

CHEMISTRY THAT MATTERS™



LNPT™ ELCREST™ CRX COPOLYMER RESINS

SABIC'S SPECIALTIES BUSINESS



LNP™ ELCRES™ CRX COPOLYMER RESINS

IMPROVED CHEMICAL RESISTANCE MATERIALS FOR MEDICAL
ENCLOSURES AND HOUSINGS

With patient safety at the forefront, the healthcare industry is mobilizing to address the concerns of increasing patient infections associated with medical care, known as hospital-acquired infections (HAIs). To help meet this challenge, medical equipment and high touch surfaces in patient care settings are repeatedly wiped down with increasingly aggressive chemical disinfectants.

NEED FOR IMPROVED CHEMICAL RESISTANCE

Manufacturers of medical equipment for patient monitoring, imaging, diagnostic, fluid and medication delivery need materials that offer improved chemical resistance to the more aggressive disinfectants used today in healthcare settings.

CHEMICAL RESISTANCE DATA – ENVIRONMENTAL STRESS CRACKING (ESC) PERFORMANCE

Compared to traditional PC, ABS, PBT and co-polyester resins and blends — which are potentially incompatible with highly aggressive disinfectants such as quaternary ammonium compounds — the new LNP ELCRES CRX resins can help prevent stress cracking and mitigate crack propagation.

NEW SOLUTION OFFERING

SABIC's LNP ELCRES CRX resins leverage unique copolymer technology to provide improved chemical resistance for healthcare devices and equipment, compared to existing materials used such as PC/ABS, PC/PBT, or co-polyester resins and blends.



PLASTICS DETERMINATION OF RESISTANCE TO ENVIRONMENTAL STRESS CRACKING (ESC) METHOD

PRODUCT	Mold shrinkage, flow	Exposure days	SANI-CLOTH® Bleach		SANI-CLOTH® HB		SANI-CLOTH® AF 3		SANI-CLOTH® plus		Diversey Oxivir® TB		Trichlorosynuric Acid		Cavicide® CaviWipes1		SANI-CLOTH® prime		Virex® II 256		Virex® TB		CIDEX® OPA Solution		Ethanol		
			%	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$	$\sigma_y \epsilon_b$
PC/ABS	0.6	7	●●	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
PC/PBT	1.0	7	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	
CRX5421 RESIN	1.3	7	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	
CRX9421 RESIN	1.3	7	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	
CRX1414 RESIN	0.6	7	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	
CRX9411 RESIN	0.6	3	-	-	●●	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	0.6	7	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	
	0.6	3	-	-	●●	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	


SABIC's ESC method evaluates retention of tensile properties vs. control for up to 7 days.

Compatibility criteria color rating	Tensile stress at yield retention σ_y (%)	Tensile elongation at break retention ϵ_b (%)
Compatible	> 90	80 - 139
Marginal	80 - 89	65 - 79
Not compatible	< 79	< 64 or > 140

This information should be viewed as a screening test. End users are responsible for determining the suitability of these products for their application requirements.


PERFORMANCE PROPERTIES

LNP ELCRES CRX copolymer resins are a new family of polycarbonate copolymers that can provide improved chemical resistance. These resins are based on unique copolymer building block blends offering a combination of:




IMPROVED CHEMICAL RESISTANCE
Improved chemical resistance to a range of chemical disinfectants


+




IMPACT RETENTION
Retention of ductility upon exposure to chemicals



PROCESSABILITY
Potential for high productivity molding and cycle time reduction



FLAME RETARDANCY
V0 rating up to 1.5 mm thickness



AESTHETICS
Consistent opaque color and appearance

POTENTIAL APPLICATIONS - MEDICAL EQUIPMENT HOUSINGS AND ENCLOSURES



Insulin pump



Infusion pump



Dental chair components



Ultrasound monitor



Hospital bed components



Surgical tools



Imaging devices

PROPERTY PROFILE

Property	Standard	Unit	LNP™ ELCRES™	LNP™ ELCRES™	LNP™ ELCRES™	LNP™ ELCRES™
			CRX1414 RESIN	CRX9411 RESIN	CRX5421 RESIN	CRX9421 RESIN
			Amorphous PC Copolymer	Amorphous PC Copolymer	Semi-crystalline PC copolymer /PBT	Semi-crystalline PC copolymer /PBT
Tensile Strength at Yield	ASTM D 638	MPa	54	52	42	44
Tensile Strain at Break		%	>100	>100	70	59
Tensile Modulus		MPa	2020	1920	1820	1985
Notched Izod Impact, 23 °C	ASTM D 256	J/m	875	765	645	590
Flame Performance	UL 94 SABIC		HB @ 0.75 mm	V0 @ 1.6 mm ALL V0 @ 0.8 mm BK	HB @ 0.75 mm	V0 @ 1.5 mm
MFR, 300 °C, 1.2 kgf	ASTM D 1238	g/10 min	10	10	–	–
MFR, 250 °C, 5 kgf	ASTM D 1238	g/10 min	–	–	11	11.5
Density	ASTM D 792	–	1.2	1.2	1.3	1.3
Mold Shrinkage, flow	SABIC	%	0.4-0.9	0.4-0.9	1.0-1.6	1.0-1.6
Mold Shrinkage, x-flow	method	%	0.4-0.9	0.4-0.9	0.9-1.6	0.9-1.6

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