KRAIBURG TPE

Datasheet

FR2 Series

THERMOLAST® K

The FR2 Series is your material solution for applications requiring high flame retardance at low wall thicknesses. The compounds come with UL94 V0 rating at 1.5mm, are halogen free, and are available in natural and black colors.

Typical applications

- Cable clips
- Cable holders
- Fastenings
- Grommets
- Profiles for furniture
- Seals for in-wall outlets
- Seals for plugs
- Seals for switch boxes
- Seals for windows and doors

Material advantages

- Adhesion to PP
- For injection molding and extrusion
- Fulfills flame retardant requirements R22/23 HL3 (DIN EN 45545 Railway Applications)
- Halogen free flame retardant system
- Self-extinguishing, no dripping of flaming particles
- UL 94-V0 (1.5mm) listed

Processing Method: Extrusion, Injection Molding

	Color / RAL DESIGN	**Hardness** DIN ISO 7619-1 ShoreA	**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 %
TC5FTN	natural	50	1.090	3.5	600	13.5	10	60
TC5FTZ	black	50	1.090	3.5	600	13.5	10	60
TC6FTN	natural	60	1.090	4.0	600	16.0	15	60
TC6FTZ	black	60	1.090	4.0	600	16.0	15	60
TC7FTN	natural	68	1.090	4.0	550	16.0	20	60
TC7FTZ	black	68	1.090	4.0	550	16.0	20	60
TC8FTN	natural	80	1.090	6.0	550	23.0	30	70
TC8FTZ	black	80	1.090	6.0	550	23.0	30	70

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

All values published in this data sheet are rounded average values.

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Processing Guideline Injection Molding	
Cylinder temperature	170 - 190 - 210 °C, max. 220 °C (340 - 370 - 410 °F, max. 430 °F)
Hotrunner	Hot runner temperatures: 180 - 220 °C (356 - 428 °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 color 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)
Predrying	To maintain a high level of mechanical properties the resin must be pre-dried. The use of a desiccant dehumidifying dryer is recommended. Drying conditions: 80 °C for 6 hrs; maximum dew point of the inlet air: -25 °C. The maximum residual moisture of the material should not exceed 0,05%.
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. 230 °C (320 - 356 - 392 °F; max. 446 °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 2,7 ... 3,5 : 1
Screens / breaker plate	A breaker plate and a screen pack are recommended in the extruder configuration in order to increase pressure. In minimum two screen packs of 100 mesh are recommended.
Die land	<= 3 mm (<= 0,12 in.)
Extruder Head	Ca. 200 °C (390 °F)
Die temperature	Ca. 180 - 190 °C (374 - 410 °F)
Predrying	Drying of the material for at least 6 hours at 80°C (175°F) is recommended. The moisture level of material has to be below 0.05 %. To avoid porosity in the profile a pre drying is recommended for wall thickness > 3mm.
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.