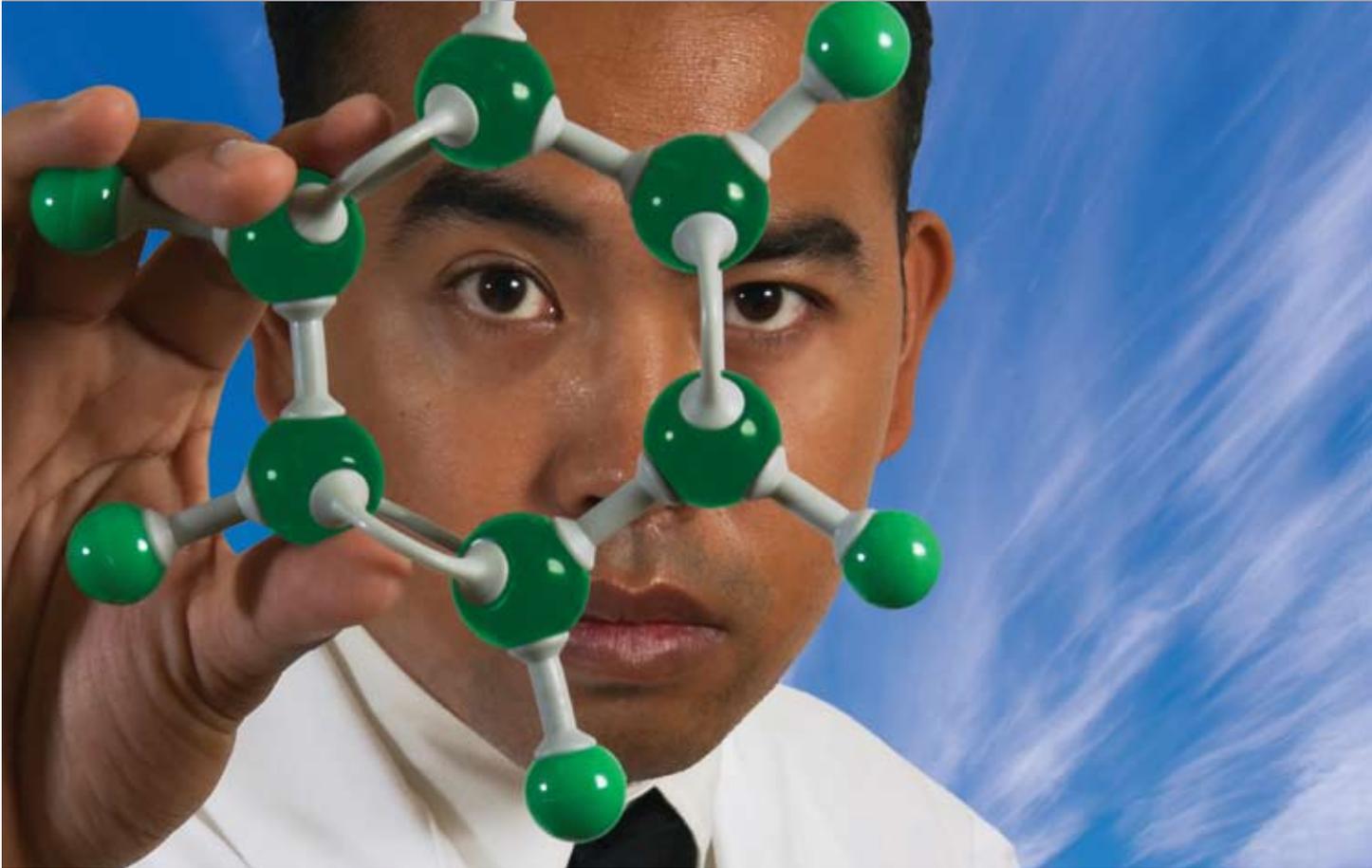


Valox iQ* PBT resins Xenoy iQ* PC/PBT resins



It's not recycled...
It's upcycled

Great resin just got greener

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One person's trash...

...is another's sustainability breakthrough.



Despite the popularity of recycling programs, that PET bottle you're drinking from would most likely end up in the solid waste in the local landfill. Post-consumer PET plastic bottles are now potential raw materials for a unique chemical upcycling process, pioneered by SABIC Innovative Plastics, that regenerates and upgrades post-consumer PET. In fact, a single kilogram of our Valox iQ* or Xenoy iQ* resin may save as much as 0.87 kg of post-consumer PET from the local landfill.

Conventional PBT resins have traditionally been formed through a chemical process that uses non-renewable crude oil or natural gas as a raw material. Not iQ resins. The proprietary chemistry that produces these high-quality PBT resins uses post-consumer PET as its main source, reducing the hydrocarbon-based fuels needed in the mix.

Plus, the iQ resin manufacturing process is more energy efficient from cradle-to-gate, consuming 55-75% less fossil fuel than other engineering thermoplastics in the marketplace today; and it reduces CO₂ emissions by a comparable amount.

In addition to their environmental benefits, Valox iQ and Xenoy iQ resins deliver mechanical, aesthetic and processing performance that's comparable to or better than conventional PBT resins. They are true "drop-in solutions" for traditionally manufactured composites, blends and alloys containing PBT.

iQ resins can extend and transform the life of a typical PET plastic bottle up to 20 years, by being converted into high-performance products for automotive, electronics, furniture or fiber OEMs. Finished products made from iQ resins may contain up to 65% post-consumer PET waste, with zero impact on mechanical or aesthetic performance.

Recognition for SABIC Innovative Plastics technology:

- Winner: SPE/GPEC 2007 Environmental Award for New Technologies in Processes
- Winner: 2006 SAE Environmental Excellence in Transportation Award
- Valox iQ8280SF resin grade is Cradle-to-Cradle Certified^{CM} at the Silver tier
- EcoMark Certification



Manufactured from chemicals recovered from post-consumer waste, Valox iQ and Xenoy iQ resins contain recycled content compliant with FTC Guidelines for Green Marketing Claims and ISO 14021 standards for environmental labeling.

First, we made PBT perform better for you...

RESPONSIBLE



...then, we made it more sustainable for the planet.

The world around us is changing. Raw materials and energy are in shorter supply than ever, while solid waste is becoming a problem. It isn't enough anymore for engineering resins to deliver high mechanical, aesthetic and processing performance. They must also deliver environmentally sustainable solutions.

That's what makes iQ resin technology so smart.

From SABIC Innovative Plastics

In the world of environmentally responsible materials, Valox iQ* and Xenoy iQ* resins break new ground for sustainable engineering materials that deliver uncompromising performance for designers, OEMs and molders alike.

They represent another evolutionary step in SABIC Innovative Plastics' long history of breakthrough ideas, and signify a new generation of environmentally holistic products that...

- Reduce the amount of end-of-life PET materials destined for landfills
- Lower oil and energy consumption, and greenhouse gas emissions
- Help minimize the environmental life-cycle impact of PBT-based components
- Perform as well as or better than conventional engineering thermoplastics composites, blends and alloys containing PBT

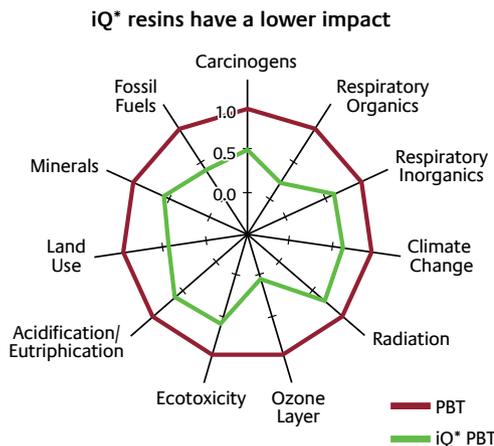
The world is changing. Markets demands are changing. Building on nearly a half century of strong market insight and materials intelligence, SABIC Innovative Plastics is helping its customers stay ahead of the curve with iQ resin technology.

The iQ Resin Difference... Renewing, Extending and Improving the Plastics Life Cycle

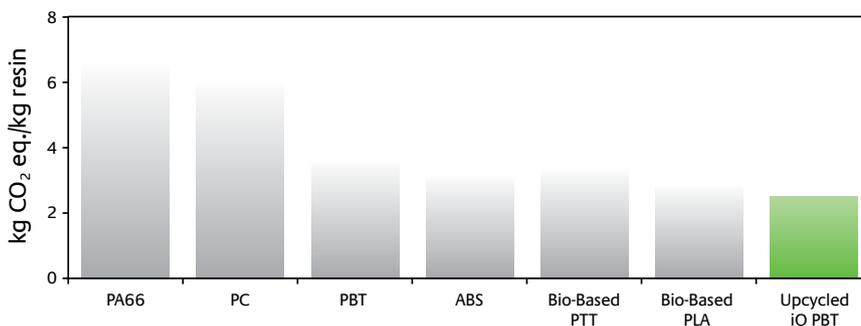
By transforming PET bottles used for 15 minutes into high-quality products that can last years longer, iQ resins measure up against the truest metric of environmentally sustainable performance: Life Cycle Assessment (LCA).

LCA has become an established methodology (ISO 14040) that adds up the environmental burden of a product over the course of its entire life cycle – beginning with the raw materials needed for its manufacture to its end-of-life disposal and handling.

Preliminary LCA studies currently under peer review indicate that, on the average, both the overall environmental profile and greenhouse gas emissions (cradle-to-gate) of iQ resins may be as much as 50% lower than comparably performing engineering resins and biopolymers.



Greenhouse gas emissions (cradle-to-gate)



Uncompromising performance.

Valox iQ* PBT and Xenoy iQ* PC/PBT resins are more than simply sustainable plastics, they're smarter technology.

Grades in either of the iQ resin product lines may contain up to 65% post-consumer content. Yet, unlike other recycled materials, which lose performance through successive melt histories, iQ resins are upcycled to deliver comparable or better performance than their conventionally manufactured counterparts.

Compared to conventional PBT resins, and depending on grade, iQ resins may offer:

- Up to 2x higher flow for superior processing, and potentially 15% to 25% lower cycle times
- A wider, more robust processing window
- High modulus ductility and super high flow, enabling thinner walled part designs and lighter weight parts from the same mold

- Non-brominated and non-chlorinated flame retardant grades
- Available in custom colors and capable of visual effects
- Complies with multiple-use FDA regulations
- Available globally

iQ resins are effectively a more environmentally sustainable drop-in alternative for composites, blends and alloys containing conventional PBT resins. Their properties and long-term performance profiles are within the same specifications as standard PBT grades.



Valox iQ[®] PBT resin

Valox iQ resin properties are designed to be similar to its traditional Valox PBT counterpart, and is available in unfilled, filled and flame-retardant grades.

Typical property profiles of Valox iQ resin include high dielectric strength, long-term heat resistance, excellent chemical and impact resistance, dimensional stability, stiffness and strength. Aesthetic options include high gloss capability and incorporation of visual effects.

Processing characteristics include excellent flow, fast cycle times and excellent blow molding performance with designated grades.

Like conventional Valox[®] resin grades, Valox iQ resins offer outstanding performance and aesthetic options for applications in the following industries:

- Automotive
- Electrical and lighting
- Building and construction
- Furniture
- Fiber and fabric
- Telecommunication
- Medical
- Food
- Appliances
- Business machines

Select grades of Valox iQ resins offer enhanced performance:

- Super high flow
- Impact modified
- Hydrostable
- Electricals
- Aesthetics
- Metalizable
- Weatherable
- FDA/Medical



Xenoy iQ[®] PC/PBT resin

As a class of materials, Xenoy iQ resins are a versatile semi-crystalline family of polycarbonate (PC) resin blended with polybutylene terephthalate (PBT) and/or polyethylene terephthalate (PET) resin. Available in both filled and unfilled grades, this material platform is characterized by excellent chemical resistance to fuels, lubricants, solvents, cleaning fluids and adhesives. It also delivers low-temperature impact performance, good weatherability and sustained dimensional stability under high heat.

Aesthetic options include low- and high-gloss capability and incorporation of visual effects.

Processing characteristics include a wide and robust processing window, low shrinkage, excellent flow and fast cycle times.

Like conventional Xenoy[®] resin grades, Xenoy iQ resins offer outstanding performance and aesthetic options for applications in the following industries:

- Automotive
- Building and construction
- Personal care
- Telecommunication
- Medical

Select grades of Xenoy iQ resins offer enhanced performance:

- High modulus ductility
- High heat
- Weatherability
- Extrusion and blow molding
- Energy management

iQ resins allow colorability and visual effects far beyond most other recycled resins.



Automotive iQ* resins.

Greener materials, cleaner manufacturing.

From every angle – government, media, competitors and consumers – automakers are feeling the pressure to deliver more environmentally compatible vehicles that can help improve fuel economy, lower greenhouse gas emissions and can also offer the possibility for recyclability.

Advanced iQ resin technology delivers on all of these challenges along with an improved processing profile – before the vehicle even rolls off the manufacturing line.

- First by tapping post-consumer PET bottles as a raw material, iQ resins extend the life of this plastic waste up to 20 years. **In fact, iQ resins provide a better combination of environmental and engineering performance than corn-based biopolymers like polylactic acid (PLA) or polyhydroxyalkanoate (PHA).**

- Further, the manufacturing process through which PET is upgraded into high-performance engineering resins reduces the use of fossil fuels and lowers overall energy usage.
- Finally, select grades of iQ resins deliver up to 2x better flow, enabling 15% to 25% shorter cycle times, lighter thin-walled parts and more energy efficient processing.

iQ resins meet the specifications for standard PBT and PC/PBT resins, while opening new opportunities for cleaner, safer and better performing connectors, lighting bezels, body panels, door handles, energy absorbers and other automotive components.



On the road.

The benefits of iQ resin technology continue into the next phase of the automotive life cycle: the open road.

There, Valox iQ* and Xenoy iQ* resins deliver the same or better aesthetic and mechanical properties when compared to conventional PBT engineering resins. Plus, like traditional PBT, iQ resins offer the same opportunities for part consolidation and metal replacement that contribute to reduced overall vehicle weight. As a result, iQ resin technology can help improve fuel consumption and lower emissions over the course of a vehicle's lifetime.

Select high-modulus ductile grades of iQ resins offer expanded value compared to standard PBT and PC/PBT resins, including:

- 3% to 7% lower specific gravity vs. conventional PBT resins
- 20% to 25% reduction in coefficient of thermal expansion
- 4x to 8x greater tensile elongation to break
- 6x impact strength
- 20% to 70% better creep performance
- 15% to 50% improvement in fatigue performance

These iQ resins meet the standard industry specifications for PBT and PC/PBT resins.



iQ resins offer automakers a sustainable edge as they strive to meet requirements for more environmentally responsible transportation.

Electronics iQ* resins.

Plug-n-Play renewable PBT.



As pressure builds on electronics manufacturers to balance engineering performance with reduced environmental impacts, iQ resins offer a more environmentally friendly plug-n-play alternative to conventional PBT resins.

In addition to upgrading post-consumer PET waste and eliminating hydrocarbon-based raw materials from their manufacturing process, the iQ resin line also offers products that minimize or eliminate environmentally sensitive additives. Select grades of Valox iQ* and Xenoy iQ* resins, for example, offer non-halogenated flame retardants.

These and other iQ products meet the specifications for standard PBT and PC/PBT resins, while introducing new options for cleaner, greener and better performing cooling fans, connectors, switch gears and relays, as well as fuser components in printer applications.

In addition, iQ resins offer the same surface aesthetics, chemical resistance and high dielectric performance of conventional PBT resins, while enabling higher point values under the US EPEAT (Electronic Product Environmental Assessment Tool) program. In fact, Valox iQ and Xenoy iQ resins may enable up to 2 EPEAT points for the electronics OEM due to their high post-consumer content.

Plus, far from compromising on the critical properties that electronics applications require, iQ resins deliver the same performance profile as conventional PBTs. For example, they offer:

- UL94 V0 @ 0.8mm
- Tensile elongation and flexural modulus are similar to standard PBT and PC/PBT
- Excellent processability, and custom color capability
- Comparative tracking index (CTI) ranges from 325 to 600 volts



EPEAT certified

The U.S. Electronic Product Environmental Assessment Tool (EPEAT) is a voluntary program supported by the U.S. Environmental Protection Agency. It establishes a standard rating system (IEEE 1680) that helps purchasers of electronics equipment to evaluate, compare and select desktop computers, notebooks and monitors based on their environmental attributes.

Although the program is voluntary, U.S. Federal Acquisition Regulations require federal agencies to purchase at least 95% EPEAT-registered products in all relevant electronic product categories. Some corporations, state and local governments have also established procurement guidelines referencing EPEAT.

Valox iQ PBT and Xenoy iQ PC/PBT can contribute to or even increase an electronic design's qualification under EPEAT standards. In addition to containing up to 65% post-consumer content, iQ resins are recyclable materials and, depending on grade, may offer additional environmentally preferable qualities, such as non-halogenated flame resistance.

Industry iQ* resins.

iQ* resins' unique performance and environmental profile is sprouting innovative applications across multiple industries.

Furniture market

Valox iQ* resin used in furniture may contribute toward points MR4.1 and MR4.2 for recycled content in the US Green Building Council's LEED* CI rating system for environmental excellence in the design of commercial interiors. Additionally, iQ* PBT used in the formulation of Valox iQ and Xenoy iQ* grades has been assessed by MBDC as acceptable for use in furniture based on MBDC's health and environmental criteria. Valox iQ8280SF Natural resin has been awarded MBDC's Cradle-to-Cradle certification at the silver level.

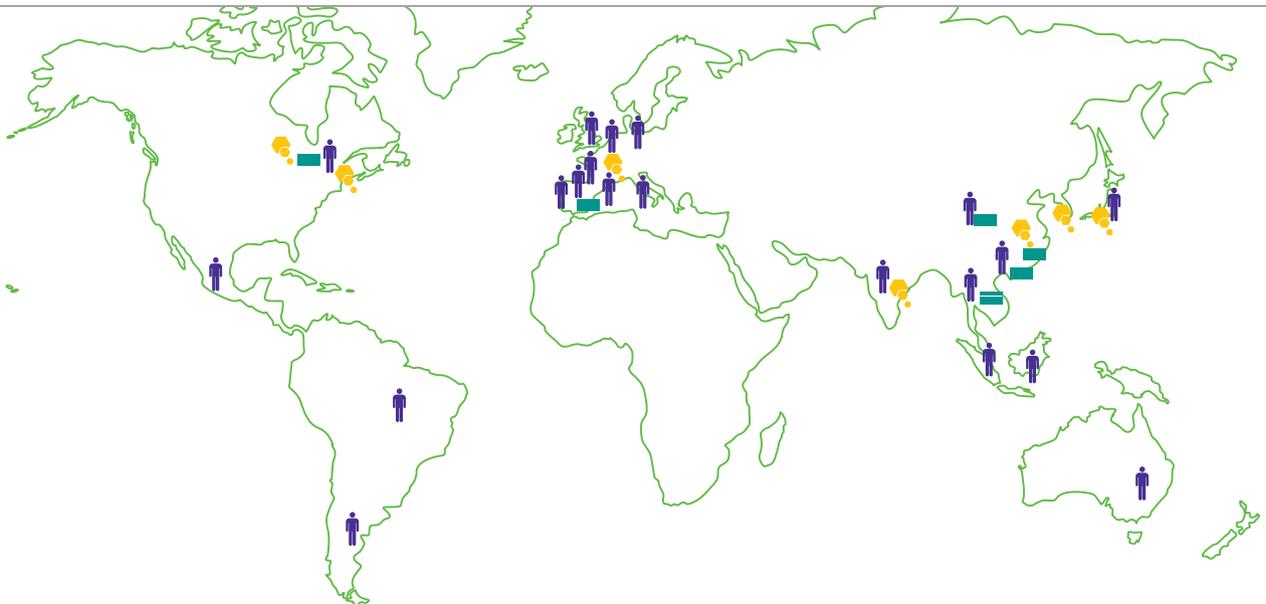
Fiber

Valox iQ resins enable soft yet resilient monofilaments, staple fibers and continuous filament yarns for woven and nonwoven fabrics. These enhanced PBT materials offer a good balance of properties and improved functionality, including hydrostability, colorability and chemical resistance.

Valox iQ resins for textiles also offer a wide range of intrinsic viscosities with good melt strength, making them adaptable to many fiber and textile applications. Plus, Valox iQ resins make excellent candidates for melt blown processes that create nonwoven filter media used in air and liquid filtration systems for automotive, gasoline, chemicals, food and beverages, medical and other applications.

Emerging applications

Valox iQ resins comply with multiple use FDA requirements for use in applications such as kitchen utensils, mugs, chopsticks and others, to name but a few. Today, Valox iQ420HP resin is used by customers in Japan for chopsticks that enables up to 1000 dishwasher cycles and helps with resource conservation by replacing disposable wooden chopsticks.



Global employees
Locations worldwide include manufacturing technology and joint-venture sites in 21 countries.



Global capacity investments
Mt. Vernon, IN – Lexan Resin Copolymer Retrofit
Spain – Ultem Resin Plant
Cartageña, Spain – Lexan Resin Expansion Plant
China – Compounding Expansion



Global application technology centers
Pittsfield, MA – Polymer Processing Development Center
Wixom, MI – Advanced Technology Development Center
Bergen Op Zoom, The Netherlands – European Processing Center
Shanghai, China – China Technology Center
Bangalore, India – Welch Technology Center
Moka, Japan – Moka Technology Center
Seoul, Korea – Korea Technology Center

Technologies for a new generation.

For nearly half a century, SABIC Innovative Plastics has been developing leading-edge thermoplastic resins.

Today, we offer one of the most comprehensive selections of engineering materials available to OEMs and suppliers worldwide.

But our worth exceeds the sum of our product portfolio. We multiply our value to customers by providing world-class application development centers, cutting-edge process technologies and outstanding technical support.

The engine driving this innovation is our unique Global Application Technology (GApT) organization. GApT is what enables us to rapidly develop next-generation materials solutions for customers around the world. Staffed by over 100 engineers, the organization has a global reach through seven state-of-the-art Centers of Excellence, strategically located in the United States, Europe, China, Japan, Korea and India.

In addition to driving development of end applications, our Centers of Excellence can help refine their manufacture by providing a full range of tools for molding, extrusion, thermoforming and even melt spinning methods. It further backs its capabilities with secondary operations support such as painting, welding and vacuum metallization, as well as the structural analysis of finished components.

Lastly, OEMs can tap GApT's comprehensive range of performance testing methodologies and technologies to help ensure that key properties of their application are accurately measured throughout the development process.

SABIC Innovative Plastics continues to aggressively expand its global application technology to deliver next-generation material solutions to customers around the world – when they need them, and sometimes before they need them.

Toward a sustainable future

The SABIC Innovative Plastics story is just getting started. We look toward the future with a clear charter for the customers we serve in more than 60 countries worldwide.

With the long-term commitment and resources of SABIC to empower us, SABIC Innovative Plastics is poised to expand its portfolio of advanced materials and help its customers usher in the products that support cleaner, more sustainable futures across multiple industries.

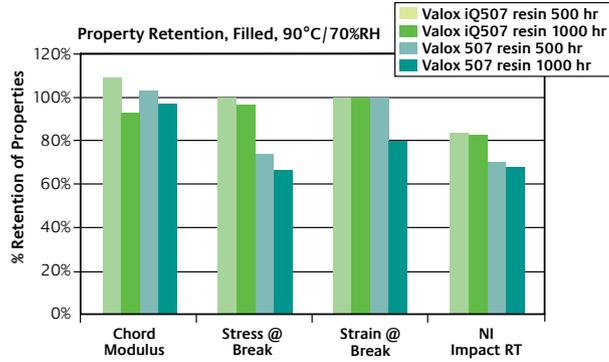
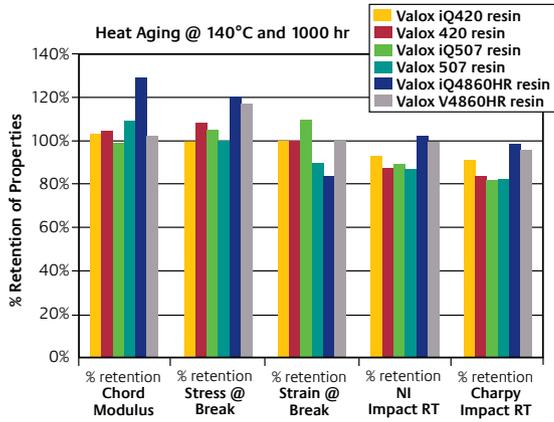
Our dedicated global staff is committed to maximizing the competitive success of OEMs through close collaboration and breakthrough material innovations. Plus, as a leader in advanced materials, we are taking an active role in the development of progressive new technologies that help solve the toughest problems for our customers and the world at large.



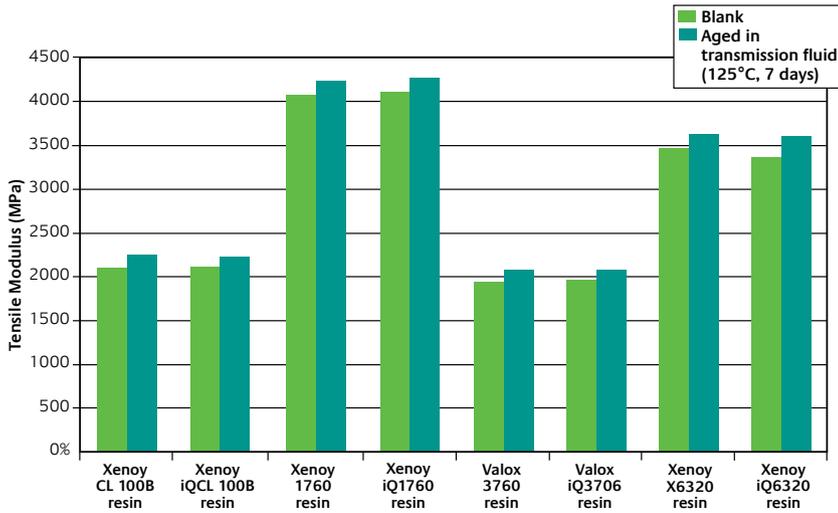
Typical property values

	ISO Unit	Valox* V8280 resin	Valox iQ8280SF resin	Valox 508 resin	Valox iQ508 resin	Valox VAC3001 resin	Valox iQ3001 resin	Xenoy* 1103 resin	Xenoy iQ1103 resin
Density	g/cm ³	1.63	1.64	1.47	1.48	1.36	1.35	1.21	1.2
Tensile strength	MPa	132	132						
Tensile strength, yield, 5.0 mm/min	MPa			117	117				
Tensile strength, yield, 50 mm/min	MPa					55	52	49	50
Tensile Elongation	%	2.1	2.1						
Flexural Stress	MPa	195	203						
Flexural Modulus	MPa	10900	11300	7180	8051	2583	2600	1771	1818
Dynatup impact at RT, Total Energy	J	8	6.5						
Izod Impact, notched @ RT	J/m	86.7	87.1						
Izod Impact, notched @ -30°C	J/m	79.5	82.7						
Izod Impact, notched @ -30°C	kJ/m ²							46	49
Izod Impact, notched @ 23°C	kJ/m ²			9	9	3	3	54	53
Izod Impact, unnotched @ RT	J/m	835	901						
Izod Impact, unnotched @ -30°C	J/m	923	825						
Charpy Impact, notched @ 23°C	kJ/m ²			12.6	12.1			59	63
Capillary @ 270°C, 24/s	Pa-s	1062	144						
Capillary @ 270°C, 664/s	Pa-s	307	159						
Capillary @ 270°C, 2286/s	Pa-s	188	109						
HDT @ 0.45 Mpa	°C	221	216	206	198	174	167	105	99
HDT @ 1.8 Mpa	°C	197	199	135 Flat	136 Flat	74	74		
Vicat Softening Temperature	°C							122	116
MVR @ 250°C and 2.16kg	cm ³ /10 min			6	7			14	16

Long-term heat aging test results

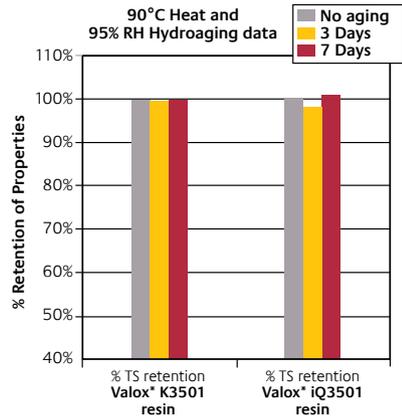


Chemical resistance of Valox iQ* resin and Xenoy iQ* resin



Valox iQ* resin and Xenoy iQ* resin exhibit similar chemical resistance performance to their Valox* resin and Xenoy* resin offsets, respectively

Long-term performance of Valox iQ resin



Valox K3501 and Valox* iQ3501 resins have similar heat and hydro-aging performance

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