

# 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.

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THERMOPLASTICS					
Material groups	Styrene-Polymerisate		Polycarbonate	Polyamide PA	
Abbreviation & Attribute	ABS	ASA	PC	PA 6x	PA 6x reinforced
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	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)
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.	
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.	
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](http://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 resistive 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

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

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THERMOPLASTICS				DUROPLAST		
PMMA plexiglass®	Modified Polyether PPE (PPO)		Blends		Elastomer	Phenolharz
PMMA	PPE+PS	PPE+PS reinforced	PC+ABS flame-resistant V-0	ASA+PC flame-resistant V-0	TPE SEBS/SEPS	PF
DPB, MIT, SM, SOC, STC	NEG TYPE A	RT B (base parts)	HT STG + AC (live parts)	CT, COC, DAC, EVO, EST, NB, PRO, SB, SLC, SMC, SMP, SMT, SYN	MIT & SOC (intermediate rings), DMB & DC (protectors), SLC (intermediate rings)	DK, MG
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.
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.
+		—		—	—	+
+		—		○	—	+
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○		○		+	+	+
+		+		+	+	+
—		—		—	—	○

## Product groups abbreviation (catalogue page)

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