» MATERIAL OVERVIEW

HÄNSSLER
Kunststoff- und Dichtungstechnik

Material Group 01 – PTFE (polytetrafluoroethylene)

Material number	Name	Colour	Hardness [shore]	Temperature range [°C]			Pressure range	Main application	Description	Confor-mities	Resistances	Chemically volatilities	Special properties
				-	+	short							
01.001	PTFE pure	○	55D	-200	260		250 bar	back-up rings, flat seals, O-rings, V-rings, WDR, turned-milled parts	PTFE natural, the standard in sealing and plastics technology. An ideal material for contact with aggressive media and particularly suitable for the food industry	FDA, EG 1935/2004	very good chemical resistance against almost all media	molten or dissolved alkali metals, volatile against radiation, swells in fluorine-containing hydrocarbons	temperature-resistant, low-friction
01.002	PTFE TFM natural	○ N	57D					gas applications	PTFE TFM is a modified PTFE with a denser structure. machined parts have a smoother surface	FDA, EG 1935/2004			temperature-resistant, low-friction, gas-tight, low cold flow
01.003	PTFE PGM	●	58D				350 bar	slip rings, piston and rod seals, WDR	PTFE compound with 15 % glass + 5 % MOS2		good chemical resistance against almost all media		good pressure resistance, good dielectric properties, low cold flow
01.004	PTFE D46	●	63D				600 bar	slip rings, piston and rod seals, guide bands	PTFE compound with 40 % bronze		good chemical resistance against almost all media, not suitable for water applications	alkali metals, sodium, unstable against radiation, water	good pressure resistance, very good friction, for hard counter surfaces
01.005	PTFE PKO	●	60D				400 bar	guide band, slip rings, piston and rod seals	PTFE compound with 23 % coal, 2 % graphite		good chemical resistance against almost all media		good pressure resistance, water hydraulics, pneumatics, soft counter surfaces, good dry-running properties
01.006	PTFE PGR	●	60D				350 bar	guide band, slip rings, piston and rod seals, spring-supported seals	PTFE compound with graphite			hydraulic oil with zinc	
01.007	PTFE EKO	●	56D					rotary seals, spring-supported seals	PTFE compound with 10 % Ekonol (organic filler)	FDA	very good chemical resistance against almost all media, good wear and extrusion resistance		good friction, good dry-running properties, used in water hydraulics, food industry, for soft counter surfaces
01.008	PTFE PGV	●	60D				400 bar	piston and rod seals, V-rings	PTFE compound with glass-fibre content	FDA, EG 1935/2004	very good chemical resistance against almost all media	limited for hot water use	high pressure resistance, good dielectric properties, for hard counter surfaces
01.009	PTFE PKF 10 %	●	60D				450 bar	back-up rings, piston and rod seals, slide bearings	PTFE compound with 10 % carbon-fibre				very high pressure resistance, for hard counter surfaces, hot water applications
01.010	PTFE PKF 15 %	●	60D				500 bar		PTFE compound with 15 % carbon-fibre				very high pressure resistance, for hard counter surfaces, hot water applications
01.011	PTFE PPS	●	60D						PTFE +15 % PPS +10 % Ko +2 % MoS2				very high pressure resistance, high abrasion resistance
01.012	PTFE ESD	●	57D				350 bar	back-up rings, piston and rod seals, slide bearings, turned-milled parts	PTFE compound with conductive pigments				ESD applications, electrically conductive, no static charge
01.013	PTFE PEEK	●	60D				500 bar		PTFE compound with PEEK	FDA, EG 1935/2004			very high pressure resistance, high abrasion resistance for extreme applications
01.014	PTFE Kohle TFM	●	60D				400 bar	shaft seals, rod seals, piston seals, spring-loaded seals	PTFE TFM + coal				good dry-running properties
01.015	PTFE TFM GF	●	60D						PTFE TFM + 25 % glass				good pressure resistance, for hard counter surfaces

Material Group 02 – TPU (thermoplastic polyurethane)

Material number	Name	Colour	Hardness [shore]	Temperature range [°C] -	Temperature range [°C] +	Temperature range [°C] short	Pressure range	Main application	Description	Confor-mities	Resistances	Chemically volatilities	Special properties
02.001	HPU 95 R		95A	-20	115	150	400 bar [1] 750 bar [2]	O-rings, lip seals, piston and rod seals, scrapers, slip rings	hydrolysis-resistant, thermoplastic polyurethane, high wear resistance, high elasticity	FDA, EG 1935/2004	pure aliphatic hydrocarbons, mineral oils and greases, silicone oils and greases, hot water, ozone, UV, synthetic ester	aromatic solvents, concen-trated alcohols, concentrated acids and bases	high wear resistance, high tear strength, high elasticity, low-friction compared to elastomers
02.002	HPU 95 N	N								FDA, EG 1935/2004			
02.003	HPU 95 G												
02.004	HPU 95 B												
02.005	HPU 55 GE		55D	-20	115	150	550 bar [1] 750 bar [2]	O-rings, lip seals, piston and rod seals, scrapers, slip rings, back-up rings, compact piston seals, replacements for PTFE seals or secondary seals					high wear resistance, high tear strength, high elasticity, very low friction, high compression strength
02.006	HPU 55 B												
02.007	C-HPU 96 R		96A	-37	110	125	500 bar [1] 750 bar [2]	O-rings, lip seals, piston and rod seals, scrapers, slip rings, back-up rings, compact piston seals, replacement for PTFE seals or secondary seals		FDA	pure aliphatic hydrocarbons, mineral oils and greases, silicone oils and greases, ozone, UV	aromatic solvents, concen-trated alcohols, concentrated acids and bases	high wear resistance, high tear strength, high elasticity, low-friction compared to elastomers
02.008	C-HPU 96 SB									FDA			
02.009	C-HPU 96 HB									FDA			
02.010	C-HPU 96 G									FDA			
02.011	C-HPU 96 FDA	N								FDA			
02.012	C-HPU 96 FDA+KTW	N								FDA, EG 1935/2004, KTW			
02.013	C-HPU 57 GE		57D	-37	115	125	600 bar [1] 800 bar [2]	O-rings, lip seals, piston and rod seals, scrapers, slip rings, back-up rings, compact piston seals, replacement for PTFE seals or secondary seals	hydrolysis-resistant, thermoplastic polyurethane				high wear resistance, high tear strength, high elasticity, very low friction, high com-pression strength
02.014	C-HPU 70 S		70D	-20	110	120	600 bar [1] 1.000 bar [2]						high wear resistance, high tear strength, high elasticity, very low friction, very high compression strength
02.015	LT-PU Plus		95A	-55	110	120	350 bar [1]	O-rings, lip seals, piston and rod seals, scrapers, slip rings	hydrolysis-resistant, thermoplastic polyurethane for use in low temperatures				high wear resistance, high tear strength, high elasticity, low friction compared to elastomers, low temperature applications, disadvantages in metal-cutting process
02.016	SL-PU 96		96A	-20	110	120		grooved seals, pneumatic seals, piston and rod seals, scrapers, slip rings	thermoplastic polyurethane with the addition of lubricants		pure aliphatic hydrocarbons, mineral oils and greases, ozone, UV	aromatic solvents, concen-trated alcohols, concentrated acids and bases, hot water	emergency running properties in absence of lubricant
02.017	PU 93		93A	-30	110	120	500 bar [1] 750 bar [2]	lip seals, piston and rod seals, scrapers, slip rings	PUR on polyester diol base		mineral oils and greases, cold water, hydraulic oils		high wear resistance, high tear strength, high elasticity, low-friction compared to elastomers

Material group 03 – Elastomers

Material number	Name	Colour	Hardness [shore]	Temperature range [°C]			Pressure range	Main application	Description	Conformities	Resistances	Chemically volatilities	Special properties
				-	+	short							
03.001	NBR 85 S	●	85A	-30	110	120	250 bar [1] 500 bar [2]	O-rings, lip seals, scrapers, WDR	NBR (nitrile butadiene rubber)		aliphatic hydrocarbons (propane, butane, gasoline, mineral oils and greases, diesel, fuel oil), vegetable and animal fats, hydraulic fluids (HFA, HFB, HFC), diluted acids and bases, water, salt water at low temperatures	fuels with a high aromatic content, aromatic hydrocarbons (benzene), chlorinated hydrocarbons (trichloroethylene), polar solvents (ketones, acetone, acetic acid ethyl ester), concentrated acids, glycol-based media (brake fluid), ozone, UV	high abrasion resistance, high elasticity
03.002	NBR 85 W	○	85A	-30	110	120							
03.003	NBR 75 S	●	75A	-30	90	100	100 bar [1] 250 bar [2]	O-rings, lip seals, scrapers, rotary seals, generally for preferred low preload, pneumatics					
03.004	T-NBR 80 S	●	80A	-50	100	120	150 bar [1] 400 bar [2]	O-rings, lip seals, scrapers, WDR	NBR for use at lower temperatures				
03.005	H-NBR 85 G	●	85A	-20	150	170	250 bar [1] 500 bar [2]	O-rings, lip seals, scrapers	highly saturated NBR for use at higher temperatures and ozone levels		water, steam up to 150 °C, ozone, UV	fuels with a high aromatic content, aromatic hydrocarbons (benzene), chlorinated hydrocarbons (trichloroethylene), polar solvents (ketones, acetone, acetic acid ethyl ester), concentrated acids, glycol-based media (brake fluid)	ozone and UV resistant, use at higher temperatures
03.006	H-NBR 90	●	90A	-20	150	170				FDA			
03.007	H-NBR 85 ED	●	85A	-15	150	170			highly saturated NBR for use at higher temperatures and ozone levels, for gas applications	NORSOK M7 10			ozone and UV resistant, use at higher temperatures, gas applications
03.008	H-NBR 73	●	73A	-15	150	170	150 bar [1] 250 bar [2]	O-rings, lip seals, scrapers, rotary seals, generally for preferred low preload, pneumatics	highly saturated NBR for use at higher temperatures and ozone levels, for low pressure applications, pneumatics				ozone and UV resistant, use at higher temperatures
03.009	EPDM 85 S	●	85A	-45	130	180	150 bar [1] 300 bar [2]	O-rings, lip seals, scrapers, rotary seals	EPDM (ethylene-propylene-diene-monomer)		hot water and hot steam, glycol-based brake fluid (types cross-linked with peroxide), organic and inorganic acids, detergents, soda and potash lye, hydraulic fluids based on phosphate-acid-ester (HFD-R), silicone oils and greases, polar solvents (ketones, ester, alcohols), ozone, UV, generally weather-resistant	mineral oils and greases, fuels	weather-resistant, for the sealing of brake fluids, hot steam applications
03.010	EPDM 85 FDA	○	85A	-45	130	180				FDA			
03.011	EPDM 85 FDA + KTW	●	82A	-40	120	180				FDA, EG 1935/2004, KTW			for use in potable water and food applications
03.012	FPM 82 B	●	82A	-20	220	300		O-rings, scrapers, lip seals, WDR, piston seals	FPM (fluorinated rubber material), also known as FKM (US) or Viton®, especially for high temperature applications or special media resistance		mineral oils and greases, HFD fluids, silicon oils and greases, aliphatic hydrocarbons (gasoline, butane, propane, natural gas), aromatic hydrocarbons (benzene, toluene), chlorinated hydrocarbons (trichloroethylene, carbon tetrachloride), fuels, fuels containing methanol, ozone, weather-resistant	solvents, (acetone, methyl ethyl ketone, ethyl acetate, diethyl ether, dioxane), Skydrol 500 and 7000, glycol-based brake fluids, ammonia gas, amines, alkalis, steam, low molecular weight organic acids (formic acid and acetic acid), methane above 40 °C	high-temperature applications
03.013	FPM 85 FDA	●	85A	-20	220	250				FDA			for foodstuff applications
03.014	FPM 85 S	●	85A	-20	210	250							high-temperature applications
03.015	FPM 80 ED	●	80A	-20	220	300		gas applications		NORSOK M7 10			for gas applications
03.016	FPM 85 GLT	●	85A	-40	220	300		high or low temperature applications					use at high and low temperatures
03.017	FPM 73 B	●	73A	-20	120		150 bar [1] 250 bar [2]	O-rings, pre-stressing elements, pneumatics, rotary seals, generally for low preloads, low pressure applications					for low pressure applications
03.018	TFE/P AFLAS® 85 S	●	85A	-5	200	230		water and steam applications	fluoroelastomer (tetrafluoroethylene/ propylene)		water, steam, mineral oils, greases, aromatic hydrocarbons	amines, ketones, halogens	for water applications and high temperatures

03.019	TFE/P AFLAS® 90 S	●	90A	-5	200	230	180 bar [1] 300 bar [2]	water and steam applications	fluoroelastomer (tetrafluoroethylene/ propylene)		water, steam, mineral oils, greases, aromatic hydrocar-bons	amines, ketones, halogens	for water applications and high temperatures
03.020	MVQ 85 B	●	85A	-60	200	230	150 bar [1] 200 bar [2]	O-rings, flat seals	silicone rubber		ozone, weather-resistant, oil and hot air	concentrated acids and alkalis, hot steam	for low temperature applications and for use in foodstuff applications
03.021	MVQ FDA N	N	85A	-60	200	230	150 bar [1] 200 bar [2]	O-rings, flat seals	silicone rubber	FDA	ozone, weather-resistant, oil and hot air	concentrated acids and alkalis, hot steam	for low temperature applications and for use in foodstuff applications
03.022	MVQ FDA W	○	85A	-60	200	230	150 bar [1] 200 bar [2]	O-rings, flat seals	silicone rubber	FDA	ozone, weather-resistant, oil and hot air	concentrated acids and alkalis, hot steam	for low temperature applications and for use in foodstuff applications
03.023	Hydrel 54	●	54D	-30	120		400 bar [1] 750 bar [2]	supporting elements, scrapers, guides	TPE (thermoplastic elastomers)		diluted bases and acids at room temperature, alcohols and hydrocarbons at room temperature, mineral oils, saline solutions	ketones, ether, hydrogen peroxide, DOT4 brake fluid, hydrochloride acid, nitric acid, sulphuric acid, ethylene glycol	low friction, abrasion resistant
03.024	TPE 55	N	54D	-30	120		400 bar [1] 750 bar [2]	supporting elements, scrapers, guides	TPE (thermoplastic elastomers)	FDA	diluted bases and acids at room temperature, alcohols and hydrocarbons at room temperature, mineral oils, saline solutions	ketones, ether, hydrogen peroxide, DOT4 brake fluid, hydrochloride acid, nitric acid, sulphuric acid, ethylene glycol	low friction, abrasion resistant

Material Group 04 – Engineering Plastics

Material number	Name	Colour	Hardness [shore]	Temperature range [°C] -	+	short	Pressure range	Main application	Description	Confor-mities	Resistances	Chemically volatilities	Special properties
04.001	POM C	○ N	85D	-50	100	140	500 bar [1] 750 bar [2]	supporting elements, guide elements, construction parts	polyacetal (semi-crystalline thermoplastic)	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	high dimensional stability, low moisture absorption, very good sliding properties, high abrasion resistance, low creep tendency, good machinability, good electrical and dielectric behaviour
04.002	POM C GE	●	85D	-50	100	140		supporting elements, guide elements, construction parts	polyacetal (semi-crystalline thermoplastic)	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	high dimensional stability, low moisture absorption, very good sliding properties, high abrasion resistance, low creep tendency, good machinability, good electrical and dielectric behaviour
04.003	POM C R	●	85D	-50	100	140		supporting elements, guide elements, construction parts	polyacetal (semi-crystalline thermoplastic)	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	high dimensional stability, low moisture absorption, very good sliding properties, high abrasion resistance, low creep tendency, good machinability, good electrical and dielectric behaviour
04.004	POM C G	●	85D	-50	100	140		supporting elements, guide elements, construction parts	polyacetal (semi-crystalline thermoplastic)	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	high dimensional stability, low moisture absorption, very good sliding properties, high abrasion resistance, low creep tendency, good machinability, good electrical and dielectric behaviour
04.005	POM C B	●	85D	-50	100	140		supporting elements, guide elements, construction parts	polyacetal (semi-crystalline thermoplastic)	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	high dimensional stability, low moisture absorption, very good sliding properties, high abrasion resistance, low creep tendency, good machinability, good electrical and dielectric behaviour
04.006	POM C S	●	85D	-50	100	140		supporting elements, guide elements, construction parts	polyacetal (semi-crystalline thermoplastic)		good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	high dimensional stability, low moisture absorption, very good sliding properties, high abrasion resistance, low creep tendency, good machinability, good electrical and dielectric behaviour
04.007	POM H	○ N	83D	-50	90	150		supporting elements, guide elements, construction parts	polyacetal (semi-crystalline thermoplastic)	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	good dimensional stability, low moisture absorption, good wear resistance, high creep resistance, good machinability
04.008	POM C ESD 90	●	76D	-50	85	140		ESD applications			good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	antistatic, no carbon black additives, good gliding properties
04.009	POM C ESD 90 PLUS	●	73D	-50	85	140		ESD applications			good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	antistatic, no carbon black additives, good gliding properties, low fluctuation of electri-cal resistance
04.010	POM C ESD 90 W	○	72D	-50	85	140		ESD applications			good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	antistatic, no carbon black additives, good gliding properties
04.011	POM C FG W	○	81D	-50	100	140		food industry	polyacetal (semi-crystalline thermoplastic)	FDA, EG 1935/2004	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	food-compliant
04.012	POM C FG S	●	81D	-50	100	140		food industry	polyacetal (semi-crystalline thermoplastic)	FDA, EG 1935/2004	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	food-compliant
04.013	POM C FG B	●	81D	-50	100	140		food industry	polyacetal (semi-crystalline thermoplastic)	FDA, EG 1935/2004	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	food-compliant
04.014	POM C GF 25	●	85D	-20	100	140		construction parts	polyacetal (semi-crystalline thermo-plastic) reinforced with glass-fibre		good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	high rigidity, high dimensional stability, low moisture absorption, good dimensional stability
04.015	POM C GLD 160	○	80D	-50	100	140		construction parts, guide elements	polyacetal (semi-crystalline thermo-plastic) with anti-friction additives	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids), hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	extremely low wear, very good sliding properties, low stick-slip effect

Material Group 04 – Engineering Plastics

Material number	Name	Colour	Hardness [shore]	Temperature range [°C]			Pressure range	Main application	Description	Conformities	Resistances	Chemically volatilities	Special properties
				-	+	short							
04.016	POM C GLD 350	●	77D	-50	100	140		construction parts, guide element	polyacetal (semi-crystalline thermoplastic) with anti-friction additives	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant, up to 3 % moisture absorption in normal climate	oxidising chemicals, strong acids (pH<4), UV	extremely low wear, very good sliding properties, good impact resistance
04.017	POM C MDT B	●	82D	-20	90	140		food industry	polyacetal (semi-crystalline thermoplastic) with metal detectable additives	FDA, EG 1935/2004			metal-detectable
04.018	POM C MG	M	81D	-50	100	140		medical technology	polyacetal (semi-crystalline thermoplastic)	USP VI, ISO10993, FDA			medical grade, can be sterilised multiple times (hot steam, plasma, ethylene oxide)
04.019	POM C ESD 60	●	79D	-20	100	140		ESD applications			good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant, UV	oxidising chemicals, strong acids (pH<4)	electrically conductive, high dimensional stability, low moisture absorption, low creep tendency, UV resistant
04.020	PA6	N	82D	-40	85	160		construction parts, guide elements, back-up rings	polyamide (semi-crystalline thermoplastic)	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant, up to 3 % moisture absorption in normal climate	oxidising chemicals, strong acids (pH<4), UV	good degree of toughness, very good sound and vibration damping, very good sliding properties, up to 3% moisture absorption in normal climate, good bonding property, good weldability, high abrasion resistance
04.021	PA6 FG	N	82D	-40	85	160		food industry		FDA, EG 1935/2004			food-compliant, good degree of toughness, very good sliding properties
04.022	PA6 FR	N	83D	-20	85	160		construction parts					flame retardant, self-extinguishing, free of halogen and phosphorus
04.023	PA6 GC	N	82D	-40	95	160			polyamide (semi-crystalline thermoplastic), glass-bead reinforced				extreme high wear resistance, good sliding properties, high strength, high rigidity
04.024	PA6 GF30	●	86D	-30	110	180			polyamide (semi-crystalline thermoplastic), glass-bead reinforced				very high rigidity, high compression strength, very high heat resistance
04.025	PA6 MO	●	82D	-40	85	160			polyamide (semi-crystalline thermoplastic) with anti-friction additives		good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant, UV, up to 3 % moisture absorption in normal climate	oxidising chemicals, strong acids (pH<4)	UV resistant, high strength, good rigidity, good sliding properties
04.026	PA6 ESD 60	●	87D					ESD applications	polyamide (semi-crystalline thermoplastic) with conductive additives				electrically conductive, UV resistant
04.027	PA6 GC MO	●	82D	-40	95	160		construction parts	polyamide (semi-crystalline thermoplastic), glass-bead reinforced with anti-friction additives				good sliding and wear properties, high mechanical strength, UV resistant
04.028	PA66	N	83D	-30	95	170			polyamide (semi-crystalline thermoplastic)	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant, up to 3 % moisture absorption in normal climate	oxidising chemicals, strong acids (pH<4), UV	good dimensional stability, very good sliding properties, high abrasion resistance, good strength over a wide temperature range, good bonding properties, good weldability
04.029	PA66 FG	N	83D	-30	95	170		food industry	polyamide (semi-crystalline thermoplastic)	FDA, EG 1935/2004			food-compliant
04.030	PA66 GF 30	●	86D	-20	120	200		construction parts	polyamide (semi-crystalline thermoplastic), glass-bead reinforced				good dimensional stability, high mechanical strength, very high heat resistance
04.031	PA66 GLD 240	N	80D	-30	90	150		construction parts, guide elements	polyamide (semi-crystalline thermoplastic) with anti-friction additives				very good sliding properties, low abrasion, high strength
04.032	PA66 HS	N	82D	-30	120	170		construction parts	polyamide (semi-crystalline thermoplastic)				good heat ageing resistance, good thermal stability, good dimensional stability
04.033	PA66 MO	●	83D	-30	95	170			polyamide (semi-crystalline thermoplastic) with anti-friction additives				high mechanical strength, very good sliding properties, good abrasion resistance

04.034	PA6 G	N	83D	-40	110	170	500 bar [1] 750 bar [2]	construction parts, guide elements, back-up rings	high-molecular and semi-crystalline thermoplastic, polymerised polyamide 6	FDA	good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant, up to 3 % moisture absorption in normal climate	oxidising chemicals, strong acids (pH<4), UV	good degree of toughness, very good sliding properties, very good abrasion resistance, high mechanical strength, high degree of toughness, good bonding property, good weldability
04.035	PA6 G ESD 60	●	80D	-40	110	170		ESD applications	high-molecular and semi-crystalline thermoplastic, polymerised polyamide 6 with conductive additives				antistatic, high strength, good compression strength
04.036	PA6 G ESD 90	●	80D	-40	110	170							
04.037	PA6 G GK	N	83D	-40	110	170		construction parts	high-molecular and semi-crystalline thermoplastic, polymerised polyamide 6, glass-bead reinforced				high rigidity, low deformation under pressure, high heat resistance
04.038	PA6 G HS	●	82D	-40	120	180			high-molecular and semi-crystalline thermoplastic, polymerised polyamide 6		good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant, up to 3 % moisture absorption in normal climate, UV resistant	oxidising chemicals, strong acids (pH<4)	UV resistant, high rigidity, good heat ageing resistance
04.039	PA6 G MO	●	83D	-40	110	170		construction parts, guide elements	high-molecular and semi-crystalline thermoplastic, polymerised polyamide 6 with anti-friction additives				UV resistant, high strength, high degree of toughness over a wide temperature range
04.040	PA6 G LU	N	82D	-40	110	160					good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant, up to 3 % moisture absorption in normal climate	oxidising chemicals, strong acids (pH<4), UV	good gliding and wear properties, low stick-slip effect, high strength
04.041	PA6 G OL	●	82D	-40	110	160				FDA			very good gliding behaviour, self-lubricating, very low stick-slip effect
04.042	PA12	N	78D	-50	80	140		construction parts	polyamide 12 (semi-crystalline thermoplastic)		good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	low moisture absorption, very good stress crack resistance, good impact resistance, high dimensional stability
04.043	PA12 GF 30	N	79D	-40	80	150			polyamide 12 (semi-crystalline thermoplastic) reinforced with glass-fibre				high rigidity, high hardness, good dimensional stability
04.044	PA12 MO	●	78D	-50	80	140			polyamide 12 (semi-crystalline thermoplastic) with gliding additives		good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant, UV resistant	oxidising chemicals, strong acids (pH<4)	UV resistant
04.045	PA46	●	84D	-40	135	200			polyamide 46 (semi-crystalline thermoplastic)		good chemical resistance (alcohols, aldehydes, esters, glycols, gasoline, mineral oils, weak alkalis, weak acids) hydrolysis-resistant	oxidising chemicals, strong acids (pH<4), UV	high continuous use temperature, very good sliding properties, high heat resistance
04.046	PK	N	78D	-30	100	150		sealing elements, construction parts	polyketone (semi-crystalline thermoplastic)				very good recovery property, low moisture absorption, very high abrasion resistance, very low wear in identical abrasion partners, high dimensional stability, high impact resistance
04.047	PK GF 30	N	83D	-30	100	150		construction parts	polyketone (semi-crystalline thermoplastic) reinforced with glass-fibre				high rigidity, high hardness, good dimensional stability at high dynamic loads
04.048	PC	T	82D	-40	115	140			polycarbonate (amorphous thermoplastic)	FDA			good dimensional stability, low moisture absorption, high rigidity, good electrical insulation properties, high impact resistance, high heat resistance
04.049	PET	○ N	84D	-20	115	180		construction parts, food industry	polyethylene terephthalate (semi-crystalline thermoplastic)	FDA			excellent dimensional stability, very low water absorption, very good creep behaviour, good sliding properties, high wear resistance, high strength, good machinability, low coefficient of thermal expansion

N = natural (no colour), T = transparent, M = multicoloured; [1] dynamic, [2] static

Material Group 04 – Engineering Plastics

Material number	Name	Colour	Hardness [shore]	Temperature range [°C]			Pressure range	Main application	Description	Confor-mities	Resistances	Chemically volatilities	Special properties
				-	+	short							
04.050	PET FG	N	83D	-20	115	180		construction parts, food industry	polyethylene terephthalate (semi-crystal-line thermoplastic)	FDA, EG 1935/2004			food-compliant
04.051	PEEK	N	88D	-60	250	310	up to 500 bar [1] at 140 °C up to 1.000 bar [2]	construction parts, back-up rings	poly ether ether ketone (semi-crystalline thermoplastic)	FDA	almost all organic and inorganic chemicals, hydrolysis-resistant up to 280 °C, high-energy radiation	concentrated nitric acid, some halogens, hydrocar-bons, UV	very good dimensional stability, flame resistant, self-extinguishing, very low smoke density, very good sliding properties, high abrasion resistance, high wear resistance, high rigidity, high strength, high degree of toughness, low creep tendency, good machinability, good bonding properties, good weldability, high heat resistance, low coefficient of thermal expansion, good electrical insulation properties over a wide temperature range
04.052	PEEK CF 30		91D	-20	250	310		construction parts	poly ether ether ketone (semi-crystalline thermoplastic) reinforced with car-bon-fibre				low coefficient of thermal expansion, very high strength and rigidity, good dimensional stability
04.053	PEEK ESD 60		85D	-20	260	300		ESD applications	poly ether ether ketone (semi-crystalline thermoplastic) with conductive additives				electrically conductive
04.054	PEEK FG	N	88D	-60	250	310		construction parts, food industry	poly ether ether ketone (semi-crystalline thermoplastic)	FDA, EG 1935/2004			food-compliant
04.055	PEEK GF 30		89D	-20	250	310		construction parts	poly ether ether ketone (semi-crystalline thermoplastic) reinforced with glass-fibre				high rigidity with good dimensional stability, very low creep behaviour, high continuous use temperature
04.056	PEEK GLD 140 FG B		86D	-30	250	310		construction parts, food industry	poly ether ether ketone (semi-crystalline thermoplastic) with gliding additives	FDA, EG 1935/2004			food-compliant, very good gliding beha-viour
04.057	PEEK GLD 140 FG	N	86D	-30	250	310				FDA, EG 1935/2004			
04.058	PEEK GLD 140 B		86D	-30	250	310		construction parts					very good gliding behaviour
04.059	PEEK GLD 140	N	86D	-30	250	310							
04.060	PEEK MG B		88D	-60	250	310		medical technology	poly ether ether ketone (semi-crystalline thermoplastic)	USP VI, ISO10993, FDA			medical grade, very easy to sterilise, high purity
04.061	PEEK MG GE		88D	-60	250	310				USP VI, ISO10993, FDA			
04.062	PEEK MG G		88D	-60	250	310				USP VI, ISO10993, FDA			
04.063	PEEK MG	N	88D	-60	250	310				USP VI, ISO10993, FDA			
04.064	PEEK MG R		88D	-60	250	310				USP VI, ISO10993, FDA			
04.065	PEEK MG S		88D	-60	250	310				USP VI, ISO10993, FDA			
04.066	PEEK MOD		85D	-30	250	310		construction parts	poly ether ether ketone (semi-crystalline thermoplastic) with gliding additives				very good gliding and abrasion properties

04.067	PEEK MOD ESD	●	85D	-30	250	310		ESD applications	poly ether ether ketone (semi-crystalline thermoplastic) with gliding and conductive additives		almost all organic and inorganic chemicals, hydrolysis-resistant up to 280 °C, high-energy radiation	concentrated nitric acid, some halogens, hydrocarbons, UV	very good gliding and abrasion properties, antistatic
04.068	PEEK PVX	●			260	300		construction parts	poly ether ether ketone (semi-crystalline thermoplastic) reinforced with carbon-fibre, PTFE, graphite				good heat resistance, high creep resistance, good gliding and abrasion properties
04.069	PEEK LDS	●			260	300		construction parts for laser structuring	poly ether ether ketone (semi-crystalline thermoplastic) with mineral fillers				for laser structuring
04.070	PSU	● N T	85D	-50	160	180		construction parts	polyarylsulfone (amorphous thermoplastic)	FDA	hydrolysis-resistant, high energy radiation		high rigidity, good dimensional stability, very high continuous use temperature, flame-retardant, self-extinguishing, very low smoke development, high bending strength, high level of hardness, good machinability, very good bonding properties, very good weldability, low coefficient of thermal expansion, very good electrical insulation properties, particularly low radiation absorption in microwave spectrum
04.071	PEI	N T	86D	-50	170	210			polyetherimide (amorphous thermoplastic)	FDA	high-energy radiation		high rigidity even at high temperatures, very low smoke development
04.072	PEI ESD 60	●	89D	0	170	210		ESD applications	polyetherimide (amorphous thermoplastic) with conductive additives				electrically conductive
04.073	PEI ESD 90	●	88D	0	170	210							
04.074	PEI GF 30	●	92D	-30	170	210		construction parts	polyetherimid (amorphous thermoplastic) glass-fiber reinforced				high heat resistance, high flame resistance, very low smoke development
04.075	PPS	N	88D	-20	220	260			polyphenylensulfid (semi-crystalline thermoplastic)	FDA	very good chemical resistance		high continuous use temperature, high level of hardness, high mechanical strength, flame-retardant, self-extinguishing, good machinability, good bonding properties, very good electrical insulation properties
04.076	PPS GF 40	N	92D	0	220	250			polyphenylene sulphide (semi-crystalline thermoplastic) reinforced with glass-fibre	FDA			extremely high rigidity, good dimensional stability, very low creep tendency
04.077	PPS MOD	●	77D	-20	220	260			polyphenylene sulphide (semi-crystalline thermoplastic) with gliding additive	FDA			extremely low wear
04.078	PE 1000	○ N	63D	-250	80	130	350 bar [1] 400 bar [2]	construction parts, sealing elements	ultra high molecular polyethylene	FDA, EG 1935/2004		oxidising chemicals, strong acids (pH<4), UV	high abrasion and wear resistance, low coefficient of sliding friction, high impact resistance, low temperature applications
04.079	PE 1000 G	●	63D	-250	80	130				FDA, EG 1935/2004			
04.080	PE 1000 S	●	63D	-250	80	130							
04.081	PE 500	○ N	65D	-100	80	100		construction parts	high molecular polyethylene	FDA, EG 1935/2004			good mechanical properties, wear-resistant, scratch-resistant, physiologically harmless
04.082	PE 500 S	●	65D	-100	80	100							
04.083	PE 300	○ N	63D	-50	80	100			polyethylene	FDA, EG 1935/2004			very good wear resistance, low weight
04.084	PE 300 S	●	63D	-50	80	100							
04.085	PP	○	70D	0	100	150			polypropylene				flame-retardant, high rigidity

Material Group 04 – Engineering Plastics

Material number	Name	Colour	Hardness [shore]	Temperature range [°C]			Pressure range	Main application	Description	Confor-mities	Resistances	Chemically volatilities	Special properties
				-	+	short							
04.086	PP GR		72D	0	100	150		construction parts	polypropylene	FDA	very good chemical resistance		flame-retardant, high rigidity
04.087	PVDF N		77D	-20	140	150		construction parts, food stuffs industry, chemical industry	polyvinylidene fluoride (high molecular polymer on vinylidene fluoride base)	FDA, EG 1935/2004	very good chemical resistance, very good ageing resistance		high temperature resistance, particularly good chemical resistance
04.088	PVDF S		77D	-20	140	150							

Material Group 05 – Compound Materials

Material number	Name	Colour	Hardness [shore]	Temperature range [°C]			Pressure range	Main application	Description	Confor-mities	Resistances	Chemically volatilities	Special properties
				-	+	short							
05.001	HGW Flex			-40	100			guide elements	phenol cotton fabric according to DIN 2085				a little more flexible for small guide elements, high dimensional accuracy, pressure-tight
05.002	HGW			-40	100								high dimensional accuracy, high compression strength
05.003	HGW HD			-40	100				phenol cotton fabric according to DIN 2086				
05.004	HGW MFG			-40	100				phenol cotton fabric with solid lubricant				high dimensional accuracy, high compression strength, friction-optimised
05.005	HGW DN			-40	130				phenol synthetic fabric				high dimensional accuracy, high compression strength, low friction, low water absorption

Material Group 06 – Additive Manufacturing FFF Process

Material number	Name	Colour	Hardness [shore]	Temperature range [°C]			Pressure range	Main application	Description	Confor-mities	Resistances	Chemically volatilities	Special properties
				-	+	short							
06.001	ABS	M		-40	80			construction parts, prototypes	acrylonitrile-butadien-styrene (amorphous thermoplastic)		concentrated and diluted acids, diluted organic acids, gasoline, oils and greases (mineral, animal, plant)	UV, aromatics, ketones, ether, ester, chlorinated hydrocarbons, sulphur hydrocarbons, concentrated acids	low moisture absorption, high rigidity, good bonding properties, good thermo-forming properties
06.002	ABS ESD			-40	80			ESD applications	acrylonitrile-butadien-styrene (amorphous thermoplastic) with conductive additives				electrically conductive
06.003	ABS FR			-40	80			construction parts	acrylonitrile-butadien-styrene (amorphous thermoplastic) with additives				flame retardant
06.004	ABS ASA			-40	75				acrylic ester-styrene-acrylonitrile		very good chemical resistance, UV and weather-resistant		UV resistant
06.005	Iglidur®			-40	80	90							wear-resistant, abrasion-resistant
06.006	PETG	M		-40	68				polyethylene, terephthalate, glycol	FDA, EG 1935/2004			large components, food-compliant

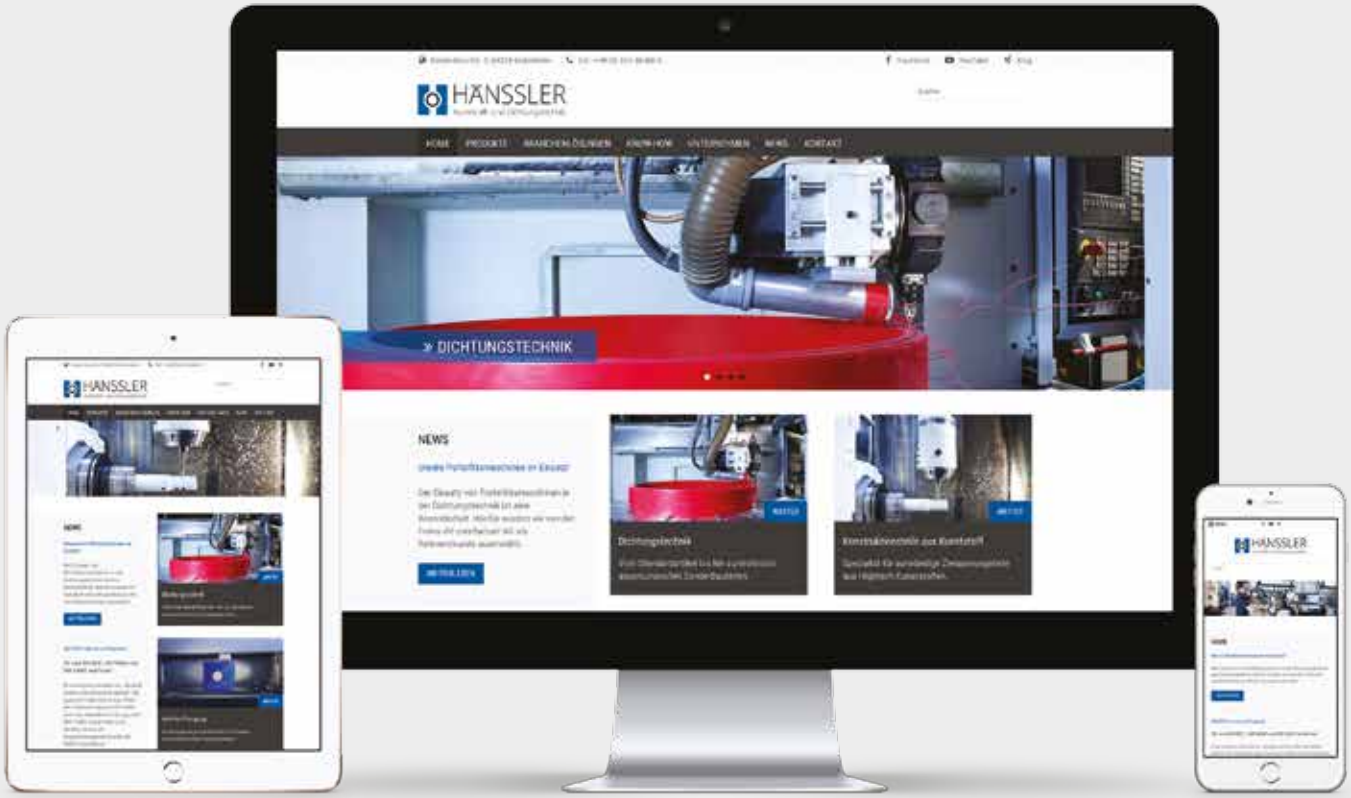
Material Group 07 – Additive Manufacturing SLA Process

Material number	Name	Colour	Hardness [shore]	Temperature range [°C]			Pressure range	Main application	Description	Confor-mities	Resistances	Chemically volatilities	Special properties
				-	+	short							
07.001	Resin trans	T		-40	80			prototypes, product development	photo polymer (resin)			UV	transparent components, can be polished
07.002	Resin W	○		-40	80								
07.003	Resin G	●		-40	80								paintable
07.004	Resin S	●		-40	80								
07.005	Resin HF	●		-40	80			functional prototypes, product development					break-resistant, higher tensile strength, higher elastic modulus
07.006	Resin HT	● T		0	280			heat-resistant equipment, casting moulds for prototypes					heat-resistant
07.007	Resin Flex	●	80A	0	60			flexible prototypes					flexible
07.008	Resin D	●		0	80			functional prototypes					impact-resistant, abrasion-resistant, low friction coefficient, stretchable

Material Group 08 – Additive Manufacturing SLS Process

Material number	Name	Colour	Hardness [shore]	Temperature range [°C]			Pressure range	Main application	Description	Confor-mities	Resistances	Chemically volatilities	Special properties
				-	+	short							
08.001	PA	○		-40	80			functional prototypes	polyamide 12		good chemical resistance		high strength
08.002	PA	●		-40	80								

Our recommendations are made according to the best of our knowledge. However, they depend on applications and use and are thus non-binding and we exclude any liability for damages. HWe/0,5T/sc/0417



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