenclature beginning with “H” are biocompatible supported (I) by SABIC; other materials are not. See page 8.
+ : Grades available without bromine and/or chlorine additives (F). ++ : RoHS compliant grades available (H).
EtO : Ethylene Oxide. γ-ray: Gamma / E-Beam. γ-ray LC: Gamma / E-Beam with clear Low Color Shift options.
A-121-M: Steam Autoclave @ 121°C; options within 1-350 cycles. A-134-M: Steam Autoclave @ 134°C; options within 1-350 cycles.
A-134-E: Steam Autoclave @ 134°C; options within 1-2500 cycles.

RESPIRATORY AND SLEEP THERAPY	MONITORING AND IMAGING	LABWARE, DIAGNOSTICS AND HOSPITAL EQUIPMENT	MEDICAL LIGHTING	MEDICAL TRAYS	BIOPHARMACEUTICAL EQUIPMENT
Respiratory masks **HP resins:** clarity, impact resistance, EtO, A-121-L **HPH resins:** clarity, A-134-M Masks, humidifier tanks, enclosures **HPX4 resin:** clarity, improved processing, hydrolytic stability, chemical resistance, A-121-M **EXL resins:** impact resistance, toughness, enhanced processing, FR options	**Equipment enclosures** **9x5(A)(U) resins:** FR, impact resistance, (Transparency and UV stable options) **FL3000 resin:** foamable FR **EXL resins:** impact resistance, toughness, enhanced processing, FR options	**Equipment enclosures** **9x5(A)(U) resins:** FR, impact resistance, (Transparency and UV stable options) **FL3000 resin:** foamable FR **EXL resins:** impact resistance, toughness, enhanced processing, FR options **Disposables** **HP and HPS series resins:** clarity, impact resistance, EtO, γ-ray (HPS-LC) **HPH resins:** clarity, A-134-M	**Reflector Cover** **SLX resins:** enhanced UV stability, transparent and tinted colour options	**Transport tts** **HPX4 resin:** clarity, improved processing, hydrolytic stability, chemical resistance, A-121-M **HPH resins:** clarity, A-134-M	**Connectors and filtration housings** **HPS resins:** clarity, impact resistance, EtO, γ-ray LC, A-121-L **HPH resins:** clarity, A-134-M **HPX resins:** clarity, impact resistance, improved processing, EtO, A-121-M
Instrument Panels, Covers, Monitors CFR Resins: clarity, flame resistance, impact resistance	**Instrument Panels, Covers, Monitors** CFR Resins: clarity, flame resistance, impact resistance	**Instrument Panels, Covers, Monitors** CFR Resins: clarity, flame resistance, impact resistance			
Equipment enclosures **CXxxxxME and CY6xxx series resins:** for balance of impact resistance and enhanced chemical resistance, FR	**Equipment enclosures** **CXxxxxME and CY6xxx series resins:** for balance of impact resistance and enhanced chemical resistance, FR **CM6210 resin:** thermoformed panels, FR	**Equipment enclosures** **CXxxxxME and CY6xxx series resins:** for balance of impact resistance and enhanced chemical resistance, FR			
	Equipment enclosures **XENOY resins:** high gloss, balance of impact, chemical and UV resistance, FR options	**Equipment enclosures** **XENOY resins:** high gloss, balance of impact, chemical and UV resistance, FR options			

SEGMENT AND MATERIAL SELECTION CONSIDERATIONS

PRODUCT FAMILY	BLOOD MANAGEMENT	FLUID DELIVERY AND IV THERAPY	DRUG DELIVERY	SURGICAL INSTRUMENTS	ORTHOPEDICS
CYCOLAC ABS resins++			**Device Housings** **HMxxMD resins:** general balance of toughness and flow, excellent aesthetics, high gloss	**Instrument handles** **HMxxMD resins:** general balance of toughness and flow, excellent aesthetics	
ULTEM PEI resins++		**Disposables** **HU series resins:** enhanced chemical and lipid resistance, EtO, γ-ray, low temperature hydrogen peroxide gas	**Disposables, Pumps** **HU series resins:** enhanced chemical and lipid resistance, EtO, γ-ray, A-134-E, low temperature hydrogen peroxide gas	**Instrument handles and internal gears/latches** **HU series resins:** tensile and compressive strength, enhanced chemical resistance, EtO, γ-ray, A-134-E, low temperature hydrogen peroxide gas	**External fixation and temporary joint trials** **HU series resins:** strength, stiffness, EtO, γ-ray, A-134-E, low temperature hydrogen peroxide gas
NORYL modified PPE resins++	**Device Housings** non-halogenated flame resistance		**Internal Components** dimensional stability	**Internal components** **HNA resins:** chemical resistance, EtO, γ-ray, A-134-E, low temperature hydrogen peroxide gas	**Temporary joint trials** **HNA resins:** chemical resistance, A-134-E, low temperature hydrogen peroxide gas
VALOX PBT and/or PET semi-crystalline resins and blends++	**Melt blown fibers** **HX30x1HP resins:** melt blown membrane media	**Disposables** **VALOX HX series resins:** enhanced chemical resistance EtO, γ-ray	**Internal Components** **VALOX HX resins:** formaldehyde-free wear resistance, EtO, γ-ray		

SABIC compounds: >20 amorphous and crystalline base resins +,++. **Sterilization options:** EtO, γ-Ray, A-121/134-L/M/E, low temperature hydrogen peroxide gas

LUBRICOMP and LUBRILOY compounds – internally lubricated		**Internal components / gears**	**Internal components / gears**	
THERMOCOMP compounds - internally reinforced		**Internal components**	**Internal components**	**Temporary joint trials** **Fixation devices**
FARADEX compounds - for electromagnetic and radio frequency interference (EMI/RFI) attenuation	**Pump housings**			
STAT-KON compounds for surface resistivity from antistatic, through conductive, to electromagnetic interference (EMI) shielding.				
STAT-LOY compounds for permanent anti-static performance		**Housings/Spacers**		
COLORCOMP compounds for added colors and/or special effects	**Pump housings**	**Housings/handles**	**Surgical handles**	**Handles**

In the chart below, only materials listed with nomenclature beginning with “H” are biocompatible supported (I) by SABIC; other materials are not. See page 8.
+ : Grades available without bromine and/or chlorine additives (F). ++ : RoHS compliant grades available (H).
EtO : Ethylene Oxide. γ-ray: Gamma / E-Beam. γ-ray LC: Gamma / E-Beam with clear Low Color Shift options.
A-121-M: Steam Autoclave @ 121°C; options within 1-350 cycles. A-134-M: Steam Autoclave @ 134°C; options within 1-350 cycles.
A-134-E: Steam Autoclave @ 134°C; options within 1-2500 cycles.

RESPIRATORY AND SLEEP THERAPY	MONITORING AND IMAGING	LABWARE, DIAGNOSTICS AND HOSPITAL EQUIPMENT	MEDICAL LIGHTING	MEDICAL TRAYS	BIOPHARMACEUTICAL EQUIPMENT
	Equipment enclosures **CYCOLAC resins:** excellent aesthetics, high gloss, FR options	**Equipment enclosures** **CYCOLAC resins:** excellent aesthetics, high gloss, FR options			
Internal components / impellers **HU resins:** strength, stiffness, dimensional stability	**Internal gears/ latches and other components** **HU resins:** strength, stiffness, dimensional stability **(HU)2xxx series resins:** reinforced strength	**Internal gears/ latches** **HU series resins:** tight tolerance, strength, stiffness, EtO, γ-ray, A-134-E, low temperature hydrogen peroxide gas **(HU)2xxx series resins:** reinforced strength	**Reflector** **10x0 and XH6050 resins:** light weight metal replacement, heat management options **Removable Handles** **HU resins:** chemical resistance and repeat autoclave sterilization (A-134-E), low temperature hydrogen peroxide gas	**Surgical and dental trays** **HU100x resins:** transparancy, chemical resistance, extended duty autoclave sterilization (A-134-E), low temperature hydrogen peroxide gas	**Connectors and filtration housings** **HU100x resins:** transparancy, chemical resistance, extended duty autoclave sterilization (A-134-E), low temperature hydrogen peroxide gas
	Equipment enclosures **FN series resins:** foamable panels, FR	**Equipment enclosures** **FN series resins:** foamable panels, FR	**Removable handles** **HNA resins:** for chemical resistance and repeat autoclave sterilization (A-134-E), low temperature hydrogen peroxide gas	**Transport, surgical and dental trays** **HNA resins:** chemical resistance and repeat autoclave sterilization (A-134-E), low temperature hydrogen peroxide gas	**Connectors and filtration housings** **HNA resins:** chemical resistance and repeat autoclave sterilization (A-134-E), low temperature hydrogen peroxide gas
	Work surfaces **VALOX resins:** enhanced chemical resistance, FR options		**Luminaire housing** **VALOX resins:** enhanced chemical resistance, FR options		**Filter media** **HX30x1HP resins:** for melt blown membrane media

Internal components	Internal gears/ latches and other components	Internal gears/ latches and other components		
	Internal gears/ latches and other components	Internal gears/ latches and other components		
Equipment enclosures	Equipment enclosures	Equipment enclosures		
Equipment enclosures	Equipment enclosures	Equipment enclosures		
Equipment enclosures	Equipment enclosures	Equipment enclosures	Surgical and dental trays	Cages and bins

CHEMICAL RESISTANCE PERFORMANCE GUIDELINES

PRODUCT FAMILY	GRADE/SERIES	Exposure time (days)	Bleach sodium hypochlorite solution, 50%	Cidex† glutaraldehyde based disinfectant	Methyl ethyl ketone (MEK)	Virex† organic ammonium chloride based disinfectant	Betadine† microbicide; povidone-iodine solution	Ethanol (ethyl alcohol)	Hydrogen peroxide 3%	Isopropanol (isopropyl alcohol; ipa) 70%	Saline 10%	Lipid hydrocarbon-containing organic compounds; fatty acid derivatives	DEHP diethylhexylphthalate
LEXAN PC RESINS													
Healthcare products													
	HP1R	3	⊕	⊕	■	●	⊕	●	⊕	⊕	⊕		
	HPS2R	3	⊕	⊕	■	●	⊕	⊕	⊕	⊕	⊕		
	HPS7	3	⊕	●	■	●	⊕	⊕	7 days ⊕	⊕	⊕	●	5 days ⊕
	HPX4	3	⊕	⊕	■	▲	⊕	⊕	⊕	⊕	⊕		
	HPH4404	3	⊕	⊕	■	⊕	⊕	⊕	⊕	⊕⊕	⊕		
	HPH4504H	3	⊕	⊕	■	⊕	⊕	⊕	⊕	⊕⊕	●		
Standard products													
	925	7	⊕	●	■	●	⊕	⊕	⊕	⊕	⊕		
	945	7	⊕	●▲	■	●	⊕	⊕	⊕	⊕	⊕⊕		
	925A	7	⊕	●	■	⊕	⊕	⊕	⊕	⊕	⊕		
	945AU	7	⊕	⊕	■	⊕	⊕	⊕	⊕⊕	⊕	⊕⊕		
Standard Products — Enhanced flow / ductility resins													
	EXL1414	7	⊕⊕	⊕⊕	■	●	⊕⊕	⊕⊕	⊕⊕	⊕⊕	⊕⊕		
	EXL9112	7	⊕⊕	⊕▲	■	●	⊕⊕	⊕	⊕⊕	⊕⊕	⊕⊕		
	EXL9330	7	⊕⊕	⊕⊕	■	⊕	⊕⊕	⊕⊕	⊕⊕	⊕⊕	⊕⊕		
XYLEX PC/POLYESTER RESIN BLENDS													
Healthcare products													
	HX8300HP	3	⊕	●	■	●▲	⊕⊕	■	⊕	⊕⊕	⊕⊕	■	
CYCOLOY PC/ABS RESIN BLENDS													
Healthcare Products													
	HC1204HF	7	●	▲	■	▲	■	■	⊕⊕	⊕	●		
Standard products													
	C2950	7	●	■	■	■	■	▲	●	●	▲		
	C6600	7	●	■	■	■	⊕⊕	■	●	■	⊕⊕		
	CX2244ME	7	●	■	■	■	⊕⊕	■	⊕⊕	●	⊕⊕		
	CX2142ME	7	●	■	■	■	⊕⊕	■	⊕⊕	●	●		
CYCOLAC ABS RESINS													
Healthcare products													
	HMG47MD	7	⊕⊕	●	■	●	■	■	▲⊕	●	●		
	HMG94MD	7	⊕⊕	■	■	■	■	■	⊕	■	●		
Standard products													
	MG37EPX	7	⊕⊕	●	■	⊕▲	●	■	⊕⊕	■	⊕⊕		
	GRM2600L	7	⊕⊕	●	■	⊕⊕	●	■	⊕⊕	●	⊕⊕		

LEGEND FOR SYMBOLS

- ● Compatible at 0.5% strain
- ⊕ Compatible at 1.0% strain
- ⊕⊕ Compatible at 1.5% strain
- ▲ Marginal for one or both measures at 0.5% strain
- ▲⊕ Marginal for one or both measures at 1.0% strain
- ▲⊕⊕ Marginal for one or both measures at 1.5% strain
- ■ Not compatible

LAB BENCH COMPATIBILITY RATING:

Color rating	Retention tensile stress at yield, %	Retention tensile elongation at break, %
COMPATIBLE	≥ 90	80 -139
MARGINAL	80 - 89	65 - 79
NOT COMPATIBLE	≤ 79	≤ 64 OR > 140

PRODUCT FAMILY	GRADE/SERIES	Exposure time (days)	Bleach sodium hypochlorite solution, 50%	Cidex[†] glutaraldehyde based disinfectant	Methyl ethyl ketone (MEK)	Virex[†] organic ammonium chloride based disinfectant	Betadine[†] microbicide; povidone-iodine solution	Ethanol (ethyl alcohol)	Hydrogen peroxide 3%	Isopropanol (isopropyl alcohol; ipa) 70%	Saline 10%	Lipid hydrocarbon-containing organic compounds; fatty acid derivatives
ULTEM PEI RESINS												
Healthcare products												
	HU1004	7										
	HU1010	7										
	HU2300	7										
NORYL MODIFIED PPE RESIN BLENDS												
Healthcare products												
	HN731E	7										
	HNA033	7										
	HNA055	7										
Standard products												
	GFN2	3										
VALOX PBT AND/OR PET RESINS AND BLENDS												
Healthcare products												
	HX215HPR	3										
	HX420HP	3										
Standard products												
	365	3										
	855	3										
LUBRICOMP COMPOUNDS – Internally lubricated												
	AL003	7										
	DFL36	3										
	EL003	7										
	RFL36	7										
	WFL36	7										
	ZFL36CCX	7										
THERMOCOMP COMPOUNDS – Internally reinforced												
	DF006ER	3										
	EF006	7										
	LF006	7										
	RF006	7										
	UF008	7										
	WF006	7										

CHEMICAL RESISTANCE TESTING ACCORDING TO ISO 4599 (DETERMINATION OF RESISTANCE TO ENVIRONMENTAL STRESS CRACKING (ESCR) — BENT STRIP METHOD) OR ASTM D543 (EVALUATING THE RESISTANCE OF PLASTICS TO CHEMICAL REAGENTS).
This information should be used as indicative only: Accurate chemical compatibility can only be determined under final application conditions. Therefore, extensive testing of the finished part is strongly recommended. The performance and interpretation of end-use testing are the end producers responsiblity.

STRAIN LEVEL <0.5%
Generally represents molded-in stress of actual part, when designed and molded in line with recommended guidelines

STRAIN LEVELS >0.5%
A material is generally more susceptible to chemical attack at higher strain levels. [e.g. chemically induced cracking will more readily occur at strain level 1.5% than at strain level 0.5%]

TEST TEMPERATURE - 23°C

PERFORMANCE PROPERTIES HEALTHCARE RESINS

	LEVEL OF RELEASE ADDITIVE				HEALTHCARE CONSIDERATIONS (D)					PHYSICAL PROPERTIES (E)			
					STANDARDS AND REGULATORY								
	None	Standard	Higher	Data provided for:	RoHS compliant (H)	Biocompatible supported (I) healthcare product (J)	Food contact		Lipid resistance	Light transmission	Specific gravity	Melt flow rate	Mold shrinkage flow, 3.2 mm
							FDA (K)	EU (K)		%			
Product family		Grade / series								ASTM D 1003 %	ASTM D 792 -	ASTM D 1238 g/10 min	SABIC Method %
LEXAN PC RESINS Standard												300°C/1.2 kgf	
		HP1HF		HP1HF	●	●	●	●		88	1.18	39	0.5 - 0.7
		HP1	HP1R	HP1	●	●	●	●		88	1.2	25	0.5 - 0.7
	HP2NR	HP2	HP2R	HP2	●	●	●	●		88	1.2	17.5	0.5 - 0.7
	HP4NR	HP4	HP4R	HP4	●	●	●	●		88	1.2	10.5	0.5 - 0.7
	HP6NR	HP6		HP6	●	●	●	●		88	1.2	7	0.5 - 0.7
Gamma stabilized[2]													
		HPS1	HPS1R	HPS1	●	●	●	Not listed		88	1.2	25	0.5 - 0.7
		HPS2	HPS2R	HPS2	●	●	●	Not listed		88	1.2	17.5	0.5 - 0.7
		HPS4		HPS4	●	●	●	Not listed			1.19	10.5	0.5 - 0.7
		HPS6	HPS6R	HPS6	●	●	●	Not listed		88	1.2	7	0.5 - 0.7
		HPS7	HPS7R	HPS7	●	●	●	Not listed	●	88	1.2	5	0.5 - 0.7
LEXAN PC SPECIALTY CLEAR RESINS Enhanced processing												300°C/1.2 kgf	
			HPX8R	HPX8R	●	●	●	●		82	1.19	35	0.4 - 0.8
	HPX4			HPX4	●	●	●	●		82	1.19	10	0.4 - 0.8
High heat autoclavability													
		HPH4404		HPH4404	●	●	●	●		85	1.2	6	0.6 - 0.8
		HPH4504H		HPH4504H	●	●	●	●		85	1.2	3	0.7 - 0.8
XYLEX PC/POLYESTER RESIN BLENDS												265°C/2.16 kgf	
	HX8300HP			HX8300HP	●	●	●	●		88	1.2	15	0.5 - 0.8
		HX7509HP		HX7509HP	●	●	●[1]	●		88	1.2	12	0.4 - 0.6
CYCOLOY PC/ABS RESIN BLENDS												260°C/5.0 kgf	
		HC1204HF		HC1204HF	●	●	●	●		Opaque	1.15	24	0.5 - 0.7
CYCOLAC ABS RESINS												230°C/3.8 kgf	
			HMG47MD	HMG47MD	●	●	●	●		Opaque	1.05	5.6	0.5 - 0.8
			HMG94MD	HMG94MD	●	●	●	●		Opaque	1.04	11.7	0.5 - 0.8
ULTEM PEI RESINS												337°C/6.6 kgf	
	HU1000		HU1000E	HU1000	●	●	●	●	●	75	1.27	9	0.5 - 0.7
	HU1004			HU1004	●	●	●	●	●	65	1.28	10	0.5 - 0.7
	HU2300			HU2300	●	●	●	●	●	Opaque	1.51	5	0.2 - 0.4
NORYL MODIFIED PPE RESIN BLENDS												300°C/5.0 kgf	
			HNA033	HNA033	●	●	●	●	●	Opaque	1.08	8.3	0.7 - 0.9
			HNA055	HNA055	●	●	●	●	●	Opaque	1.07	7.2	0.5 - 0.8
			HN731A	HN731A	●	●	●	●	●	Opaque	1.06	9.2 (280°C)	0.5 - 0.7
		HN731SE		HN731SE	●	●	●	●	●	Opaque	1.06	8	0.5 - 0.7
VALOX PBT AND/OR PET RESINS AND BLENDS												250°C/2.16 kgf	
		HX215HP		HX215HP	●	●	●[1]	●	●	Opaque	1.31	80	0.9 - 1.6
	HX420HP			HX420HP	●	●	●[1]	●		Opaque	1.53	26	0.3 - 0.8
	HX3061HP			HX3061HP	●	●	●[1]	●	●	Opaque	1.31	50	1.5 - 2.0
	HX3091HP			HX3091HP	●	●	●[1]	●	●	Opaque	1.31	21	1.8 - 2.2

● Yes ■ No

1 FDA food contact with use limitations

2 LEXAN HPSxS resins - highest release level

Additional footnotes listed on page 34.

MECHANICAL PROPERTIES (E)

Tensile stress, yld	Tensile stress, brk	Tensile strain, yld	Tensile strain, brk	Flexural modulus	Izod impact, notched, 23°C	HDT unannealed	HDT unannealed
ASTM D 638	ASTM D 638	ASTM D 638	ASTM D 638	ASTM D 790	ASTM D 256	ASTM D 648	ASTM D 648
MPa	MPa	%	%	MPa	J/m	°C	°C
Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	1.3 mm/min, 50 mm span		0.45 MPa, 6.4 mm	1.82 MPa, 6.4 mm
63	58	6	108	2410	687		125 (3.2 mm)
62	65	6	120	2300	640	137	126
62	68	7	125	2130	694	137	129
62	68	7	130	2340	801	137	132
62	68	7	135	2340	907	137	132
62	65	6	120	2300	640	137	126
62	68	7	125	2130	694	137	129
62	74	6.5	140	2400	840	138	132
62	68	6.5	135	2340	907	137	132
62	72	6.5	125	2340	935	142	132
Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	1.3 mm/min, 50 mm span		0.45 MPa, 3.2 mm	1.82 MPa, 3.2 mm
60	58	5.8	119	2360	702		120
58	64	5.8	131	2220	890		124
66	70	7	>50	2200	600	148	142
65	71		122	2020	640		143
Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	1.3 mm/min, 50 mm span		0.45 MPa, 3.2 mm	1.82 MPa, 3.2 mm
47	46	5	150	1680	1120	79	75
60	63	6.3	135	2300	854	119	106
Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	1.3 mm/min, 50 mm span		0.45 MPa, 3.2 mm	1.84 MPa, 3.2 mm
57	45	5	150	2340	587	126	109
Type I, 5 mm/min	Type I, 5 mm/min	Type I, 5 mm/min	Type I, 5 mm/min	1.3 mm/min, 50 mm span		0.45 MPa, 3.2 mm	1.84 MPa, 3.2 mm
44	33	2	24	2340	320	96	82
46	35	2	18	2620	240	95	82
Type I, 5 mm/min	Type I, 5 mm/min	Type I, 5 mm/min	Type I, 5 mm/min	1.3 mm/min, 50 mm span		0.45 MPa, 6.4 mm	1.82 MPa, 6.4 mm
110		7	60	3430	53	210	201
95	90	7	85	3000	70	214	204
168	158	3	3	9250	85		210
Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	1.3 mm/min, 50 mm span		0.45 MPa, 3.2 mm	1.84 MPa, 3.2 mm
71	57	5.3	30	2460	192	155	140
66	55	4.5	12.5	2450	314	163	148
58	49	7.2	28.1	2640	213	131	117
55	**50**	**5**	**30**	**2200**	**15**		**115**
Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	Type I, 50 mm/min	1.3 mm/min, 50 mm span		0.45 MPa, 6.4 mm	1.82 MPa, 6.4 mm
51	26	3.7	300	2340	53	154	54
120 (5 mm/min)	120 (5 mm/min)	3 (5 mm/min)	3 (5 mm/min)	7580	85	215	207
58	26	3.7	140	2400	37	120	49
56	30	3.6	300	2400	55	112	49

PERFORMANCE PROPERTIES STANDARD RESINS

		HEALTHCARE CONSIDERATIONS (D)						PHYSICAL PROPERTIES (E)			
		STANDARDS AND REGULATORY									
Product family	Grade/ series	No bromine/no chlorine flame retardant systems used in grade (F)	RoHS compliant (H)	UL 94 flame class ratings (G)	Biocompatible supported (I) healthcare product (J)	Food contact		Light transmission	Specific gravity	Melt flow rate	Mold shrinkage, flow, 3.2 mm
						FDA (K)	EU (K)	ASTM D 1003	ASTM D 792	ASTM D 1238	SABIC Method
								%	-	g/10 min	%
LEXAN PC RESINS										**300°C/1.2 kgf**	
	925	●	●	V2–0.8mm; V0–1.1mm	■	■	■	Opaque	1.19	14	0.6 - 0.8
	945	●	●	V2–0.8mm; V0–1.1mm	■	■	■	Opaque	1.19	10	0.6 - 0.8
	925A	●	●	V2–0.8mm; V1–1.5mm; V0–3.0mm	■	■	■	86	1.19	13	0.6 - 0.8
	945AU	●	●	V2–0.8mm; V0–3.0mm	■	■	■	86	1.19	10	0.6 - 0.8
	FL905 (Foamable)	●	●	V0–3.0mm	■	■	■	Opaque	1.20	3.2	0.6
LEXAN EXL RESINS										**300°C/1.2 kgf**	
	EXL1414	●	●	HB–0.7mm	■	■	■	Opaque	1.18	10	0.4 - 0.8
	EXL9112	●	●	V0–1.5mm; 5VA–3.0mm	■	■	■	Opaque	1.18	17	0.4 - 0.8
	EXL9330	●	●	V0–1.5mm; 5VA–3.0mm	■	■	■	Opaque	1.18	10	0.4 - 0.8
	EXL5689	●	●	V0–1.5mm; 5VB–3.0mm	■	■	■	Opaque	1.26	9	0.2 - 0.6
LEXAN CFR RESINS										**300°C/1.2 kgf**	
	9111	●	●	V2–0.4 mm, V-1–1.2mm, V-0–1.5 mm	■	■	■	90	1.19	18	0.55 - 0.75
CYCOLOY PC/ABS RESIN BLENDS										**260°C/2.16 kgf**	
	C1200HF	●	●	HB–1.2mm	■	■	■	Opaque	1.15	19 (260°C/5.0 kgf)	0.5 - 0.7
	C6600	●	●	V2–0.8mm; V0–1.5mm; 5VB–2.0mm	■	■	■	Opaque	1.19	21.5	0.4 - 0.6
	CY6010	●	●	V0–0.8mm; 5VB–1.5mm; 5VA–3.0mm	■	■	■	Opaque	1.18	34	0.4 - 0.5
	CY6110	●	●	V0–1.2mm; 5VB–2.0mm; 5VA–2.0mm	■	■	■	Opaque	1.18	23	0.4 - 0.6
	CY6310	●	●	V0–0.8mm; 5VB–1.5mm; 5VA–3.0mm	■	■	■	Opaque	1.16	20	0.4 - 0.6
	CY6414	●	●	V0–1.2mm; 5VB–2.0mm; 5VA–2.0mm	■	■	■	Opaque	1.18	6	0.4 - 0.8
	CX2244ME	●	●	V0–0.8mm; 5VB–1.5mm; 5VA–3.0mm	■	■	■	Opaque	1.19	20	0.4 - 0.6
	CX2142ME	●	●	V0–1.2mm; 5VB–2.0mm; 5VA–2.0mm	■	■	■	Opaque	1.19	22.5	0.4 - 0.6
	CM6210	●	●	V0–1.5mm	■	■	■	Opaque	1.28	14.6 (260°C/5.0 kgf)	0.4 - 0.6
XENOY PC/POLYESTER RESIN BLENDS										**266°C/5.0 kgf**	
	6370	●	●	HB–1.5mm	■	■	■	Opaque	1.44		0.3 - 0.4
	6620	●	●	HB–1.5mm	■	■	■	Opaque	1.20		1.6 - 1.8
	X3108(UV)		●	V0–0.8mm; 5VA–2.5mm	■	■	■	Opaque	1.34	9.3 (250°C/5.0 kgf)	1.1 - 1.2
	X3515		●	V0–1.5mm; 5VA–3.0mm	■	■	■	Opaque	1.30	26.7	0.8 - 1.0
CYCOLAC ABS RESINS										**230°C/3.8 kgf**	
	FR15	■	●	V0–1.5mm; 5VA–2.5mm	■	■	■	Opaque	1.20	4	0.5 - 0.7
ULTEM PEI RESINS										**337°C/6.6 kgf**	
	1010	●2	●	V-0-0.8 mm; 5VA-3.0mm	■	Available	Available		1.27	17.8	0.5 - 0.7
	2100R	●2	●	V0–0.4mm; 5VA–1.9mm	■	Available	Available		1.34	7.8	0.5 - 0.6
	2310	●2	●	V0–0.3mm; 5VA–1.2mm	■	Available	Available		1.51	7.6	0.2 - 0.4
	4001	●2	●	V0–0.4mm; 5VA–1.5mm	■	Available	Available		1.33	9.5	0.5 - 0.7
NORYL MODIFIED PPE RESIN BLENDS										**300°C/5.0 kgf**	
	FNH2160 (Foamable)	●	●	V0-6mm; 5VA-3.9mm	■	■	■	Opaque	1.12		0.5 - 0.8 (6.4mm)
	GFN2(V1)	●	●	HB–1.5mm	■	●	●	Opaque	1.20	9	0.2 - 0.5
GTX	GTX678	●	●	V1–1.5mm; V0–2.0mm; 5VA/B –2.0mm	■	■	■	Opaque	1.12	7	1.3 - 1.5
PPX	PPX630(S)	●	●		■	●	●	Opaque	1.19	2.6 (260°C)	0.2 - 0.23
VALOX PBT AND/OR PET RESINS AND BLENDS										**266°C/5.0 kgf**	
	310SE0	■	●	V0-0.71mm; 5VA-3mm	■	■	■	Opaque	1.40	8.6 (250°C/2.16kgf)	1.5 - 2.3
	357U	■	●	V0–0.6mm; 5VA–3.0mm	■	■	■	Opaque	1.34		0.8 - 1.1
	364	■	●	V0-1.47mm; 5VA-2.99mm	■	■	■	Opaque	1.30		0.8 - 1.0
	365	■	●	V0–0.8mm; 5VA–2.2mm	■	■	■	Opaque	1.33		0.8 - 1.0
	3706	■	●	V0–1.5mm; 5VA–2.5mm	■	■	■	Opaque	1.30	23	1.2 - 1.4
	855	■	●	V0–1.5mm	■	■	■	Opaque	1.54	81	0.4 - 0.6
	V3900WX	■	●	V0-1.5mm; 5VA-3mm	■	■	■	Opaque	1.30	11 (265°C/2.16kgf)	0.7 - 1.0

1 GFN2V in Europe
2 Inherent flame resistance
N/A: Not Applicable
Additional footnotes listed on page 34.

● Yes
■ No

MECHANICAL PROPERTIES (E)

Tensile stress, yld	Tensile stress, brk	Tensile strain, yld	Tensile strain, brk	Flexural modulus	Izod impact, notched, 23°C	HDT unannealed	HDT unannealed
ASTM D 638	ASTM D 638	ASTM D 638	ASTM D 638	ASTM D 790	ASTM D 638	ASTM D 638	ASTM D 638
MPa	MPa	%	%	MPa	J/m	°C	°C
Type I, 50 mm/min	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**1.3 mm/min, 50 mm span**		**0.45 MPa, 6.4 mm**	**1.82 MPa, 6.4 mm**
62	65	6	125	2340	801	137	126
62	65	6	125	2340	801	137	126
62	67	6	125	2370	801	137	126
62	67	6	125	2370	801	137	126
58	47	5.7	30	2670	520		
Type I, 50 mm/min	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**1.3 mm/min, 50 mm span**		**0.45 MPa, 3.2 mm**	**1.84 MPa, 3.2 mm**
56	50	6	98	2230	865	139	124
58	58	5.8	103	2340	731	136	124
58	61	6	130	2060	801	134	120
55	44	4.4	15	3500	340		135
Type I, 50 mm/min	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**1.3 mm/min, 50 mm span**		**0.45 MPa, 3.2 mm**	**1.82 MPa, 3.2 mm**
67	54	6	80	2400	600	130	120
Type I, 50 mm/min	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**1.3 mm/min, 50 mm span**		**0.45 MPa, 3.2 mm**	**1.84 MPa, 3.2 mm**
57	44	5	150	2340	587	129	112
63	48	4	80	2620	587	97	90
63	48	4	34	2790	92		81
63	47	4	65	2760	475		88
63	50	4	>50	2700	600	100	88
64	62	6	85	2330	795		118
66	57	4.2	98	2750	690		89
64	54	4	90	2700	600	94	84
64	50	4.9	80	3500	500		90
Type I, 50 mm/min	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**1.3 mm/min, 50 mm span**		**0.45 MPa, 6.4 mm**	**1.82 MPa, 6.4 mm**
	91 (5 mm/min)		4 (5 mm/min)	5370	170	204	148
43			175	1720	801	98	60
52	42	6	26	2020	522		88 (3.2 mm)
52	42	4.3	44	1860	747	123	95
Type I, 5 mm/min	**Type I, 5 mm/min**	**Type I, 5 mm/min**	**Type I, 5 mm/min**	**1.3 mm/min, 50 mm span**		**0.45 MPa, 3.2 mm**	**1.84 MPa, 3.2 mm**
41	35	2.3	9	2720	213	82	70
Type I, 5 mm/min	**Type I, 5 mm/min**	**Type I, 5 mm/min**	**Type I, 5 mm/min**	**2.6 mm/min, 100 mm span**		**0.45 MPa, 6.4 mm**	**1.82 MPa, 6.4 mm**
110		7	60	109	32	207	198
114	115		6	5170	85	210	208
168	158		2	9230	85		210
103			40	3400	117		200
Type I, 50 mm/min	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**1.3 mm/min, 50 mm span**		**0.45 MPa, 3.2 mm**	**1.84 MPa, 3.2 mm**
36	35		12	2250 (6.4 mm)	N/A	93 (6.4 mm)	82 (6.4 mm)
	90 (5 mm/min)		2.6 (5 mm/min)	5800	119	140	135
58	52	7	12	2600	100	195	
77	77		7.7	5550	165	155	133
Type I, 50 mm/min	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**Type I, 50 mm/min**	**1.3 mm/min, 50 mm span**		**0.45 MPa, 6.4 mm**	**1.82 MPa, 6.4 mm**
58	58	20	20	2620	37	162	71
48	48		110	2060	534	137	98
46	39	5	70	1860	747	103 (3.2mm)	68 (3.2mm)
41	41		120	2240	640	129	121
48	39	6	50	1990	667	126 (3.2 mm)	85 (3.2 mm)
	89 (5 mm/min)			4820	53	204	187
53	43	5	50	2200	800	119	96

PERFORMANCE PROPERTIES SABIC SPECIALTY COMPOUNDS

THE SABIC SPECIALTY COMPOUNDING BUSINESS OFFERS

extensive expertise in developing engineering thermoplastic custom compounds. SABIC has demonstrated proven functionality across a diverse range of capabilities. A key area of functionality includes high performance, very high modulus, long fiber reinforced thermoplastics (LFRT). Other capabilities include radio-opaque, low wear/low COF (co-efficient of friction) and internally reinforced materials, to name a few. SABIC compounds are offered for >20 different base resins.

THERMOCOMP AND THERMOTUF INTERNALLY REINFORCED COMPOUNDS

THERMOCOMP materials represent a range of capabilities to reinforce resins and offer the potential for improved strength, stiffness or dimensional stability. This family of products offers materials tailored for specialized mechanical and temperature performance, fatigue and creep resistance and also exceptional processing (EP) for thin-wall requirements. Depending on application requirements, THERMOCOMP may also provide melt processable fluoropolymer compounds, and may facilitate chemical resistance for custom weight and feel. THERMOTUF™ compounds support the need for exceptional balance of strength and toughness. Biocompatible high modulus carbon fiber compounds are also available for demanding structural applications.

LUBRICOMP AND LUBRILOY INTERNALLY LUBRICATED COMPOUNDS

LUBRICOMP compounds offer inherent lubricity by combining engineering resins with PTFE, silicone, aramid fiber or other fillers. These materials are utilized to help increase wear resistance, reduce COF (coefficient of friction) and reduce slip-stick effects of plastic parts moving over other surfaces, whether it's plastic-on-metal wear or plastic-on-plastic wear. They may also limit the need for external/topical lubricants. Options to include glass or carbon fibers for improved strength, rigidity and dimensional stability are also available.

LUBRILOY compounds are an alloy technology offering PTFE and silicone free wear and friction solutions. These materials can offer lower specific gravity, outstanding hydrolysis resistance and improved surface appearance versus PTFE lubricated compounds.

COLORCOMP COMPOUNDS

COLORCOMP pre-colored unfilled resins offer the ability to combine a broad range of thermoplastic resins with pigments for critical color matches, fast service and small lots.

STAT-KON AND STAT-LOY ELECTRICALLY CONDUCTIVE COMPOUNDS

STAT-KON compounds are made by compounding base resins with electrically conductive fillers or reinforcing agents, producing conductive and dissipative materials in the 10^2 to 10^8 ohms/sq. resistivity range. In addition to protecting parts and components against static build-up and ESD electrostatic discharge events, this line of materials offers a range of mechanical, physical and thermal properties depending on the base resin selected.

STAT-LOY alloy compounds combine an insulative base resin with an inherently conductive polymer to provide permanent anti-static performance. STAT-LOY compounds are non-sloughing and colorable. These compounds offer cost-effective solutions when products for anti-stat applications are required. Transparent and biocompatible STAT-LOY options are available where transparency is needed.

FARADEX CONDUCTIVE EMI/RFI ATTENUATION COMPOUNDS

FARADEX compounds provide electromagnetic and radio frequency interference (EMI/RFI) attenuation in applications from electronics to material handling. Conductive fibers form the conductive network required for EMI/RFI shielding. FARADEX compounds can also be used in applications where ESD protection is required. These compounds provide mechanical properties, part weight and a design freedom similar to standard unfilled base resins. They help to avoid costly secondary steps, offering the potential for total system cost reduction.

PERFORMANCE PROPERTIES SABIC SPECIALTY COMPOUNDS

LUBRICOMP and LUBRILOY internally lubricated compounds

GRADE/ SERIES	BASE RESIN	FIBER TYPE	ADDITIVE TYPE	PHYSICAL PROPERTIES (E) Light transmission ASTM D 1003 %	Specific gravity ASTM D 792 –	Tensile stress, yld ASTM D 638 MPa	Tensile stress, brk ASTM D 638 MPa
						TYPE I, 50 MM/MIN	TYPE I, 50 MM/MIN
D2000AXH	PC	N/A	alloy lubricant	Opaque	1.17	53	60
DCI06APW	PC	carbon fiber	silicone	Opaque	1.3		183 (5mm/min)
DL003EXJ	PC	N/A	PTFE	Opaque	1.29	46	38
DFL34EH	PC	glass fiber	PTFE	Opaque	1.48	N/A	95
EX03599H	PEI	N/A	PTFE	Opaque	1.28	105	88
EX10404H	PEI	carbon fiber	PTFE	Opaque	1.39	N/A	216
WFL34H	PBT	glass fiber	PTFE	Opaque	1.59	N/A	123

STAT-KON and STAT-LOY electrically conductive compounds

GRADE/ SERIES	BASE RESIN	FIBER TYPE	ADDITIVE TYPE	PHYSICAL PROPERTIES (E) Light transmission ASTM D 1003 %	Specific gravity ASTM D 792 –	Tensile stress, yld ASTM D 638 MPa	Tensile stress, brk ASTM D 638 MPa
						TYPE I, 50 MM/MIN	TYPE I, 50 MM/MIN
A3000TXB	ABS	N/A	bioassessed & permanent anti-stat		1.09	38	27
MD000ISC	PP	N/A	carbon powder	opaque	0.98	21	17
OE006C1	PPS	carbon fiber	electrical conductivity	opaque	1.44		192 (5mm/min)
93000LTH	acrylic	N/A	permanent anti-stat		1.15		40 (5mm/min)

FARADEX EMI/RFI shielding compounds

GRADE/ SERIES	BASE RESIN	FIBER TYPE	ADDITIVE TYPE	PHYSICAL PROPERTIES (E) Light transmission ASTM D 1003 %	Specific gravity ASTM D 792 –	Tensile stress, yld ASTM D 638 MPa	Tensile stress, brk ASTM D 638 MPa
						TYPE I, 50 MM/MIN	TYPE I, 50 MM/MIN
DS0036I	PC	Stainless steel fiber	EMI/RFI shielding fiber	opaque	1.29	57	55
NS0031	PC/ABS	Stainless steel fiber	EMI/RFI shielding	opaque	1.24	52	49

THERMOCOMP internally reinforced structural compounds

GRADE/ SERIES	BASE RESIN	FIBER TYPE	PHYSICAL PROPERTIES (E) Light transmission ASTM D 1003 %	Specific gravity ASTM D 792 –	Mold shrinkage ASTM D955 %	Tensile stress, yld ASTM D 638 MPa	Tensile stress, brk ASTM D 638 MPa
					FLOW, 3.2 MM	TYPE I, 50 MM/MIN	TYPE I, 50 MM/MIN
DF006HL	PC	glass	opaque	1.43	0.1-0.4	115	114
EC006AQW	PC	carbon	opaque	1.39	0.03-0.1		255
LC006	PEEK	carbon	opaque	1.41	.001	225	225
LF006	PEEK	glass	opaque	1.53	N/A	176	176
OF006	PPS	glass	opaque	1.58	.001 - .003	145	130
RC006XXH	PA 6/6	carbon	opaque	1.27	0.1-0.3		269
RF006XXH	PA 6/6	glass	opaque	1.41	0.3-0.6		167
WF006	PBT	glass	opaque	1.55	.003	137	137

N/A: Not applicable
Blank cells: not tested

Additional footnotes listed on page 34.

Tensile strain, yld ASTM D 638 %	Tensile strain, brk ASTM D 638 %	Flexural modulus ASTM D 790 MPa	Izod Impact, notched ASTM D 256 J/m	HDT unannealed ASTM D 648 °C	HDT unannealed ASTM D 648 °C	STANDARDS AND REGULATORY
TYPE I, 50 MM/MIN	TYPE I, 50 MM/MIN	1.3 MM/MIN, 50 MM SPAN	23°C	.45 MPA	1.82 MPA	Solutions for RoHS (H) compliant; no bromine/ no chlorine flame-retardant systems (C); and healthcare considerations may be offered. Due to the specialization of our Speciality Compounding grades, please review specific healthcare standards and/or regulatory requirements with a SABIC representative.
6.5	125	2130	715	140	126	
	1.4 (5mm/min)	20100	94		128	
5.6	17.3	2190	176	141	130	
N/A	2.7	6320	149	146	142	
7	28	3480	48	N/A	190	
N/A	1.3	17300	556	N/A	213	
N/A	2.8	6840	87	223	213	

Tensile strain, yld ASTM D 638 %	Tensile strain, brk ASTM D 638 %	Flexural modulus ASTM D 790 MPa	Izod Impact, notched ASTM D 256 J/m	HDT unannealed ASTM D 648 °C	HDT unannealed ASTM D 648 °C	STANDARDS AND REGULATORY
TYPE I, 50 MM/MIN	TYPE I, 50 MM/MIN	1.3 MM/MIN, 50 MM SPAN	23°C	.45 MPA	1.82 MPA	Solutions for RoHS (H) compliant; no bromine/ no chlorine flame-retardant systems (C); and healthcare considerations may be offered. Due to the specialization of our Speciality Compounding grades, please review specific healthcare standards and/or regulatory requirements with a SABIC representative.
4	31	1630	131	78	66	
9	133.8	1130	833	81	52	
	1.2 (5mm/min)	19900	49	277	264	
	7 (5mm/min)	1470	40		66	

Tensile strain, yld ASTM D 638 %	Tensile strain, brk ASTM D 638 %	Flexural modulus ASTM D 790 MPa	Izod Impact, notched ASTM D 256 J/m	HDT unannealed ASTM D 648 °C	HDT unannealed ASTM D 648 °C	STANDARDS AND REGULATORY
TYPE I, 50 MM/MIN	TYPE I, 50 MM/MIN	1.3 MM/MIN, 50 MM SPAN	23°C	.45 MPA	1.82 MPA	Solutions for RoHS (H) compliant; no bromine/ no chlorine flame-retardant systems (C); and healthcare considerations may be offered. Due to the specialization of our Speciality Compounding grades, please review specific healthcare standards and/or regulatory requirements with a SABIC representative.
3.8	6	2600	122	136	125	
3.3	4.7	2800	74	120	105	

Tensile strain, yld ASTM D 638 %	Tensile strain, brk ASTM D 638 %	Flexural modulus ASTM D 790 MPa	Izod impact, notched ASTM D 256 J/m	HDT unannealed ASTM D 648 °C	STANDARDS AND REGULATORY
TYPE I, 50 MM/MIN	TYPE I, 50 MM/MIN	1.3 MM/MIN, 50 MM SPAN	23°C	1.82 MPA	Solutions for RoHS (H) compliant; no bromine/no chlorine flame-retardant systems (F); and healthcare considerations may be offered. Due to the specialization of our Speciality Compounding grades, please review specific healthcare standards and/or regulatory requirements with a SABIC representative.
2.8	2.7	7500	167	144	
	1.4	22200	80	198	
1.4	1.5	20200	74.7	299	
2.0	1.9	10800	117	299	
N/A	1.2	11300	69.4	268	
	2.1	20300	102	257	
	2.4	9700	67	246	
2.9	2.9	9360	90.7	207	

FOOTNOTES TO PRODUCT CHARTS PP11, 26-33

A Biocompatibility: material evaluated based on ISO 10993 or USP Class VI protocol; supporting information available by Type I or Type II letter. Reference footnote I below.

C Implant policy: SABIC does not support applications that remain implanted beyond 29 days.

D Healthcare Considerations: The material may offer capability of attribute shown; please consult with a SABIC representative for additional information.

E Physical and Mechanical Properties: Information presented in parenthesis ( ) after data indicates that different test conditions were applied.

F No bromine, no chlorine flame-retardant systems used in grade formulation; however, final product assessment must include colorants (grade-color combination).

G UL 94 Flame class rating: Representative information from UL Yellow Card provided; see UL (www.ul.com) for full Yellow Card data set.

H RoHS compliant: Grade listed conforms to EU Directive 2011/65/EU (as amended including EU Directive 2017/2102/EU) Restriction of Hazardous Substances (RoHS 2); final assessment must include colorants (grade-color combination).

I Biocompatibility: A representative lot of material evaluated based on ISO 10993 or USP VI protocol. Biocompatibility information available via Type I or Type II letter. Type I Letter: Issued for products that have been specifically tested for biocompatibility. Type II Letter: Issued when specific product has not been tested but similar products have been tested for biocompatibility.

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

J The SABIC Healthcare product policy

- Easily identifiable healthcare product nomenclature
  - CYCOLAC HM resins
  - CYCOLOY HC resins
  - LEXAN HP resins
  - NORYL HN resins
  - ULTEM HU resins
  - VALOX HX resins
  - XYLEX HX resins
- Biocompatibility assessed (according to ISO10993 or USP Class VI)
- Food contact compliance for most “healthcare products”
- FDA Drug Master File and/or Device Master File listing (Letter of Authorization provided as needed)
- SABIC healthcare products are subject to formula lock and stringent management of change process (ask your SABIC representative for more details)

K Food Contact: Food contact status may be contingent on the color package used in combination with the base resin.

L Steam sterlization: Though steam autoclave testing has been conducted, performance may vary by exact temperature, time and conditions of exposure. Design of device also influences duration of materials' ductility in use.

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, TX 77042
USA

Technical Answer Center
T +1 800 845 0600
E productinquiries@sabic.com

Europe
Plasticslaan 1
PO Box 117
4600 AC
Bergen op Zoom
The Netherlands
T +31 (0)164 292911
F +31 (0)164 292940

Technical Answer Center
T (0) 0 800 1 238 5060
T2 0036 1 288 3040
E webinquires@sabic.com

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

Follow us on LinkedIn at SABIC Solutions for Healthcare