PROPERTIES OF PLASTIC MATERIALS

INFORMATION

Combustibility test for plastics according to UL SUBJECT 94

UL 94 V-0
Test: The test samples are extinguished within 50 seconds average time (mean of 10 successive tests).
None of the test samples burns longer than 10 seconds. None of the test samples emits burning particles.

UL 94 V-1
Test: The test samples are extinguished within 250 seconds average time (mean of 10 successive tests).
None of the test samples burns longer than 30 seconds. None of the test samples emits burning particles.

UL 94 V-2
Test: Same test as UL 94 V–1, but the test samples emit burning particles during the test.

The test samples mentioned above are extinguished in all cases.
If the test samples keep burning after 30 seconds, a horizontal test can be carried out to reach the classification UL 94 HB.

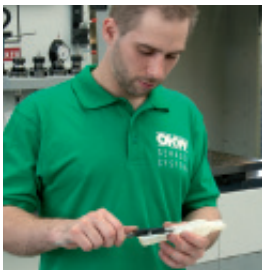
Environment

In the development of plastic enclosures and tuning knobs, the designers follow the "**Ecodesign Directive 2005/32/EC**". The high quality standards, the use of homogeneous materials for easy recycling, timeless design and the long service life of the products also contribute towards sustainability.

Special material "individual colours"

To adapt the products to your corporate design, we can also produce a large number of enclosures and tuning knobs in your own colours. For the colour you require, we can have the required natural material coloured and extruded in top reproduction quality. Individual adjustment of colour is possible according to a sample, range of dyes, RAL, Pantone or NCS.

Plastics parts tolerances



Dimensional and form deviations occur in the production of injection-moulded plastic parts. The maximum permissible deviations from the nominal dimensions are listed in DIN 16742 TG6.

Up-to-date material data sheets are also available on our website www.okw.com.

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	THERMOPLASTICS					DUROPLAST
Material groups	Styrene-Polymerisate		Polycarbonate	Polyamide PA		Phenolharz
Abbreviation & Attribute	ABS	ASA	PC	PA 6x	PA 6x reinforced	PF
Application for the following product groups	AC, BLOB, COM, CT, DC, DIA, DK, DMB, DPB, DT, EG, ERC, FG, IFT, IB, KKS, Kombi-PG, MED, MG, MIT, MOT, PG 138/190/220, RB, SEC, SG, SM, SNA, SOC, TT, UMB, UNT, accessory KKS	BODY, STC	CLK (knob body), RB, DT (cover), IB, RT B (lid, top parts), RT C, SK (illuminated parts), dial	MG, Cable glands	Handle bar, TK & CK (only knob), SK (knob + assembly kit), strain relief (A9199005, A9166004)	DK, MG
Properties for choice of material	Good resistance against medium temperature combined with good impact strength (only certain types) and antistatic adjustment. On the whole, good resistance against chemicals. UV-light may have a negative effect.	Similar properties to ABS, but more scratch-resistant and with greater colour stability. Very good resistance to ageing and weathering caused by light (UV), especially in dark colours.	Thermoplastic with high temperature stability with excellent resistance to all kinds of temperature. On the whole, good resistance against chemicals and UV-light.	Thermoplastic with high temperature stability, extremely solid and tenacious. Good sliding properties and high capacity of resistance to wear. Contact with humidity may result in a change of properties.		High thermal and chemical resistance. Insoluble and non-fusible when cured, recyclable and reusable thanks to modern processes.
Recommended use	Cases and operating elements of all kinds. Suitable for use in enclosed rooms, also at low temperatures.	Enclosures of all kinds. Particularly suitable for outdoor applications.	Recommended for enclosures in enclosed rooms and out of doors. Not recommended for use with strong alkalis or for direct exposure to sunlight.	Ideally suited for technical parts with complex geometry, e.g. outdoor applications and machine building.		For components in chemically resistant environments.
Resistance of material to						
Gasoline	○	○	–	+		
Diesel oil	+	+	○	+		
Sea water	+	+	+	+		
Hydrochlorid acid 10%	○	○	+	–		
Weak alkaline solutions	+	+	–	–		
Strong alkaline solutions	+	○	–	–		
Atmospheric influences	○	+	+	+		
Lactic acid	+	+	+	○		
Acetone	–	–	–	+		

	THERMOPLASTICS						DUROPLAST
Material groups	PMMA plexiglass®	Modified Polyether PPE (PPO)		Blends		Elastomer TPE	Phenolharz
Abbreviation & Attribute	PMMA	PPE+PS	PPE+PS reinforced	PC+ABS flame-resistant V-0	ASA+PC flame-resistant V-0	SEBS/SEPS	PF
Application for the following product groups	DPB, MIT, SM, SOC, STC	NEG TYPE A	RT B (base parts)	HT SOB STG + AC (live parts)	CMC, COC, CT, DAC, EVO, EST, MDB, NB, PRO, SB, SLC, SMC, SMP, SMT, SYN	MIT & SOC (intermediate rings), DMB & DC (protectors), SLC (intermediate rings), CLK (outer shell)	DK, MG
Properties for choice of material	Good mechanical properties, more brittle than ABS. Visually attractive. Light transmission up to 92 % for some types.	Extremely good mechanical, thermal and electrical properties. Good ageing stability and weathering resistance. High chemical resistance.		Good stability in case of high temperature combined with enormous impact strength as well as toughness at subzero temperature. On the whole, good resistance against chemicals. UV-light may have a negative effect.	Good stability in case of high temperature combined with enormous impact strength. On the whole, good resistance against chemicals. High weathering resistance.	Weather-resistant with good chemical properties. Depending on their Shore hardness, thermoplastic elastomers can have other properties.	High thermal and chemical resistance. Insoluble and non-fusible when cured, recyclable and reusable thanks to modern processes.
Recommended use	Enclosures and enclosure parts with full light transmission or for the infrared sector.	Components and enclosures for control panel or wall installation.		Ideally suited for indoor use with moderate corrosive conditions. Limited outdoor suitability.	Recommended for enclosures in enclosed rooms and out of doors.	Ideal for protecting the enclosures and their environments. Gives hand-held enclosures a pleasant touch sensation.	For components in chemically resistant environments.
Resistance of material to							
Gasoline	+	–		–		–	+
Diesel oil	+	–		○		–	+
Sea water	+	+		+		+	+
Hydrochlorid acid 10%	+	+		+		+	+
Weak alkaline solutions	+	+		–		+	+
Strong alkaline solutions	○	+		–		○	○
Atmospheric influences	○	○		+		+	+
Lactic acid	+	+		+		+	+
Acetone	–	–		–		–	○

Up-to-date material data sheets are also available in the Internet www.okw.com

The plastic properties are exclusively applicable for the specified standard test pieces. Variations may occur as far as cases and technical parts are concerned.
This does not exempt you from carrying out your own tests. The application, utilisation and subsequent processing are beyond our control and the responsibility for this therefore rests solely with you.

Description to resistances of materials

Values at room temperature:
+ = constant
○ = conditionally constant
– = inconstant

Simultaneous exposure to different media may alter the resitive properties of a material! To be safe, it is advisable to test the cases for sufficient resistance of the material under the conditions of the specific application.

Material abbreviation

ASA	Acrylnitrile-Styrene-Acrylester
ABS	Acrylnitrile-Butadiene-Styrene
PA	Polyamide
PC	Polycarbonate
PF	Phenol-Formaldehyde Resin
PMMA	Polymethylmethacrylate
PPE	Polyphenylene-Ether
PPE+PS	Polyphenylene-Ether-Polystyrene-Blend
PPO	Polyphenylene-Oxide
SAN	Styrene-Acrylnitrile-Copolymeride
SEBS	Styrene /ethylene butene / block copolymerisate
SEPS	Styrene /ethylene propylene/block copolymerisate
SB	Styrol-Butadiene
TPE	Thermoplastic Elastomer

Product groups abbreviation (catalogue page)

AC	ART-CASE
BLOB	BLOB
BODY	BODY-CASE
CK	COM-KNOBS
CLK	CONTROL-KNOBS
CMC	COMMUNITEC
COC	CONNECT
COM	COMTEC
CT	CARRYTEC
DAC	DATEC-COMPACT
DC	DATEC-CONTROL
DIA	DIATEC
DK	TUNING KNOBS
DMB	DATEC-MOBIL-BOX
DPB	DATEC-POCKET-BOX
DT	DATEC-TERMINAL
EG	EURO CASE
ERC	ERGO-CASE
EST	EASYTEC
EVO	EVOTEC
FG	FLAT-PACK CASE
HT	HAND-TERMINAL
IB	IN-BOX
IFT	INTERFACE-TERMINAL
KKS	COMBINATION KNOBS
Kombi-PG	COMBI DESK CASE
MDB	MINI-DATA-BOX
MED	MEDITEC
MG	POTTING BOX
MIT	MINITEC
MOT	MOTEC
NB	NET-BOX
NEG A	DIN-MODULAR CASE TYPE A
PG	DESK CASE
PRO	PROTEC
RB	ROBUST-BOX
RT B	RAILTEC B
RT C	RAILTEC C
SB	SMART-BOX
SEC	SENSO-CASE
SG	SHELL-TYPE CASES
SLC	SLIM-CASE
SK	STAR-KNOBS
SM	SMART-CASE
SMC	SMART-CONTROL
SMT	SMART-TERMINAL (with extruded Al profile)
SMP	SMART-PANEL
SNA	SNAPTEC
SOB	SOLID-BOX
SOC	SOFT-CASE
STG	PLUG CASE
STC	STYLE-CASE
SYN	SYNERGY (with extruded aluminium profile)
TK	TOP-KNOBS
TT	TOPTEC
UMB	HAND-HELD-BOX
UNT	UNITEC