Datasheet

GP/FG Series

THERMOLAST® K

The GP/FG Series is your material solution for a variety of different applications.It is particularly appropriate for passenger compartments. The compounds are available in natural and black colors.

Typical applications

- Car mats
- Function and design elements
- Handles (tools, toolboxes, skipoles)
- Seals
- Soft touch surface (thumb wheels, push buttons, switches)

Material advantages

- Adhesion to PP
- Easy coloring (compounds in natural colors)
- Excellent mechanical properties
- Excellent processing behavior
- Fulfills specifications for automotive interior
- Pleasant surface feel (Soft touch)
- UL 94 HB listed

Processing Method: Extrusion, Injection Molding

	Color / RAL DESIGN	Hardness DIN ISO 7619 ShoreA	Hardness DIN ISO 7619	Density DIN EN ISO 1183-1 g/cm3	Tensile Strength [1] DIN 53504/ISO 37 MPa	Elongation at Break [1] DIN 53504/ISO 37 %	Tear Resistance ISO 34-1 Methode B (b)(Graves) N/mm	CS 72 h/23 °C DIN ISO 815-1 Method A	CS 24 h/70 °C DIN ISO 815-1 Method A	CS 24 h/100 °C DIN ISO 815-1 Method A
TC2GPN	natural	21		1.100	3.0	650	6.0	-	-	-
TC2GPZ	black	23		1.100	3.0	650	9.0	10	22	57
TC3GPN	natural	28		1.100	5.0	750	14.0	10	26	66
TC3GPZ	black	29		1.100	4.0	750	9.0	10	23	55
TC4GPN	natural	39		1.100	6.5	800	14.0	12	23	59
TC4GPZ	black	38		1.100	5.0	750	11.0	10	32	62
TC5GPN	natural	49		1.100	7.5	800	14.0	16	27	53
TC5GPZ	black	49		1.100	6.5	750	14.0	16	34	66
TC6GPN	natural	59		1.100	8.5	750	16.0	18	30	57

This datasheet is an extract of the KRAIBURG TPE program. Please contact KRAIBURG TPE to select the compound suitable for the requirements.

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TC6GPZ	black	59		1.100	8.0	750	16.0	21	34	68
TC7GPN	natural	68		1.100	9.5	700	20.0	25	37	61
TC7GPZ	black	68		1.100	9.0	700	20.0	25	40	66
TC8GPN	natural	79		1.100	11.5	700	27.0	31	43	60
TC8GPZ	black	80		1.100	11.0	700	26.0	32	49	70
TC9GPN	natural	89		1.100	14.5	650	37.0	45	64	84
TC9GPZ	black	89		1.100	13.0	650	39.0	40	57	72
TC0GPN	natural		32	1.100	15.0	650	41.0	46	72	85
TC0GPZ	black		33	1.100	14.5	650	45.0	41	60	70

[1] Deviating from ISO 37 standard test piece S2 is tested with a traverse speed of 200 mm/min.

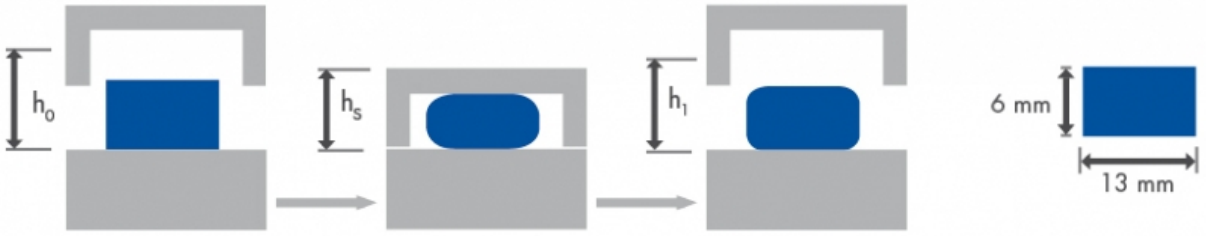
Odour test acc. VW PV 3900 (VW 50180) @ 40 °C (2) level 3.0 / @ 80° C (3) level 3.

All values published in this data sheet are rounded average values.
Specification limits are based on three-fold standard deviation from the average value.

Compression Set

Compression Set (acc. DIN ISO 815)

For the compression set testing the following specimen is used:
The specimen is a cylindrical disk shaped 6 mm thick and 13 mm in diameter.



h_0 = initial thickness of the test piece (in mm)
h_1 = thickness after recovery (in mm)
h_S = height of the specimen (in mm)

$$\text{Compression Set} = \frac{h_0 - h_1}{h_0 - h_s} \times 100$$

The specimen is compressed by 25%. The compressed specimen is heated to the test temperature. DIN ISO 815 discribes two methods.

Method A: The specimen is allowed to recover immediately after its aging in the oven and then cooled down to room temperature. After 30 minutes the thickness of the specimen is measured and the compression set calculated.

Method B: The specimen is cooled down to room temperature after its aging in the oven and then allowed to recover.

Test results gained from method B are in general higher than from method A.

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Processing Guideline Injection Molding	
Cylinder temperature	180 - 200 - 220 °C, max. 250 °C (360 - 390 - 430 °F, max. 480 °F)
Hotrunner	Hot runner temperatures: 200 -250 °C (390 - 480 °F). The runner should be empty after a maximum of 2 - 3 shots.
Injection pressure	200 - 1000 bar (2900 - 14504 psi) (depending on the size and weight of the part).
Injection rate	In general, the fill time should not be more than 1–2 seconds.
Hold pressure	We recommend to derive the optimum hold pressure from determining the solidification point, starting with 40 % - 60 % of the required injection pressure.
Back pressure	20 - 100 bar; if colour batches are used, higher back pressure is necessary.
Screw retraction	If an open nozzle is used processing with screw retraction is advisable.
Mold temperature	25 - 40 °C (77 - 104 °F)
Pre drying	Pre drying of the material is not necessary; if surface moisture forms as a result of changes in temperature, the material should be dried for 2 - 4 hours at 60 - 80 °C (140° F).
Needle valve	With materials < 50 Shore A the use of a needle valve is advisable.
Screw geometry	Standard 3-zone polyolefine screw.
Residence time	The residence time is to be set as short as possible with a maximum of 10 minutes.
Cleaning recommendation	For cleaning and purging of the machine it is appropriate to use polypropylene or polyethylene. Machine must be PVC-free.

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Processing Guideline Extrusion	
Cylinder temperature	160 - 180 - 200 °C, max. 250 °C (320 - 360 - 390 °F; max. 480 °F)
Screw geometry	Standard three-zone screw (e.g. polyolefin screw). The screw must be able to provide sufficient shearing.
L/D ratio	At least 25
Compression ratio	At least 3.5 : 1
Screens / breaker plate	A breaker plate and a screen pack are generally recommended in the extruder configuration in order to increase pressure.
Die land	<= 3 mm (<= 0,12 in.)
Extruder Head	Ca. 200 °C (390 °F)
Die temperature	Ca. 200 - 230 °C (390 - 450 °F)
Pre drying	Pre drying of the material is not necessary; if surface moisture forms as a result of changes in temperature, the material should be dried for 2 - 4 hours at 60 - 80 °C (140 - 175 °F).
Calibration	Generally not necessary; support elements may be required when extruding THERMOLAST® compounds with high hardness or when coextruding with standard thermoplastics.
Cleaning recommendation	For cleaning and purging of the machine it is appropriate to use polypropylene or polyethylene. Machine must be PVC-free.