



Medical Solutions Portfolio

Adhesives for Assembly and Encapsulation
Engineering Polymers
High-Performance Polymers
Polyolefins
Silicone Coatings and Lubricants
Silicone HCR & LSR

Silicone Skin Adhesives
Silicone & TPE Tubings
Thermoplastic Elastomers
Transparent Polymers
UV-Curing Structural Adhesives & Encapsulants

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CHIMEI – Acrylonitrile Butadiene Styrene (ABS)

Polylac®

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Kibisan®

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Delrin – Polyoxymethylen-Homopolymer (POM-H)

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INEOS Olefins & Polymers – Polyethylene with low density (LDPE)

Eltex® MED LDPE

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INEOS Olefins & Polymers – Polyethylene with high density (HDPE)

Eltex® MED HDPE, Eltex® HDPE, Eltex® organoleptic HDPE

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INEOS Olefins & Polymers – Polypropylene (PP)

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LG – Methyl Methacrylate Acrylonitrile Butadiene Styrene (M-ABS)

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LG ABS Acrylnitril-Butadien-Styrol

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USI – Cyclic Block Copolymer (CBC)

ViviOn™

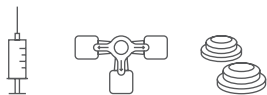
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Our principals for medical Specialties



Medical Fluids for Device Lubrication and Siliconization



Hydrophobic lubricants for glass, metals, plastics and rubbers

Type	Product Description	Regulatory Status				Physical Properties			
		INCI	USP NF	Ph. Eur.	DMF*	Viscosity [cSt., 25°C]	Specific Gravity [at 25°C]	Refractive Index [at 25°C]	Flash Point, closed cup [°C]

Liveo™ 360 Medical Fluid

20 cSt.	Clear, colourless, PDMS liquid (Polydimethylsiloxan)	✓	✓	✓	✓	20	0,951	1,4018	>100
100 cSt.		✓	✓	✓	✓	100	0,967	1,4032	>100
350 cSt.		✓	✓	✓	✓	350	0,971	1,4042	>100
1000 cSt.		✓	✓	✓	✓	1000	0,972	1,4046	>100
12500 cSt.		✓	✓	✓	✓	12500	-	1,4047	>100

* A DMF has been filed with the U.S. FDA. A letter of Authorization is available upon request

- › High water repellency/hydrophobicity
- › Excellent lubricating characteristics



Waterborne silicone emulsion for lubrication and siliconization of glass-made parenteral container

Product Description	Regulatory Status				Physical Properties			
	INCI	USP NF	Ph. Eur.	DMF**	Viscosity [cSt., 25°C]	Specific Gravity [at 25°C]	Drying Rate similar to	pH

Liveo™ 366 35% Dimethicone NF Emulsion

White, liquid emulsion containing 35% Dimethicone	✓	✓*	✓*	✓*	350	0,99	water	5,0
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* no monograph exists for the Liveo™ 366 35% Dimethicone NF Emulsion but PDMS used in the production is compliant

** A DMF has been filed with the U.S. FDA. A letter of Authorization is available upon request

- › Excellent lubricating and release characteristics
- › Not formulated with OPE-surfactant
- › Not formulated with parabens



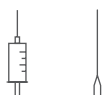
Hydrophobic silicone dispersion for lubrication and siliconization of cutting edges and needles

Product Description	Regulatory Status				Physical Properties			
	INCI	USP NF	Ph. Eur.	DMF	Viscosity [cSt., 25°C]	Drying Rate similar to	Refractive Index [at 25°C]	Flash Point, closed cup [°C]

Liveo™ MDX4-4159 50% Medical Grade Dispersion

Colorless to slightly hazy liquid, aminofunctional silicone dispersion with 50% active ingredients	-	-	-	✓	130	Mineral spirits	1,4089	13,3
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- › High adhesion to metal, providing durability
- › Only to be used diluted in Liveo™ Q7-9180 0,65 cSt. or 1 cSt. or non-polar solvents to an active content of 1-5%
- › Ideal curing conditions: 25-70°C, 55-60% relative humidity for 24h. Lubricity properties further improve for 7-10 days at RT or 3-7 days at 70°C



Diluting solvent for Liveo™ 360 Medical Fluid and Liveo™ MDX4-4159 50% Medical Grade Dispersion

Type	Product Description	Regulatory Status				Physical Properties			
		INCI	USP NF	Europ. Techn. file	VOC	Viscosity [cSt., 25°C]	Specific Gravity [at 25°C]	Drying Rate similar to	Flash Point, closed cup [°C]

Liveo™ Q7-9180 Silicone Fluid

0,65 cSt.	Clear, colorless, high-purity, volatile Hexamethyldisiloxan	✓	-	✓*	**	0,65	0,76	acetone	-3
1 cSt.	Clear, colorless, high-purity, volatile Octamethyltrisiloxan	✓	-	✓*	**	1	0,82	isopropanol	34

* DuPont has the capabilities to provide safety data sheets to meet requirements

** VOC Exempted in U.S. by EPA

Silicone Skin Adhesives



Non-sensitizing, gentle adhesion to skin for wound care and scar therapies as well as wearable device fixation

Type	Product Description	Physical Properties			Biocompatibility Testing		
		Viscosity Part A & B [mPa/s] at 25°C	Penetration after Cure [mm/10]	Peel Adhesion [N/2,5 cm]*	Release [N/2,5 cm]	ISO 10993-5	ISO 10993-10/11

Liveo™ MG Series Soft Skin Adhesives (SSA)

MG 7-9700	Two-part (1:1 by weight), PT-catalyzed, soft fillerless elastomeric adhesive Low viscosity Transparent	500/ 320	90	0,6	0,11	✓	✓
MG 7-9800		500/ 320	90	0,6	0,11	✓	✓
MG 7-9850		2900/ 2900	135	1,1	0,03	✓**	✓**
MG 7-9900		5100/ 5100	140	1,9	0,05	✓**	✓**
MG 7-9960		5000/ 5000	145	2,8	0,06	✓**	✓**

*: @ 250 µm, peel force from polycarbonate

** : based on biocompatibility test data from analogous materials

- › High tack, gentle removal from skin, repositionable from skin
- › High gas and moisture permeability
- › Application method: Knife over roll coating is recommended





Non-sensitizing adherence of medical devices as stoma-appliances, surgical dressings/pads, external prosthetics and wearable medical devices

Type	Product Description	Physical Properties				Biocompatibility Testing	
		% solid content in solvent type	Viscosity [mPa/s] at 25°C	Peel Adhesion [N/2,5 cm]*	Shear [kg]	ISO 10993-5**	ISO 10993-10**

Liveo™ MG Series Pressure Sensitive Adhesives (PSA)

MG-2401	One-part, polycondensed polydimethylsiloxane/silicate resin adhesive Volatile solvent-based silicone adhesive	32%, HMDS	90	17,2*	21	✓	✓
MG-2402		64%, Ethyl-acetate	2500	17,2*	21	✓	✓
MG-2502		59%, Ethyl-acetate	2500	16,4*	16	✓	✓
MG-2410 hotmelt	One-part, polycondensed polydimethylsiloxane/silicate resin adhesive Hot-melt silicone adhesive	100%	30300 at 185°C	14,5*	9	✓	✓

*: @50 µm, peel force from stainless steel

** : based on test results on adhesive solids

- › Medium to very high tack
- › High adhesion and conformity to skin for extended wear time
- › High gas and moisture permeability
- › Application methods (1) formulated and packaged as spray adhesive, (2) conventional tape coating equipment (transfer coating, brushing), (3) printing/dispensing using specific nozzles provided by Nordson EFC

PSA/SSA Components for Silicone Skin Adhesives



For topical application to skin, including bandages, tapes, wound dressings, medicated patches and plasters

Product Description	Physical Properties				Biocompatibility Testing		
	Tensile strength [mPa]	Shore A Hardness	Thick-ness [μm]	Peel adhesion [2,5 g/cm] *	USP NF	Ph. Eur.	FDA DMF

Liveo™ 7-4107 Silicone Elastomer Membrane

100% Biomedical Grade LSR							
75 μm thick	10	50	75	2,5	Class VI	3.1.9 **	n.a.
Translucent, matte, soft and flexible film							

*: @75 μm, peel force from stainless steel
 **: based on test results on adhesive solids

- › Rolled film supplied on PC carrier
- › Conforms to curved surfaces
- › 300-400 m coil, 145-155 mm width, 83-113 g/m²



Silicone Elastomers



High Consistency Rubber (HCR)



Millable thermoset silicone elastomers for extruded parts or fabrication of molded medical/surgical/diagnostic devices and components

Type	Product Description	Physical Properties					Biocompatibility Testing						
		Hardness Shore A	Tensile Strength [MPa]	Elongation at break [%]	Tear Strength [kN/m]	Relative Density	ISO 10993-3	ISO 10993-4	ISO 10993-5	ISO 10993-10	Ph. Eur. 3.1.9 ¹	Food Grade	USP Class V & VI

Liveo™ C6-Series High Consistency Rubber (HCR)

C6-135	Two-part (1:1 by weight), PT-catalyzed HCR	36	8,2	1120	35,1	1,12	-	-	✓	✓	✓	✓	✓
C6-150		50	10,6	980	42,1	1,16	-	-	✓	✓	✓	✓	✓
C6-165	Enhanced tear-resistance HCR ≤ 29 day implant	61	8,0	940	42,1	1,21	-	-	✓	✓	✓	✓	✓
C6-180		77	7,2	610	38,6	1,21	-	-	✓	✓	✓	✓	✓
C6-235	One-Part HCR base Peroxide-curing agent necessary ≤ 29 day implant	37	7,5	810	21,1	1,12	-	-	✓	✓	✓	✓	✓
C6-250		49	8,2	530	26,3	1,16	-	-	✓	✓	✓	✓	✓
C6-265	LH: Lower hysteresis for demanding applications (e.g. peristaltic pump tubing)	66	8,2	560	35,1	1,20	-	-	✓	✓	✓	✓	✓
C6-350 LH		49	8,5	730	38,6	1,15	-	✓	✓	✓	✓	✓	✓

¹: Selected Ph. Eur. 3.1.9: substances soluble in hexane & volatile matter

› Manufactured in dedicated healthcare facility

Type	Product Description	Physical Properties					Biocompatibility Testing						
		Hardness Shore A	Tensile Strength [MPa]	Elongation at break [%]	Tear Strength [kN/m]	Relative Density	ISO 10993-3	ISO 10993-4	ISO 10993-5	ISO 10993-10	Ph. Eur. 3.1.9 ¹	Food Grade	USP Class V & VI

Liveo™ BioMedical Grade High Consistency Rubber (HCR)

Q7-4720	Two-part (1:1 by weight), PT-catalyzed HCR Enhanced tear-resistance HCR > 29 day implant Compliant to USP pyrogenicity	23	8,9	1310	31,6	1,11	✓	✓	✓	✓	✓	✓	✓
Q7-4735		36	9,3	1180	36,8	1,12	✓	✓	✓	✓	✓	✓	✓
Q7-4750		50	10	930	45,6	1,16	✓	✓	✓	✓	✓	✓	✓
Q7-4765		65	8	900	45,6	1,20	✓	✓	✓	✓	✓	✓	✓
Q7-4780		77	7,8	660	42,1	1,20	✓	✓	✓	✓	✓	✓	✓
Q7-4535 base	HCR-base, must add peroxide Enhanced tear-resistance HCR > 29 day implant Compliant to USP pyrogenicity	36	8,1	830	24,6	1,12	✓	✓	✓	✓	✓	✓	✓
Q7-4550 base		48	9,3	680	31,6	1,16	-	-	✓	✓	✓	✓	✓

¹: Selected Ph. Eur. 3.1.9: substances soluble in hexane & volatile matter

› Manufactured in dedicated healthcare facility



Liquid Silicone Rubber (LSR)



Injection molding of precise and intricate parts of medical devices as o-rings, stoppers, closures or mesh and fabric coating

Type	Product Description	Physical Properties					Biocompatibility Testing						
		Hardness Shore A	Tensile Strength [MPa]	Elongation at break [%]	Tear Strength [kN/m]	Relative Density	ISO 10993-3	ISO 10993-4	ISO 10993-5	ISO 10993-10	Ph. Eur. 3.1.9 1	Food Grade	USP Class V & VI

Liveo™ C6-Series Liquid Silicone Rubber (LSR)

C6-530	Two-part (1:1 by weight), PT-catalyzed LSR ≤ 29 day implant	30	8,2	830	26,3	1,13	-	-	✓	✓	✓	✓	✓
C6-540		40	8,9	740	24,1	1,13	-	-	✓	✓	✓	✓	✓
C6-550		50	10,4	660	44,7	1,14	-	-	✓	✓	✓	✓	✓
C6-560		60	8,8	540	50,9	1,10	-	-	✓	✓	✓	✓	✓
C6-570		65	9,1	440	54,4	1,15	-	-	✓	✓	✓	✓	✓
C6-720	Two-part (1:1 by weight), PT-catalyzed LSR ≤ 29 day implant Reduced mold fouling Enhanced tear strength & compression set No post-cure to stabilize physical properties	23	6,5	750	26	1,14	-	-	✓	✓	✓	✓	✓
C6-740		40	8,6	680	30,7	1,14	-	-	✓	✓	✓	✓	✓
C6-750		50	8,8	610	42,1	1,13	-	✓	✓	✓	✓	✓	✓
C6-770		67	9,3	450	42,1	1,14	-	✓	✓	✓	✓	✓	✓
C6-830		29	7,1/1031	727	16,1/92	1,13	✓	✓	✓	✓	✓	✓	✓
C6-840		42	8,1/1180	639	28,2/161	1,11	✓	✓	✓	✓	✓	✓	✓
C6-850		52	8,3/1200	535	43,3/247	1,12	✓	✓	✓	✓	✓	✓	✓
C6-860		59	8,5/1240	457	49,9/285	1,12	✓	✓	✓	✓	✓	✓	✓
C6-870		68	8,6/1249	455	41,5/237	1,15	✓	✓	✓	✓	✓	✓	✓

†: Selected Ph. Eur. 3.1.9: substances soluble in hexane & volatile matter

› Manufactured in dedicated healthcare facility

Type	Product Description	Physical Properties					Biocompatibility Testing						
		Hardness Shore A	Tensile Strength [MPa]	Elongation at break [%]	Tear Strength [kN/m]	Relative Density	ISO 10993-3	ISO 10993-4	ISO 10993-5	ISO 10993-10	Ph. Eur. 3.1.9 ¹	Food Grade	USP Class V & VI

Liveo™ BioMedical Grade Liquid Silicone Rubber (LSR)

7-6830	Two-part (1:1 by weight), PT-catalyzed LSR > 29 day implant	30	8,8	790	24,1	1,13	✓	✓	✓	✓	✓	✓	✓
7-6840		40	9,8	700	36,8	1,13	✓	✓	✓	✓	✓	✓	✓
Q7-4840		44	9,4	540	36,8	1,12	✓	✓	✓	✓	✓	✓	✓
Q7-4850		50	10,1	630	45,1	1,15	✓	✓	✓	✓	✓	✓	✓
Q7-4860		60	8,8	540	50,9	1,1	✓	✓	✓	✓	✓	✓	✓
Q7-4870		66	9,5	420	47,4	1,15	✓	✓	✓	✓	✓	✓	✓
Q7-7840	Two-part (1:1 by weight), PT-catalyzed LSR > 29 day implant	40	9,3	750	30,7	1,14	✓	✓	✓	✓	✓	✓	✓
Q7-7850	Formulated to reduce mold fouling	50	9	660	48,2	1,13	✓	✓	✓	✓	✓	✓	✓
Q7-78700	Enhanced tear strength & compression set	67	9,4	415	45,6	1,14	✓	✓	✓	✓	✓	✓	✓

¹: Selected Ph. Eur. 3.1.9: substances soluble in hexane & volatile matter

› Manufactured in dedicated healthcare facility



DuPont – Tubing Solutions



Translucent, platinum-cured silicone tubing for safe, secure and ultrapure fluid transfer and filling. Available in 3 durometer

Type	Product description	Physical Properties					Biocompatibility Testing				
		Durometer Shore A ¹	Elongation at Break [%]	Modulus at 200% [mPa]	Tensile Strength at break [kN/m]	Tear Strength [kN/m]	USP Class V	ISO 10993	Ph. Eur. 3.1.9	FDA 21 CFR 210/211 and 177.2600	USP 661

Liveo™ Pharma Tubing

Liveo RX Pump Medical Grade Tubing	specifically designed for medical device applications, where precision tolerances are needed from an extruded silicone profile	50	>300	2,1	9,6	46,0	✓	✓	✓	✓	✓
Liveo RX-50 Medical Grade Tubing		50	>300	2,1	9,6	46,0	✓	✓	✓	✓	✓
Liveo RX-65 Medical Grade Tubing		65	>300	2,7	9,0	45,0	✓	✓	✓	✓	✓
Liveo RX-80 Medical Grade Tubing		80	>300	4	7,1	42,0	✓	✓	✓	✓	✓



High purity Shore A 50 translucent silicone tubing for ultrapure fluid transfer. Low-Hysteresis technology provides extended peristaltic pump performance, long pump life & outstanding filling accuracy.

Type	Product description	Physical Properties							Biocompatibility Testing			
		Durometer Shore A ¹	Elongation at break [%] ²	Modulus at 200% [MPa] ²	Tensile Strength at break [kN/m] ²	Burst Pressure [bar] ³	Tear Strenght [kN/m] ¹	Specific Gravity ²	ISO 11737-1 ISO 10993-3, 4, 5, 6, 10, 11	USP 788/88/85/151/661	Ph. Eur. 3.1.9 & FDA 21 CFR 177.2600	JP XIV section 11

Liveo™ Pharma Advanced Pump Tubing

APT 50	50	590	3	8,9	3,4	40,3	1,14	✓	✓	✓	✓
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- › Pump life up to four times higher than Liveo™ Pharma Tubing
- › Superior resiliency
- › Easily sterilizable
- › Kink resistant



High-purity Shore A 65 silicone tubing for ultrapure fluid transfer. Polyester fiber-reinforced pharmaceutical grade silicone tubing for applications requiring high kink, high pressure or high vacuum resistance

Type	Product description	Physical Properties							Biocompatibility Testing			
		Durometer Shore A ¹	Elongation at break [%] ²	Modulus at 200% [MPa] ²	Tensile Strength at break [kN/m] ²	Burst Pressure [bar] ³	Tear Strenght [kN/m] ¹	Specific Gravity ²	ISO 11737-1 ISO 10993-3, 4, 5, 6, 10, 11	USP 788/88/85/151/661	Ph. Eur. 3.1.9 & FDA 21 CFR 177.2600	JP XIV section 11

Liveo™ Pharma 65 Reinforced Tubing

Pharma 65 RFT	65	890 ¹	2,82 ¹	7,94 ¹	41,2 ¹	45,5 ¹	1,22 ¹	✓	✓	✓	✓
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¹: Based on elastomer

²: On extruded tubing (Die D)

³: Burst pressure for tubing dimension is available in product information sheet (PRI)

- › Reinforced for improved burst strength
- › Resistant to collapse under vacuum
- › High resiliency
- › Easy sterilizable

DuPont Liveo™ TPE Pharma Tubing



High-purity Shore A 65 Pharma TPE tubing for fluid, media and solvent transport, single-use processing or peristaltic pump applications in biopharmaceutical processes and biotechnology

Type	Product description	Physical Properties					Biocompatibility Testing				
		Durometer Shore A	Elongation at break [%] ^{1,2}	Modulus at 200% [MPa] ^{1,2}	Tensile Strength at break [kN/m] ^{1,2}	Burst Pressure 1 [bar] ^{1,2}	Specific Gravity ^{1,2}	ISO 11737-1	ISO 10993-5,6,10,11	USP Class VI	USP 85/151/ 232/665/788

Liveo™ Pharma TPE Tubing

Pharma TPE 65	65	1134 ¹	2,7 ¹	9,4 ¹	87 ¹	0,9 ¹	✓	✓	✓	✓
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¹: Based on tests with Liveo™ Pharma TPE Tubing 9,5 mm (inner diameter) x 15,9 mm (outer diameter)

²: Properties after steam sterilization (121°C/30 min) / gamma radiation (50 kGy)

- › Improved heat-welding to itself and competitive offer
- › High tensile strength and burst resistance before & after welding
- › Low extractables
- › Good chemical resistance
- › Minimal spallation after 24h of pumping
- › Stable clarify after sterilization
- › Manufactured in ISO Class 7 cleanroom





Sterilizable, weldable TPE tubing for biopharmaceutical processing applications requiring lower temperatures, including advanced fluid management; freeze/thaw; monoclonal antibodies; mRNA vaccines; viral vector vaccines and gene therapies.

Typ	Product description	Physical Properties					Biocompatibility Testing				
		Durometer Shore A	Elongation at break [%] ^{1,2}	Modulus at 200% [MPa] ^{1,2}	Tensile Strength at break [kN/m] ^{1,2}	Specific Gravity ^{1,2}	ISO 11737-1	ISO 10993-5,6,11, 23	Food contact 21 CFR 117.2600 e) & f)	USP Class VI	USP 85/87/88/232/ 665/788

Liveo™ TPE Ultra-Low Temp Tubing

Pharma Ultra-Low Temp TPE	Improved elastomer toughness down to -86°C; resistant to multiple freeze/thaw cycles; high ductility; less susceptible to brittle fracture; bending, crushing and impact strength at -80°C	62	1030 ² / 1256 ³	1,88 ² / 1,9 ³	9,1 ² / 8,7 ³	0,9	✓	✓	✓	✓	✓
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¹: Based on tests with Liveo™ Pharma TPE Ultra-Low Temp Tubing 9.5mm (inner diameter) x 15.9 mm (outer diameter)

²: Properties after steam sterilization (121 °C/30 min)

³: Properties after gamma irradiation (50 kGy)

- › Manufactured in an ISO class 7 clean room
- › Excellent chemical resistance
- › Designed to meet biopharmaceutical processing standards and cold resistance requirements



LV = Low Viscosity

T = Thick

SV = Special Viscosity

VT = Very Thick

SC® = See-Cure (Patented Color-Change Technology)

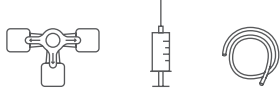
UR® = Ultra-Red (Patented Color-Change Technology)



Medical Grade UV-curing adhesives



Multipurpose UV-curing adhesives



Dymax 1000-series adhesives are ideal for bonding a wide variety of substrates found in reservoirs and housing, respiratory devices, needles & syringes, transducers, tube sets & fittings, wearable devices and other medical disposables.

Type	Recommended Substrates / Specific Features	Physical Properties					Biocompatibility Testing				
		Viscosity [cP]	Durometer Hardness	Tensile break [MPa]	Elongation at break [%]	Modulus of elasticity [Mpa]	ISO 10993-4	ISO 10993-5	ISO 10993-6	ISO 10993-10	ISO 10993-11

Dymax 1000 Series Multipurpose Adhesives

1202-M-SC	ABS, PC, PCTG, PEEK, PETG, PMMA, PS, PVC, SS	200	D55	11	230	100	✓	✓	✓	✓	✓
1405M-T-UR-SC-Z*	ABS, PC, PCTG, PEI, PET, PETG, PMMA, PPO, PS, PSU, PU, PVC, SAN, SS, TPU	8500	D75	20	160	855	-	(✓)	(✓)	-	(✓)
1040-M	ABS, PC, PCTG, PMMA, PPO, PS, SAN, AL, BR, SS, glass >autoclavable	775	D60	18,6	8	668,8	-	✓	-	-	-
1172-M-UR-Z*	ABS, COC/ COP, PA, PC, PCTG, PEBA, PEI, PET, PETG, PMMA, PS, PSU, PVC, SAN, TPU, ceramic	1050	D25	3	525	6,6	-	(✓)	-	-	-

*TPO free Z variants have pending ISO 10993 testing - up to date biocompatibility information should be requested

UV-curing Adhesives for Catheter Assembly



Dymax CTH-series adhesives provide a high degree of flexibility, excellent moisture and humidity resistance and meet the unique assembly challenges associated with newest catheter materials as Nylon12 and PEBA.

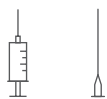
Type	Recommended Substrates / Specific Features	Physical Properties					Biocompatibility Testing				
		Viscosity [cP]	Durometer Hardness	Tensile break [MPa]	Elongation at break [%]	Modulus of elasticity [Mpa]	ISO 10993-4	ISO 10993-5	ISO 10993-6	ISO 10993-10	ISO 10993-11

Dymax CTH Series Adhesives for Catheter Assembly

209-CTH	ABS, CAP, PC, PCTG, PET, PETG, PMMA, PS, SAN, SS, NiTi	300	D70	17	120	300	✓	✓	✓	✓	✓
204-CTH-F-T	PC, PVC, PU, ABS, PET, PEBA	6500	D50	14	230	34	✓	✓	✓	✓	✓
215-CTH-LV-UR-SC-Z*	PA (Nylon 6, Nylon 12), PEBA, PET, TPU	340	D58	10	250	420	-	✓	-	-	-
250-CTH	ABS, CAP, PC, PCTG, PEI, PETG, PS, PU, PVC, SAN, glass, PCB >complete heat-curing at 80-85°C	52500	D90	51,7	2	1425	✓	✓	✓	✓	✓

*TPO free Z variants have pending ISO 10993 testing - up to date biocompatibility information should be requested

UV-Curing Adhesives for Needle Assembly



Dymax 1400- and 1500-series adhesives are ideal for automated high-speed assembly lines for cannula bonding to hubs, various hypodermic- and biopsy needles, syringes and winged infusion sets. They provide fast-cure, fluorescing properties and allow bonding of UV-blocking or heavily tinted plastics.

Type	Recommended Substrates / Specific Features	Physical Properties					Biocompatibility Testing				
		Viscosity [cP]	Durometer Hardness	Tensile break [MPa]	Elongation at break [%]	Modulus of elasticity [Mpa]	ISO 10993-4	ISO 10993-5	ISO 10993-6	ISO 10993-10	ISO 10993-11

Dymax 1400-, 1500- and 1045 Series Adhesives for Needle Assembly

1045-M	ABS, PC, SS, glass > very low extractables > autoclavable	150	D70	15	120	419	✓	✓	✓	✓	✓
1401-M-UR	ABS, PC, PMMA, PS, SS	150	D70	18,6	150	397	-	✓	-	-	-
1405-M-UR-SC-Z*	ABS, PC, PCTG, PETG, PMMA, SAN	80	D70	180	80	397	-	✓	-	-	-
1501-M-UR	ABS, PC, SAN, SS	525	D78	23,4	20	1861,6	-	✓	-	-	-



UV-Curing Adhesives for Respiratory Devices



Dymax MSK-series adhesives are formulated for bonding a variety of (highly plasticized) substrates within respiratory devices such as anaesthesia masks, resuscitator bags and breathing circuits.

Type	Recommended Substrates / Specific Features	Physical Properties					Biocompatibility Testing				
		Viscosity [cP]	Durometer Hardness	Tensile break [MPa]	Elongation at break [%]	Modulus of elasticity [Mpa]	ISO 10993-4	ISO 10993-5	ISO 10993-6	ISO 10993-10	ISO 10993-11

Dymax MSK Series Adhesives for Bonding Respiratory Devices

108-MSK	CAP, PC, PEEK, PMMA, PS, PU, PVC, SAN, TPU	600	D75	25	70	388	-	✓	-	✓	-
111-MSK	ABS, PC, PI, PMMA, PS, PU, PCC, SAN, SEBS, TPU	250	D55	6,9	400	400	-	✓	-	-	-



UV-Curing Adhesives for Wearable Medical Device Assembly



Dymax 2000-series adhesives are uniquely designed for assembly of wearable medical devices. Formulated without skin-irritants, the series provides strong bonds and dependable performance against moisture and thermal shock.

Type	Recommended Substrates / Specific Features	Physical Properties					Biocompatibility Testing				
		Viscosity [cP]	Durometer Hardness	Tensile break [MPa]	Elongation at break [%]	Modulus of elasticity [Mpa]	ISO 10993-4	ISO 10993-5	ISO 10993-6	ISO 10993-10	ISO 10993-11

Dymax 2000-MW Series Adhesives for Wearable Medical Device Assembly

2101-MW-UR	ABS, PC, PCTG, PETG, PVC, SAN, TPU	5500	D77	24,8	80	1020,4	-	✓	-	✓	-
2103-MW-UR	ABS, PC, PEBA, PVC, SS	5500	D70	13,8	23	448,2	-	✓	-	✓	-

Curing with Light and Contact / Moisture



A revolutionary patented adhesive platform, HLC™ (Hybrid Light-Curable) technology, combines the best qualities of anionic and free radical chemistries. Cure with UV / Visible light or a combination of light and contact / moisture. The contact curing feature allows bonding to a broad range of substrates, including opaque and light-blocking materials, and in shadow areas.

Type	Recommended Substrates / Specific Features	Physical Properties					Biocompatibility Testing				
		Viscosity [cP]	Durometer Hardness	Tensile break [MPa]	Elongation at break [%]	Modulus of elasticity [Mpa]	ISO 10993-4	ISO 10993-5	ISO 10993-6	ISO 10993-10	ISO 10993-11

HLC™ (Hybrid Light-Curable) Series

HLC-M-1000	ABS, PC, PCTG, PEBA, PETG, PMMA, PS, SAN, SS	3	D80	49	4	2144,3	✓	✓	✓	-	✓
HLC-M-1004*	ABS, CAP, PC, PEI, PMMA, SAN	1200	D65	13,1	150	544,7	(✓)	(✓)	(✓)	(✓)	(✓)

Medical-Grade Structural Adhesives – Bostik



Bostik Born 2 Bond, Adhesive Solution by ARKEMA

Primer & Activators

Prepare: Proper surface preparation is essential for achieving high-quality bonding and durability. Bostik's Born-2Bond™ Primers & Activators range is engineered to boosting cure speed, adhesion, and performance on demanding substrates from low-surface-energy plastics as PE, PP and PTFE to thermolastic rubber materials.

Key Features: Very low viscosity, very good wettability on low surface energy substrates, works as an accelerator for cyanoacrylate adhesives, allows adhesive application within 2 hours without loss of performance.

Material	Compliance	Viscosity [mPas]	Color	Drying Time [s]	Shelf-life [months]	Packaging [ml]
Born2Bond Primer	ISO-10993-5	1,25 (20°C)	Clear, transparent	24s	12	30



UV-Cyanoacrylates

Patented®, low-odour, low-blooming, dual-curing, (contact and light curing) cyanoacrylate adhesives. They are designed for bonding applications that require fast fixturing, coating or surface cure. The UV and visible-light cure sensitivity allow rapid bonding through transparent parts and quick curing of light-exposed bulk or surface-coated areas. Further, the products' instant bonding capability ensures cure between opaque substrates (contact cure).

	Light Lock LV	Light Lock MV	Light Lock HV	Light Lock Gel	Light Lock 30x
Base	Light-curing Methoxyl Cyanoacrylates				
Viscosity [mPas]	5-20	150-220	500-800	30.000-45.000	150-350
Photocuring time [s] (410nm, 30mW/cm²)	< 3				
Fixure Time on ABS/ABS of contact cure [s]	15-30	50-70	60-80	15-30	30-60
Elongation at break [%]	1	4	15	0,1	120
Temperature Range [°C]	-40-80				-40-60
Certifications	ISO-10993-5		ISO-10993-5	ISO-10993-10	ISO-10993-5

1K & 2K Cyanoacrylates

1K Cyanoacrylates

Born2Bond™ 1K & 2K Cyanoacrylate adhesives deliver extremely fast, durable, and high-performance bonding for diverse substrates, including plastics, metals and rubbers. With low odour, reduced blooming and gap-filling properties, these adhesives are ideal for precision applications in medical, and general assembly, offering reliability and versatility to meet the latest manufacturing demands.

Born2Bond Ultra K85: 60% Bio-Based instant adhesive. Fast-bonding adhesive that boasts exceptional resistance to humidity and high temperatures. The first-ever instant adhesive to withstand more than 1,000 hours at 85 °C and 85% relative humidity**, it is ideal for bonding substrates exposed to highly-variable environmental conditions, without compromising outstanding sustainability credentials.

	Ultra LV	Ultra MV	Ultra HV	Light Lock Gel	Ultra K 85 MV
Base	Methoxyl Cyanoacrylates				Heptyl Cyanoacrylate
Viscosity [mPas]	5-20	120-170	700-1000	105-120.000	140-200
Fixture Time* [s]	5-10	10	15	5	15
Bond Strength (GBMS) [MPa]	20	21	20	18	8-15
Appearance	transparent				
Temperature Range [°C]	-40-80				-40-100
Certifications	ISO-10993-5	ISO-10993-5, NSF S4	ISO-10993-5	ISO-10993-10	ISO-10993-5

*Depending on substrates

** Up to 5,000 hours on ABS. **Depending on substrates



2K Cyanoacrylates



High-strength hybrid adhesive that provides a fast fixture time at room temperature while maintaining good processability and bond gaps up to 5mm. This product offers excellent bonding characteristics to a large variety of non-porous substrates, such as aluminium, steel, plastics and elastomers. Formulated for applications that require mechanical and in-use environmental resistance.

	Structural
Base	Hybrid Cyanoacrylate & Acrylate
Viscosity [mPas]	Part A: 100,000-150,000 Part B: 40,000-80,000
Open Time [min]	25
Fixture Time* [s]	30-90
Bond Strenght (GBMS) [MPa]	14
Appearance	transparent
Temperature Range [°C]	-40-120
Gap filling capability [mm]	5
Certifications	ISO 10993-5

*Depending on gaps and substrates



High Performance HMPUR



Born2Bond™ High Performance HMPUR adhesives tackle these issues with versatile, single-component solutions that deliver excellent adhesion, flexibility and resistance to temperature and humidity fluctuations, enhancing product reliability and manufacturing efficiency. Bostik's latest innovations meet the industry's growing demand for more sustainable adhesives. They also remain resistant to impact, thermal shock, and chemical and organic compounds, including sweat, and sebum – making them ideal for use in hand-held devices and wearable electronics.

	HHD 6009	HHD 6002	HHD 6006
Color		Off white paste	
Viscosity [mPas]	3,500 @130 °C	5,500@130°C	6,000@130°C
Operating Temperature [°C]	100-130	120-130	120-130
Open Time [min]	1-3		2-4
Fixture Time* [s]	5-10	10	15
Tensile Strenght [MPa]	11	12	11
Elongation at Break [%]	1,500	1,100	900
UV-Trace	No	No	Yes
Certifications	ISO-10993-5, ISO-10993-10		

2K Epoxy



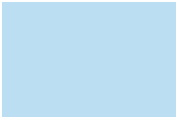
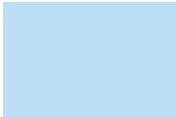
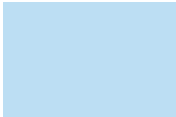
Polytec PT 2K Epoxy adhesives deliver exceptional bonding strength and chemical resistance. Designed for applications in medical devices, semiconductors and high-precision electronics, they ensure high durability under harsh conditions.

With a focus on precision and performance, these adhesives support efficient production processes and provide robust, long-lasting bonds across diverse, demanding industries.

	EP 655-1-T	EP 630-1	EP 601	EC 101
Application	Structural Bonding	Potting	Potting	Bonding, Electro Conduction
Type	2K Epoxy, heat-cure	2K Epoxy, heat-cure	2K Epoxy, cold-cure	2K Epoxy, heat-cure
1K/2K	2K	2K	2K	2K
Mix Ratio by Weight	100:10	100:10	100:35	100:100
Viscosity Mix [mPas]	11,500	2,500	460	12,000
Pot Life [h]	24	24	4	48
Typical Cure Conditions (determined by DSC)	150°C/5min	150°C/10min	150°C/12min	150°C/3-4min
Shore Hardness	D85	D85	D80	D85
Elongation at Break [%]	2,8	2,9	2,9	0,4
Certifications	USP VI	ISO 10993-5, FDA	USP VI, FA	USP VI
Special features	Autoclavable	Autoclavable	USP VI, FA	1,3 W/m.K, 1-4 *10 ⁻¹ Ω*cm

Nordson EFD – Engineered Fluid Dispensing Solutions



Features		Benchtop Dispensers				
						
		UltimusPlus™ I / II	Ultimus™ V	Ultimus™ I / II	Performus™ X100 / X15	Performus I
General Information	Type	Air Powered	Air Powered	Air Powered	Air Powered	Air Powered
	Recommended fluids	All fluids / Low-viscosity fluids	All fluids	All fluids / Low-viscosity fluids	All fluids / Low-viscosity fluids	All fluids
	Air pressure range	0.7-7.0 bar (10-100 psi) 0-1.0 bar (0.3-15 psi)	0-7.0 bar (0-100 psi)	0-7.0 bar (0-100 psi) 0-1.0 bar (0-15 psi)	0-7.0 bar (0-100 psi) 0-1.0 bar (0-15 psi)	0-7.0 bar (0-100 psi)
	Time range	0-999.9999 sec	0-9.9999 sec	0-999.9999 sec	0-99.9 sec	-
Functions	Warranty	5 years ¹	1 years	5 years ¹	2 years	1 years
	Steady mode	✓	✓	✓	✓	✓
	Teach mode	✓	✓	✓	✓	-
	Timed mode	✓	✓	✓	✓	-
Display	Display	Touchscreen	LCD	LCD	-	-
	Digital pressure / time	✓	✓	✓	✓	Analog
	Digital vacuum	✓	✓	✓	Analog	Analog
	Multilingual	✓	✓	✓	-	-
Operator Lockout	Time / pressure lockout	All Parameters	Time & Pressure	Time	-	-
Programming	Multiple cycles	MultiShot ²	Auto Sequence ²	-	-	-
	Number of programs	16 (time, pressure, vacuum, barcode)	400 (time, pressure, vacuum)	16 (time)	-	-
Connectivity (I/O)	Initiate signal	✓	✓	✓	✓	-
	End-of-Cycle feedback	✓	✓	✓	✓	-
	RS-232	-	✓	-	-	-
	Ethernet	✓ ⁴	-	-	-	-

¹ Two years in Asia

² MultiShot allows multiple shots from a single press of the foot pedal

³ Programmable memory that automatically adjusts dispensing parameters for viscosity changes.

⁴ UltimusPlus allows remote control from a PLC or computer via NX protocol.

✓ Applicable - Not applicable

Nordson EFD Dispensing Accessories



HPx High-Pressure Dispensing Tool

Easily apply precise amounts of thick assembly fluids like epoxies and medical-grade adhesives through dispense tips as small as 0,1 mm.



Equalizer 2K Dispensing Tool

Dispense more accurate, repeatable amounts of two-component materials in 1:1, 2:1, and 4:1 ratios

Nordson EFD Consumables: Optimum Components & Precision Dispense Tips



Optimum Syringe Barrels

Nordson EFD syringe barrels are molded from a proprietary blend of polypropylene to provide exceptional clarity and chemical compatibility

Available Sizes

3cc, 5cc, 10cc, 30cc, 55cc, and 70cc capacities

Available Colors

Transparent, amber, opaque black,



Optimum Syringe Barrel Pistons

Optimum® SmoothFlow™ pistons feature unique channels that prevent air entrapment while providing a smooth profile radius to reduce fluid shear.

Available in six types

White: SmoothFlow wiper pistons are used with most fluids.

Beige SmoothFlow pistons are loose-fitting and used with air-entrapped fluids.

Red SmoothFlow pistons are tight-fitting and used with mechanical dispensers.

Orange Flat-walled pistons have a looser fit to prevent "bouncing" when dispensing stringy, air entrapped fluids.

Blue LV Barrier pistons are for cyanoacrylates and very low viscosity fluids.

Clear Flex pistons are flexible and reduce "bouncing" in viscous fluids while maintaining excellent wall-wiping.



Optimum End and Tip Caps

Optimum® end caps and tip caps provide an airtight seal that allow you to pre-fill syringe barrels to save time or seal partially-used syringes between shifts to reduce waste.

Available for all Optimum Syringe barrel sizes 3cc, 5cc, 10cc, 30cc, 55cc, and 70cc.



Adapter Assemblies

Adapters assemblies connect the Nordson EFD Optimum® syringe barrels to the air output of the fluid dispenser unit.

Available for all Optimum Syringe barrel sizes 3cc, 5cc, 10cc, 30cc, 55cc, and 70cc.



Precision Dispensing Tips

- › Features and Benefits
- › Free of flash, burrs, and contaminants
- › Package labels include lot numbers for process control and traceability
- › Consistent from style to style and lot to lot
- › 360° SafetyLok™ thread ensures safe, positive attachment to syringe barrel
- › Engineered hub flats for easy twist on, twist off.

Available in six types: Precision stainless steel tips, smoothflow tapered tips, flexible tips, brush tips, PTFE coated tips, oval tips, PTFE-lined tips. Chamfered tips, polyethylene nozzles as well as tip shields. 14-33 gauge depending on type.

Tapered	Dispensing Tips						
	Tapered	Stainless Steel	PTFE-Lined	Flexible	MicroDot Ceramic	MicroDot Stainless Steel	Precision Nozzle
Very Low Viscosity Fluids	✓	●	●	●	●	●	●
Particle-Filled Pastes	●	●	▲	×	●	▲	●
Microdot Deposits	×	●	▲	●	●	●	●
Fluid is Reactive to metal	●	×	●	●	●	×	×
Depositing in Recesses	▲	●	●	▲	●	●	×
Spreading / Smearing	●	▲	●	▲	●	●	●
Fast-Curing Glues	●	▲	●	●	▲	▲	×
Beading, Striping	●	●	●	▲	●	▲	●
Easily Scratched Substrates	●	▲	●	●	●	▲	▲
Fluids							
Adhesives	●	●	●	●	●	●	●
Anaerobics	●	▲	●	▲	●	×	×
Conformal Coatings	●	▲	▲	×	▲	▲	●
Cyanoacrylates	●	▲	●	●	●	▲	▲
Gel Cyanoacrylates	●	▲	●	▲	●	▲	▲
Epoxies	●	●	●	×	●	●	●
Greases	●	●	●	×	●	●	●
Light-Cure Adhesives	●	▲*	▲*	×	▲	●	●
Oils	●	●	●	▲	●	●	●
Paints	●	●	●	×	●	●	●
Sealants	●	▲	▲	×	●	●	●
Silver Epoxy	×	▲+	×	×	●	▲	●
Solder Paste / Braze Pastes	●	●	▲	×	●	▲	●
Solder Masks	×	●	●	●	●	●	●
Solvents UV-Cure-Adhesives	●**	▲*	▲*	▲	▲	●	●

* OK if used with tip shield, part #7017715 or 701717.

+ Chamfered tips are recommended for best results.

** Standard tapered tips are recommended for best results

Key

● Recommended

▲ Satisfactory

× Do not use

Principals for Medical Polymers



BASF – Thermoplastic Polyurethane (TPU)

Properties

Elastollan is a thermoplastic polyurethane with excellent hydrolysis resistance, good resistance to microorganisms and excellent transparency.

Medical Applications

Infusion systems, redon-drains, stool drainage systems, hollow fibre membranes for oxygenator, wound coverings, general catheters (single- and multi-lumen), tracheal tubes

Type	Hardness	Food Compliance	Medical Approvals			Sterilisation		
			10993	USP	DMF	Steam	EtO	Gamma

Elastollan®

1170 A 10 FC	Shore 70 A	FDA; (EU) 10/2011; GMP	5; 10		-	-	✓	✓
1180 A 10 FC	Shore 80 A							
1185 A 10 FC	Shore 85 A			VI				
1190 A 10 FC	Shore 90 A							
1195 A 10 FC	Shore 95 A							
1198 A 10 FC	Shore 98 A							
1154 D 10 FC	Shore 54 D							
1164 D 11 FC	Shore 64 D							
1174 D 10 FC	Shore 74 D							
B 95 A 11 FC	Shore D 53							
1598 A 10 FC	Shore D 56							

Celanese – Polyamide (PA)

Properties

Zytel® – high mechanical strength, combines rigidity and impact strength

Medical Applications

Forceps, applicator guns, medical valves, filters, syringe barrels

Type	Description	Food Compliance	Medical Approvals			Sterilisation			
			10993	USP	DMF	Steam	EtO	Gamma	E-Beam

Zytel®

SC315	PA 6.12. High flow	FDA; (EU) 10/2011; GMP	5; 11	VI	-	87°C +3min 134°C <25-100 cycles*	50°C 2hr. 1x	-	*
PC310	PA 6.6 High flow	FDA; EU 10/2011; GMP	5; 11	VI	✓	87 °C +3 min 134°C < 25- 100 Zyklen	50 °C 2 h 1 X		

*Please contact your contact your sales or technical person for more information.

Celanese – Polybutylene Terephthalat (PBT)

Properties Exceptional surface finishes, good dyeing performance, chemical resistance

Medical Applications Components for insulin syringes

Type	Description	Food Compliance	Medical Approvals			Sterilisation			
			10993	USP	DMF	Steam	EtO	Gamma	E-Beam

Crastin® SC

SC193	30% glass fibre-reinforced, low warpage	FDA; (EU) 10/2011; GMP	5; 11	VI	-	87 °C +3min 134°C <25 cycles*	50 °C 2hr. 1x	40 kGy 1x	50 kGy 1x
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*Please contact your sales or technical person for more information.

Celanex®

2401MT	Without fillers	FDA; (EU) 10/2011; GMP	5; 6; 10; 11	USP 23 VI	✓	up to 30 cycles	✓	✓	
2401MT ECO-B	Without fillers, Partly bio-based raw materials								
2402MT	Without fillers, high precision								
2402MT ECO-B	Without fillers, partially bio-based PBT								
2404MT	Without fillers, low friction and wear wear properties								
2405MT	Without fillers, PT- FE-free*, improved lubricity, low friction friction and wear wear properties								
2406MT GF20	20% glass fiber rein- forced, improved sliding and wear properties								
2408MT GF20	20% glass fiber reinforced, high gloss and improved improved overmolding shafting on TPES								
2409MT GF30	30% glass fiber reinforced, high stiffness								
2411MT	Without fillers, nucleated, faster cycle time*, faster crystallization								
2414MT	Without fillers, low friction and wear properties properties, shorter								

*no intentionally added PTFE

Celanese – Ethylene Vinyl Acetate (EVA)



Properties

Ateva® G EVA can be processed at low temperatures. The polymers are optically transparent and contain no plasticizers. They are mechanically stable and can be welded with excellent results.

Medical Applications

Medical bags such as blood bags or for total parenteral nutrition, medication packaging, tubes and drains.

Type	Description	Food Compliance	Medical Approvals			Sterilisation			
			10993	USP	DMF	Steam	EtO	Gamma	E-Beam

Ateva® G

1081 G	9	FDA; (EU) 10/2011; GMP	5; 6; 10; 11	VI	✓	-	✓	✓	✓
1807 EG	18								
2803G/ 2803 G-CP	28								
2820 AG	28								
4030ACG	40								
4200 ACG-CP	41								
AT7110*	0								

*LDPE and not EVA

Celanese – Thermoplastic Polyester-Elastomer (TPC)



Properties

Hytrel® – good flexibility, sterilisation resistance, chemical resistance, low material fatigue, high resistance to long-term stress

Medical Applications

Tubing with high resistance to long-term stress, wrist protection, foot prostheses

Type	Description	Food Compliance	Medical Approvals			Sterilisation			
			10993	USP	DMF	Steam	EtO	Gamma	E-Beam

Hytrel® SC

SC956	Shore 55D	FDA; (EU) 10/2011; GMP	5; 11	VI	✓	87°C +3min 134°C <25-100 cycles*	50°C 2hr. 1x	40kGy 1x	50kGy 1x
SC969	Shore 63D								
SC976	Shore 72D								
SC988	Shore 82D								

*Please contact your contact person for more information.

Type	Hardness	Food Compliance	Medical Approvals			Sterilisation			
			10993	USP	DMF	Steam	EtO	Gamma	E-Beam

Hytre[®] PC

PC945 NC010	43	FDA; (EU) 10/2011; GMP	5; 11	VI	✓	87°C +3min 134°C <25-100 cycles*	50 °C 2hr. 1x	40 kGy 1x	50 kGy 1x
PC952 NC010	55								

*Please contact your contact person for more information.

Celanese – Thermoplastic vulcanisate (TPV)



Properties

Santoprene[®] is a thermoplastic vulcanizate with excellent long-term compression set and stress relaxation for sealing performance

Medical Applications

Syringe tips, plunger stopper, soft grip, seals

Type	Colour	Hardness	Medical Approvals			Sterilisation		
			10993	USP	DMF	Steam	EtO	Gamma

Santoprene[®]

181-55MED	bk	Shore 59A	5; 6; 10; 11	VI	-	✓	✓	50kGY
281-55MED	nc	Shore 60A						
8281-35MED	nc	Shore 38A						
8281-45MED	nc	Shore 49A						
8281-55MED	nc	Shore 59A						
8281-65MED	nc	Shore 68A						
8281-75MED	nc	Shore 79A						
8281-90MED	nc	Shore 93A						

bk = black, nc = natural color

Celanese – Liquide Crystal Polymeres (LCP)

Properties

Vectra® MT LCP liquid crystal polymers combine high flowability with high rigidity and strength. The polymers enable designers to produce thinner structures without compromising structural performance.

Medical

Applications

Dry powder inhalers, networked and portable devices, surgical instruments, microelectrical devices.

Type	Description	Food Compliance	Medical Approvals			Sterilisation		
			10993	USP	DMF	Steam	EtO	Gamma

Vectra®

MT® 1300	Without fillers	FDA; (EU) 10/2011; GMP	5; 6; 10; 11	USP 23 class VI	✓	✓ up to 250 cycles	✓	✓
MT® 1305	15% glass fiber reinforced, high strength, high stiffness							
MT® 1310	30% glass fiber reinforced, high strength, high stiffness							
MT® MT 1335	Glass fiber reinforced, tribologically modified with PTFE							-
MT® MT 1345	30% mineral-reinforced, good surface properties, hydrolytic stability							✓
MT® 4310	30% glass fiber reinforced, high flowability, high strength, high stiffness							
MT® 4350	40% mineal reinforced, high flowability, low deformation, excellent surface properties							

Vectra® LCP E840iLDS / E845iLDS* LDS are suitable for electronic components

CHIMEI – Methyl Methacrylate Acrylonitrile Butadiene Styrene (M-ABS)

Properties

M-ABS exhibits high transparency and offers good impact strength and chemical resistance. It is also easy to process.

Medical

Applications

Syringe covers

Type	MFR (g/10min)	Density (g/cm³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

Polylac®

PA-703TRP	2,3	1,08	FDA	5; 10	-	-	-	✓	-
PA-758	3,0	1,08	FDA; (EU) 10/2011; GMP	-	VI	-	-	✓	-

CHIMEI – Acrylonitrile Butadiene Styrene (ABS)

Properties

Polylac® is an impact-resistant, high-gloss ABS that is suitable for a wide range of applications. The material can be processed by injection molding as well as extrusion. In addition to good flowability, which facilitates processing in many applications, Polylac® 757F also meets the requirements of EU Directive 10/2011 and is therefore suitable for contact with food.

Medical Applications

IV regulators

Type	MFR (g/10min)	Density (g/cm³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

Polylac®

ABS PA-704LRP (milky white)	18	1,05	FDA	5; 10	-	-	-	✓	-
ABS PA-757F (milky white)	18	1,05	FDA; (EU) 10/2011; GMP	-	VI	-	-	✓	-

CHIMEI – Polycarbonate (PC)

Properties

Wonderlite® is a transparent material suitable for a wide range of applications. Polycarbonate has very good temperature resistance combined with high impact strength and transparency.

Medical Applications

Infusion valves, infusion tubes, dialysers

Type	MFR (g/10min)	Density (g/cm³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

Wonderlite®

PC-115P	15	1,2	FDA	3; 4; 5; 6; 10;11	-	-	-	✓	-
PC-115P F01 (slight blue tint)	17	1,2	FDA	5; 10	-	-	-	✓	-
PC-115P F17111C1 (blue tint)	17	1,2	FDA	3; 4; 5; 6; 10;11	-	-	-	✓	50kGy

CHIMEI – Styrene Acrylonitrile Copolymer (SAN)

Properties

Kibisan® is a transparent material with very good processing properties. Another important feature is the material's good chemical resistance, which is a prerequisite for many applications in the medical sector. In addition, both grades listed meet the requirements of EU Directive 10/2011 and are therefore also ideally suited for contact with food.

Medical Applications

Syringe covers

Type	MFR (g/10min)	Density (g/cm³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

Kibisan®

PN-107 L125FG	58	1,06	FDA; (EU) 10/2011; GMP	-	VI	-	-	✓	-
PN-127 L150FG	17	1,06	FDA; (EU) 10/2011; GMP	-	VI	-	-	✓	-

Delrin – Polyoxymethylene-Homopolymer (POM)



Properties

Delrin® – high abrasion resistance, good durability, dimensional stability

Medical Applications

Injector pens, inhalers, dosing systems

Type	Description	Food Compliance	Medical Approvals			Sterilisation			
			10993	USP	DMF	Steam	EtO	Gamma	E-Beam

Delrin® SC; Delrin® RASC

SC631	Low to medium flow properties	FDA; (EU) 10/2011; GMP	5; 11	VI	-	87°C +3min 134°C <25 cycles	50°C 2hr. 1x	-	-
SC655	Medium flow properties								
RASC655	Medium flow properties								
SC690	High flow properties								
SC698	High flow properties (filled with silicone oil)								
RASC698	High flow properties (filled with silicone oil)								

INEOS Olefins & Polymers – Polyethylene with Low Density (LDPE)



Properties Eltex® MED – good flow properties, good dimensional stability, high purity

Medical Applications Blow-fill-seal (BFS) bottles and ampoules, medical tubing, film applications

Type	MFR (190°C/2,16kg) (g/10min)	Density (kg/m³)	Food Compliance	Medical Approvals				Sterilisation			
				10993	USP	EP	DMF	Steam	EtO	Gamma	E-Beam

Eltex® MED LDPE

PH19N630	7,5	920	FDA; (EU) 10/2011; GMP	5	[661.1]; [87]	3.1.3; 3.1.4	-	-	(✓)	50 kGy	-
PH21G630	1,5	921		5	[661]; [87]; USPVI		(✓)	-	(✓)	-	-
PH22D630	0,3	922		5	[661]; [87]; USPVI		(✓)	-	(✓)	-	-
PH23H630	2	923		-	[661,1]; VI		(✓)	-	(✓)	-	-
PH23T630	22	923		-	VI		(✓)	-	(✓)	50 kGy	-
PH27D630	0,3	927		-	[661,1]; VI		(✓)	108 °C 1 h	(✓)	-	-
PH30D630	0,3	930		-	[661,1]; VI		(✓)	112 °C 1 h	(✓)	-	-

(✓) on request



INEOS Olefins & Polymers – Polyethylene with High Density (HDPE) INEOS

Properties

Eltex® MED – fast-flowing, good dimensional stability, high purity
Eltex® – good chemical resistance, outstanding organoleptic properties

Medical Applications

Syringes (syringe plungers), thin-walled containers for pharmaceutical applications, caps and closures

Type	MFR (190°C/2,16kg) (g/10min)	Density (kg/m³)	Food Compliance	Medical Approvals				Sterilisation			
				10993	USP	EP	DMF	Steam	EtO	Gamma	E-Beam

Eltex® MED HDPE

HD5226EA-M 	26	953	FDA; (EU) 10/2011; GMP	5	[87]; VI	3.1.3; 3.1.5	✓	✓	✓	-	-
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Eltex® HDPE

HD5502M 	0,2	954	FDA; (EU) 10/2011; GMP	-	-	3.1.3; 3.1.5	✓	✓	✓	-	-
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(✓) auf Anfrage

Eltex® organoleptic HDPE

CAP508 	1,8	953	FDA; (EU) 10/2011; GMP	-	[661.1]	3.1.3; 3.1.5	-	(✓)	(✓)	-	-
HD5211EA-B 	11	951	FDA; (EU) 10/2011	-	-	3.1.3	-	(✓)	(✓)	-	-
HD6070EA-B 	7,6	960		-	-	3.1.3; 3.1.5	-	(✓)	(✓)	-	-

(✓) on request





INEOS Olefins & Polymers – Polypropylene (PP)

Properties

Eltex® MED – outstanding optical properties, high transparency, low odour, high purity

Medical Applications

Inhalation components, syringe barrels and plungers, thin-walled containers for pharmaceutical applications, blow-fill-seal (BFS) (bottles and ampoules) – * PP terpolymer for film applications, medical IV bags

Type	MFR (230°C/ 2.16 kg) (g/10min)	Bend Elast. Modulus (MPa)	Food Compliance	Medical Approvals				Sterilisation			
				10993	USP	EP	DMF	Steam	EtO	Gamma	E-Beam

Eltex® MED HPP

100-MG03	3	1450	FDA; (EU) 10/2011; GMP	-	VI	3.1.3 ; 3.1.6	✓	121°C 1hr	✓	-	-	
100-MG12	12	1400		5	[87]; VI	3.1.3 ; 3.1.6	✓		✓	-	-	
100-MG25	25	1200		-	VI	3.1.3 ; 3.1.6	✓		✓	-	-	

Eltex® MED RCP

200-MG02	1,8	900	FDA; (EU) 10/2011; GMP	-	VI	3.1.3 ; 3.1.6	✓	121 °C 1 hr	✓	-	-	
201-MG02	1,8	900		-		3.1.3 ; 3.1.6	✓		✓	-	-	
240-MS23	23	980		-		-	-		✓	-	-	

Terpolymer

KS357	5	620	FDA; (EU) 10/2011; GMP	-	VI	3.1.3	-	121 °C 20 Min	(✓)	-	-	
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(✓) on request

 bio based  recycling (mechanical & chemical)

LG – Methyl Methacrylate Acrylonitrile Butadiene Styrene (M-ABS)



Properties

Exceptional transparency similar to PMMA or PC, impact strength, rigidity and ease of processing; well balanced properties; LG TR ABS exhibits good Izod impact strength and good results in the falling weight test, similar to a standard ABS; the material also does not fracture under low impact energy.

Medical Applications

Infusion valves, infusion tubes, dialysers

Type	MFR (g/10min)	Density (g/cm ³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

LG TR ABS

TR 556	5	1.09	FDA; (EU) 10/2011; GMP	-	VI	✓	-	✓	-
TR 557	23	1.09							
TR 558A	24	1.01							
TR 558A-L	25	1.14	FDA : EU 2011 GMP						

LG – ABS Acrylnitril-Butadien-Styrol



Properties

LG Chem's specialized ABS for medical applications provides a good balance of physical and mechanical properties with full regulatory compliance such as ISO 10993, USP Class VI, and food contact statements. This grade is produced under a dedicated production line to provide more stable quality and to minimize any change in production.

Medical Applications

Infusion valves, infusion tubes, dialysers

Type	MFR (g/10min)	Density (g/cm ³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

HF380-M	40	1.04	FDA : EU 2011 GMP	-	VI	✓	-	✓	-
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LG – PC Polycarbonate



Properties LG Chem’s medical PC grades offer a good balance of physical and mechanical properties in combination with full regulatory compliance.

Medical Applications

Type	MFR (g/10min)	Density (g/cm³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma
PC 2001-10	10	1.2	-	✓	-	-	✓	✓	-
PC 2001-20	20	1.2					-	-	✓
PC 2080-20	20	1.2					-	-	✓



SK CHEMICALS – Polyethylene Terephthalate (PET); Polyethylene Terephthalate Glycol Modified (PETG); Polycyclohexylene Dimethylene Terephthalate (PCTG)



Properties

SKYPET® PET BR – high transparency, excellent chemical resistance, easy to recycle
SKYGREEN® PETG S2008 – high transparency, good impact strength, easy thermoforming, good printability

Medical Applications

Blister packs, disposable syringes, medical dishes and containers, sample grippers

Type	Density (g/cm³)	Food Compliance	Medical Approvals				Sterilisation		
			10993	USP	EP	DMF	Steam	EtO	Gamma

SKYPET®

SKYPET® BR	1,33	FDA; (EU) 2023/2006; GMP	-	[87]; VI	3.1.15	✓	-	-	-
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Type	Density (g/cm³)	Food Compliance	Medical Approvals				Sterilisation			
			10993	USP	EP	DMF	Steam	ETO	Gamma	E-Beam

SKYGREEN®

SKYGREEN® S2008	1,27	FDA; (EU) 2023/2006; GMP	3; 4; 5; 6; 10; 11	[661]; [87]; VI	3.1.15	✓	-	50°C 50% 5hr.	50kGy 30min	50kGy 24hr.
SKYGREEN® MP200	1,27		-	VI	-	-	-			
SKYGREEN® MJ200	1,23		-	VI	-	-	-			

ECOZEN®

ECOZEN® MT5G 	1,25	FDA; (EU) 10/2011; GMP	-	VI	-	-	-	50°C 50% 5hr	50kGy 30min	50kGy 24hr
ECOZEN® MT10 	1,27		-			-	-			
ECOZEN® MT10G 	1,27		-			-	-			

ECOTRIA®

ECOTRIA® S2008-CR 	1,27	FDA; (EU) 2023/2006; GMP	3; 4; 5; 6; 10; 11	[661]; [87]; VI	3.1.15	✓	-	50 °C 50 % 5 hr	50 kGy 30 min	50 kGy 24 hr
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Syensqo – Polyaryletherketone (PAEK)

Properties

AvaSpire® PAEK (polyaryletherketone) is a family of high-performance polyketones tailored to close cost and performance gaps between PEEK and other high-performance polymers. For example, ductility and toughness can be significantly improved over comparable PEEK grades, resulting in 20% higher elongation at yield and twice the elongation at break.

Medical Applications

Medical and dental instruments, sterilisation cases and trays, operating theatre equipment, diagnostic equipment; reusable medical equipment

Type	MFR (g/10min)	Density (g/cm³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

AvaSpire®

AV-621 NT	5	1.29	FDA / (EU) 10/2011	5; 10; 11	-	-	134°C 18min 500x	500x	40kGy
AV-621 GF30	2	1.55	FDA						
AV-650 BG15	25	1.3	FDA	-					
AV-651 NT	25	1.29	FDA / (EU) 10/2011	5; 10; 11					
AV-651 BG15	25	1.29	FDA / (EU) 10/2011						
AV-651 BK95	25	1.29	FDA / (EU) 10/2011						
AV-651 CF30	4,5	1.42	-						
AV-651 GF30 BG20	9	1.52	FDA						
AV-651 GF30 BK95	9	1.52	-						



Syensqo – Polyetheretherketone (PEEK)

Properties

KetaSpire® PEEK are polyetheretherketones for highly demanding applications. The high-performance plastics are characterised in particular by an outstanding combination of fatigue strength and chemical resistance.

Medical Applications

Medical and dental instruments, sterilisation cases and trays, operating theatre equipment, diagnostic equipment; reusable medical devices.

Type	MFR (g/10min)	Density (g/cm ³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

KetaSpire®

KT-820 NT	3.0	1.30	FDA; (EU) 10/2011	5; 10; 11; 18	VI	-	134°C 18min 500x	500x	40kGy
KT-820 CF30	1.1	1.41	FDA	5; 10; 11	-				
KT-820 FP	3.0	1.30	FDA; (EU) 10/2011	5; 10; 11; 18					
KT-820 GF30	0.7	1.53	FDA						
KT-820 P	3.0	1.30	FDA; (EU) 10/2011						
KT-820 SL30	2.4	1.45		-					
KT-880 NT	36	1.30	FDA; (EU) 10/2011	5; 10; 11; 18	VI				
KT-880 CF30	11	1.41	FDA		-				
KT-880 GF30	14	1.53	FDA						

*KT-820 CF30, KT-820 GF30, KT-880 CF30 and KT-880 GF30 are not "EU Food" compliant.

Syensqo – Polyethersulfone (PESU)

Properties

Veradel® HC – a rigid, transparent high-temperature polymer for use in high-performance healthcare applications. The material has inherent flame resistance and is highly resistant to a wide range of cleaning agents used in healthcare as well as sterilising agents. It retains its transparency, mechanical properties and dimensional stability in both humid and very hot environments. In sterilisation it is compatible with ethylene oxide, vaporized hydrogen peroxide, gamma radiation and steam.

Medical Applications

Medical device housings

Type	MFR (g/10min)	Density (g/cm³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

Veradel® HC

HC-A301 NT	30	1,37	FDA; (EU) 10/2011; GMP	5; 10; 11; 18	VI	-	134°C 18min 100x	✓ 100x	40kGy
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Syensqo – Polyphenylsulfone (PPSU)

Properties

Radel® – Incredibly tough, transparent plastic with a heat deflection temperature (HDT) of 207°C, excellent chemical resistance and the ability to withstand over 1000 steam sterilisation cycles without significant loss of properties. Available in solid and transparent colours.

Medical Applications

Sterilisation containers and trays, orthopaedic devices, medical and dental instruments

Type	MFR (g/10min)	Density (g/cm³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

Radel®

R-5000	14-20	1,29	FDA; (EU) 10/2011; GMP	5; 10; 11; 18	VI	-	134°C 18min 1.000x	✓ 100x	40kGy
R-5100	17	1,30				-			
R-5500	12-17	1,29				-			
R-5800	20-28	1,29				-			

*The polymer base is compliant. Please check with a member of the sales team whether the colour you require is approved.

Syensqo – Polysulfone (PSU)

Properties

Udel® – Almost crystal-clear transparent plastic with a heat deflection temperature (HDT) of 174°C, high strength, good chemical resistance and excellent dimensional stability in the presence of steam and oxidising agents. Available in solid colours, transparent and glass fibre-filled grades.

Medical Applications

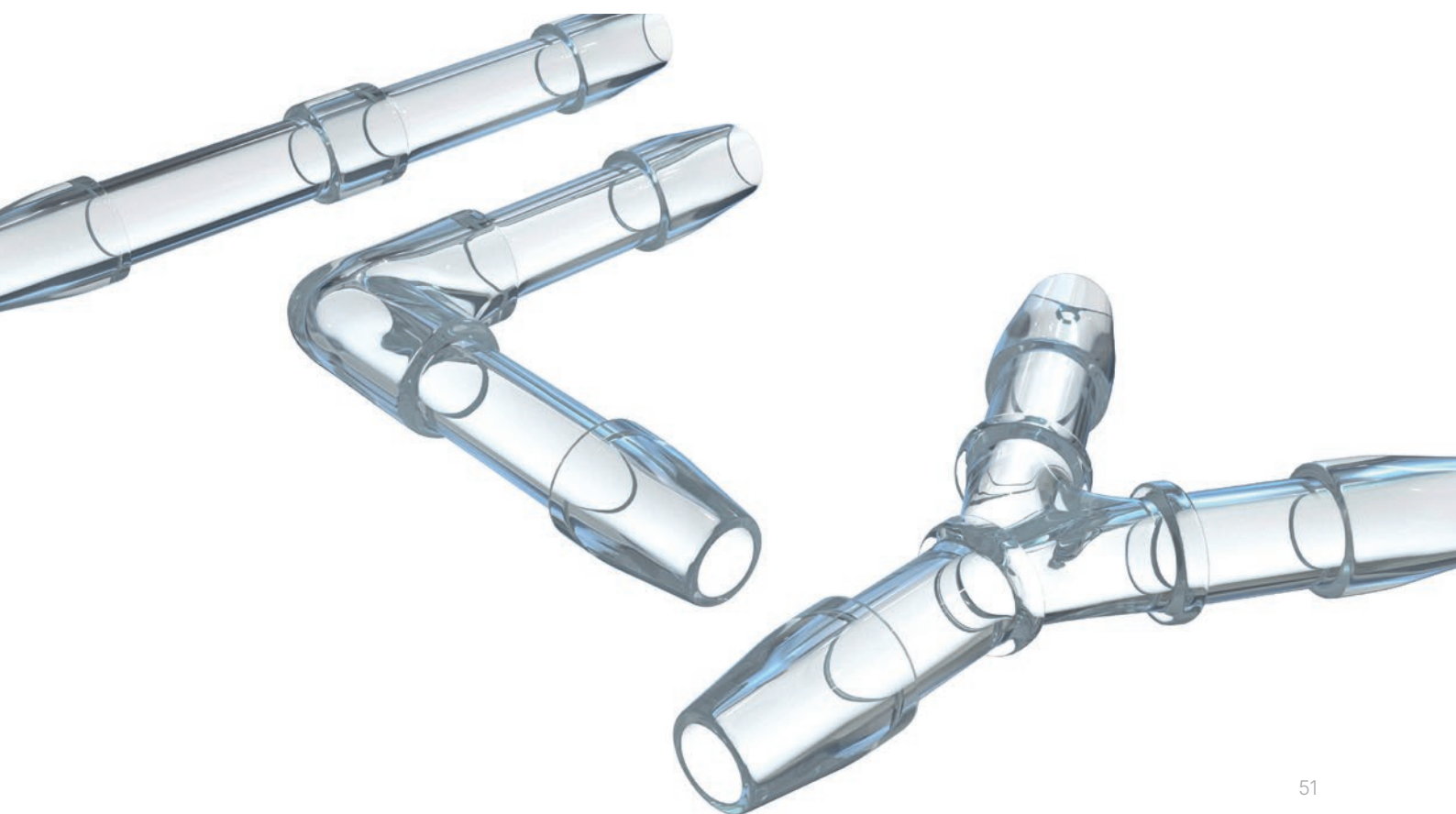
Medical and dental instruments, vacuum flasks, tube connectors, device housings, haemodialysis membranes

Type	MFR (g/10min)	Density (g/cm³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

Udel®

GF-110	5-9	1,33	FDA	5; 10; 11; 18	-	-	134°C 18min 500x	✓ 100x	40kGy
GF-120	5-9	1,40	FDA; (EU) 10/2011		-	-			
P-1700	5-9	1,24			VI	-			
P-3500 LCD	5-9	1,24				-			
P-3703	14-20	1,24				-			

*The polymer base is compliant. Please check with a member of the sales team whether the colour you require is approved.





USI – Cyclic Block Copolymer (CBC)

Properties

The key properties of CBC include high transparency, exceptional purity, low extractable substances, exceptional chemical resistance, low moisture absorption, low autofluorescence and exceptional UV-vis transmittance.

Medical Applications

Bio-diagnostic devices, syringes, bottles, laboratory equipment, medical packaging, dental applications, microtitre plates

Type	MFR (g/10min)	Density (g/cm ³)	Food Compliance	Medical Approvals			Sterilisation		
				10993	USP	DMF	Steam	EtO	Gamma

ViviOn™

1325 / 1325 EUT*	13	0,94	FDA; (EU) 10/2011; GMP	4; 5; 6; 10; 11	[661]; VI	3.1.3	-	✓	50kGy
0510 / 0510 EUT*	5	0,94							
8210 / 8210 EUT*	200	0,94							
0510 HF (High Flow)	13	0,94							
1608 (Flex. Shore D 65)	3	0,92							
0510HFE (High Flow)*	13	0,94							

*improved UV characteristics



Approvals

FDA - The Food and Drug Administration (FDA) is a U.S. public health agency that provides a range of health-related services and sets standards for food packaging and labelling. All drugs and medical devices approved for use in the U.S. must be tested by the FDA and must satisfy the agency's standards.

ISO 10993 - ISO 10993, regulated by the International Organization for Standardization (ISO), is a series of standards for the biological evaluation of medical products. The standard covers the biological evaluation of the biocompatibility of materials with the human body.

Test	Method
Genotoxicity	ISO 10993-3
Cytotoxicity	ISO 10993-5
Bone and muscle implant tests	ISO 10993-6
Sensitisation	ISO 10993-10
Intracutaneous toxicity	ISO 10993-10
Acute systemic toxicity	ISO 10993-11
Subchronic toxicity	ISO 10993-11
Full characterisation ⁽¹⁾	ISO 10993-18
Physicochemical	ISO 10993-18

⁽¹⁾ Including exhaustive extractions and risk assessment

DMF - A Drug Master File (DMF) is a confidential, detailed document describing the active ingredients contained in a medical product. It is submitted by manufacturers to the U.S. Food and Drug Administration (FDA). A DMF details the chemistry, manufacturing processes and checks that apply to a component of a drug. There is no regulatory requirement to create and file a DMF.

USP - The United States Pharmacopeia (USP) defines standards that guarantee the quality and purity of drugs and health technologies worldwide. It includes tests for the biological reactivity of elastomers, plastics and other polymer materials that come into direct or indirect contact with people. USP Class VI is the most stringent test and is accepted throughout the industry.

EP - The European Pharmacopoeia (EP) defines quality testing for medicines in Europe. All drugs and medical devices manufactured in European countries must satisfy these standards. EP quality standards (Europe).

EP 3.1.3	Release of medicinal products from some additives.
EP 3.1.4	Release of pharmaceuticals from PE without additives.
EP 3.1.5	Release of pharmaceuticals from PE with additives (additives are tested for compatibility of pharmaceuticals).
EP 3.1.6	Release of medicinal products from PP with additives (additives are tested for compatibility of pharmaceuticals).
EP 3.1.9	Silicone elastomer for closures and tubing.

EFSA - The European Food Safety Authority (EFSA) is a European agency which provides information and scientific advice on existing and emerging risks in the food chain. It deals with all issues relating directly or indirectly to food and animal feed safety, including animal health and welfare, plant protection, plant health and nutrition.

Classification	Definition
Biotolerant Materials	Are recognised as foreign by the surrounding tissue and are enclosed by a layer of connective tissue but not rejected.
Bioinert Materials	Do not form any chemical bonds when in contact with surrounding tissue.
Bioactive Materials	Are capable of chemical and biological interaction with tissues such as bone.

Contact time	Description
Short-term	Medical devices with one-off or repeated use or contact time likely to last up to 24 hours.
Longer-term	Medical devices with one-off, repeated or long-term use or contact time likely to last more than 24 hours but not longer than 30 days.
Permanent	Medical devices with one-off, repeated or long-term use or contact time lasting more than 30 days.

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We will be happy to advise you in detail about our sustainable solutions.

Local availability of products might differ from country to country.



Beyond products: Insights for Medical

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