Polyamide resistance to chemicals

CELANYL®/FRIANYL® - polyamides have a very good resistance to many substances, the resistance to motor oils and fuels is particularly noteworthy. This makes polyamides ideal for automotive and engine construction.

The following table provides information about the resistance of CELANYL®/FRIANYL® polyamides to various working materials. The information in the table relates to unreinforced and unmodified PA. Unless otherwise stated, the information on resistance at room temperature applies.

CELANYL®/FRIANYL® - polyamides are modified or reinforced with different materials for the respective customer requirements. These modifiers affect the chem. Resistance of the polyamide.

Reinforcement with fiberglass reduces the resistance to bases due to the instability of the glass to alkalis.

Elastomer modifications can improve the acid resistance of our polyamides.

If you cannot find your working materials in the table or if you use a modified polyamide, please ask our Product specialists about the resistance to the desired materials.

Explanation of symbols: (-) not resistant, (0) partly resistant, (+) resistant	**Reagent**	**A (PA66)**	**B (PA6)**
Formic acid	40 % aqueous solution	-	-
Ammonia	10 % aqueous solution	+	+
Amyl alcohol		+	+
Ethyl acetate		+	+
Ethyl ether		+	+
Bathroom cleaning		+0	+0
Benzaldehyde		0	0
Petrol		+	+
Benzene		+	+
Bitumen		0	0
Bleach	Aqueous solution (12.5% effective chlorine)	-	-
Boric acid	10 % aqueous solution	0	0
Brackish water		+	+
Brake fluid	HYDRAULAN®-Brand (BASF) DOT- 3,4, FMVSS-116 SAE-J-1703, DIN 53521	+ 0 -	+ 0 -
Butyl alcohol		0	+
Calcium chloride	Aqueous solution sat.	+	+
Camphor		+	+
Caprolactam	50 % aqueous solution Melted, technical purity > 120 °C	+ -	+ -
Chloramine	diluted solution	-	0
Chloroform		-	0
Citric acid	Concentrated Aqueous solution 10 %	0 +	0 +
Decalin		+	+
Disinfection	Active chlorine diluted solution Aldehyde diluted solution	+0 +	+0 +

Chemical resistance

Explanation of symbols: (-) not resistant, (0) partly resistant, (+) resistant	Reagent	A (PA66)	B (PA6)
Disinfection	Alcohols diluted solution	+	+
	Quaternary ammonium or phosphonium diluted solution	+	+
	Phenols diluted solution	+0	+0
	Boil it out	+	+
	Soda 0.5% aqueous	+	+
	HDH (hot air/steam/h)	+	+
	VDV (fractional vacuum availability)	+	+
	Steam. Cycle. Author	+	+
	Rays 2.5 mrad, duration 6	+	+
Ferric chloride	Aqueous solution neutral 10 %	+	+
	Aqueous solution acidic 10 %	-	-
Softening agent	Aqueous solution 10 %	+	+
Developer solution	(1:5, pH 11)	+	+
Acetic acid	5 % aqueous solution	+	+
	40 % aqueous solution	+	+
Ethanol		0	0
Hydrofluoric acid	40 % aqueous solution	-	-
Formaldehyde	30 % aqueous solution	0	0
	Aqueous solution technical purity	+	+
Fruit juices		+	+
Gas sterilization (din58 948, parts 1-4)		+	+
Drinks alcohol.		+	+
Glycol		0	0
Glysantine	40 % aqueous solution	+	+
Glycerin		+	+
Hand, spray cleaning		+	+
Heating oil		+	+
Hexane		+	+
Hydraulic fluids	Hydraulic oils H and HL (DIN 51 524)	+	+
	HLP (DIN 51 525)	+	+
	Flame retardant B113 80°C (DIN 51 502)	+	+
	e.g. Acrylic phosphate ester base		
Iodine tincture alcohol.		-	-
Potassium hydroxide	50 % aqueous solution	+	+
	10 % aqueous solution	+	+
Fuels	Normal petrol DIN 53 521, 85°C	+	+
	Super petrol DIN 53 521.85°C	+	+
	DIN 51 600, VTL 9130-008, 85°C	+	+
	Isooctane/Toluene 70:30	-	-
	FAM test fuels DIN 51 604.55°C (5% ethanol)	+	+
	M 15 (super/methanol 85:15), 55°C	+	+
	Diesel fuel DIN 51 601, 85°C VTL 9140-001,-002,-003	+	+
	ASTM-0975 No.1-D, 2-D, 3-D		

Chemical resistance

Explanation of symbols: (-) not resistant, (0) partly resistant, (+) resistant	**Reagent**	**A (PA66)**	**B (PA6)**
Fuels	Aircraft turbine fuel, 85°C F40 (VTL 9130-006), F42 (VTL 9130-007), MIL-F 5616 (JR1)	+	+
	Jet propulsion fuel, 85°C (Kerosene) IP-A, 1B, 4, 5, 6, RJ-1	+	+
	High performance fuel, 85°C (Decalin, per-hydrofluorane)	+	+
	DIN 53 521, 120°C		
Coolants	DIN 53 521, 120°C	0	0
Methyl alcohol		0	0
Methylene chloride		-	0
Milk		+	+
Lactic acid	10% aqueous solution	0	0
Menar (Argan) oils		+	+
Mortar, cement, lime		+	+
Motor oils		+	+
Naphthalene		+	+
Caustic soda	Aqueous solution 10%	+	+
	Aqueous solution 10%, 80°C	-	-
	Aqueous solution 50%	+	+
Ozone	Technical purity	0-	0-
	Diluted in air 20ppm, 35°c	0	0
Perfumes		0	0
Perchloroethylene		0	0
Petroleum ether	Technical purity, 80°C	+	+
Petroleum	Technical purity, 80°C	+	+
Peppermint oil		+	+
Phenol	Aqueous solution	-	-
Phosphoric acid		-	-
Propanol		0	0
Mercury	Metal	-	-
Nitric acid	Aqueous solution 2%	-	-
Hydrochloric acid	Aqueous solution 2%	-	-
Molds (mtl-t.18404)		+	+
Lubricating oils	Lubricating oils without HD- or ER-additives (ASTM-standard oil)	0	0
	Lubricating oils, engine oils HD, Hydraulic oils, insulating oils, transformer oils, special oils: BA, BB, BC, C, CG, DA, Gm, KA, KC, N, TD-L, TD, TW, VN, VB, VC, X, XA, ZS, ZA, ZB, ZC, ZD, F, FS, H, J, L, R, S, U, W, XB, XS (DIN 51 501, 2, 3, 6, 7, 8, 10, 11, 13, 15, 17)	+	+
	Control gear oil (DIN 51 509, 12)	+	+
	Hypoid gear oil, 110°C	+	+
	(with EP-additives), 120°C	-	-
Lubricating greases	Anti-friction bearing greases DIN 51 825, 110°C	+	+

Chemical resistance

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Lubricating greases	Base lubricating oils – metal soaps - additives, base ester oils, diester oils, phosphate ester, synthetic oils, 110°C	+0	+0
	Base polyphenol ester, 110°C	+	+
	Base Silicone oils, 110°C	+	+
Sulfuric acid		-	-
Sweat (din 54 020)		+	+
Edible fats	Edible oils	+	+
Tar		0	0
Ink		+	+
Toluene		+	+
Trichloroethane,	45 °C	+	+
Vaseline		+	+
Wax		+	+
Detergents (heavy duty detergent)	Diluted solution, 80°C	+0	+0
Water	Water (river, lake, sea, drinking, condensation, boiler, feed, chlorinated)	+	+
		+0	+0
	Wastewater (pH L2) and wastewater with shock chlorine	+	+
	Steam	0-	0-
Hydrogen peroxide		0	0
Tartaric acid		0	0
Xylene		0	0