KRAIBURG TPE

Datasheet

AD/PA/CS Series

THERMOLAST® K

The AD/PA/CS Series is your material solution for applications with excellent adhesion to PA as well as outstanding compression set. The compounds are available in natural and black colors.

Typical applications

- Fastenings
- Grommets
- Membranes
- Seals

Material advantages

- Easy coloring (compounds in natural colors)
- Excellent compression set
- Insert molding possible
- UL 94 HB listed

Processing Method: 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 %	CS 24 h/100 °C DIN ISO 815-1 Method A %	Adhesion to PA 6 [2] VDI 2019 two-component injection molding N/mm	Adhesion to PA[2]6.6 VDI 2019 two-component injection molding N/mm
TC4PCN	natural	37	1.100	2.5	300	9.0	14	31	43	3.5 (D)	3.5 (D)
TC4PCZ	black	35	1.100	2.5	350	8.5	14	35	49	3.5 (D)	3.5 (D)
TC5PCN	natural	47	1.100	4.0	350	11.5	16	32	45	4.5 (D)	4.5 (D)
TC5PCZ	black	45	1.100	4.0	400	12.5	16	36	45	4.5 (D)	4.5 (D)
TC6PCN	natural	57	1.100	5.0	350	16.0	18	34	46	5.5 (D)	5.5 (D)
TC6PCZ	black	57	1.100	5.0	400	17.0	18	37	47	5.5 (D)	6.0 (D)
TC7PCN	natural	67	1.100	7.0	400	16.0	18	35	56	7.0 (D)	7.0 (D)
TC7PCZ	black	66	1.100	7.5	400	19.0	18	38	50	7.0 (D)	7.0 (D)
TC8PCN	natural	77	1.100	8.5	400	24.0	21	39	58	8.0 (D)	8.5 (D)
TC8PCZ	black	75	1.100	9.0	450	25.5	21	41	61	8.0 (D)	8.5 (D)

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

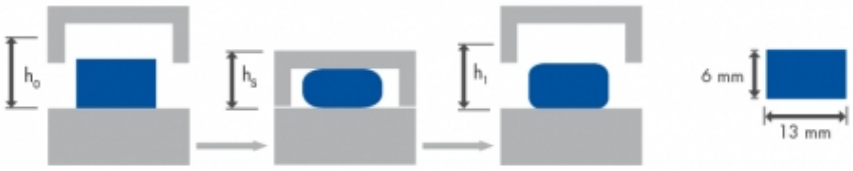
[2] The adhesion quality depends on mold design, product geometry and process parameters.

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

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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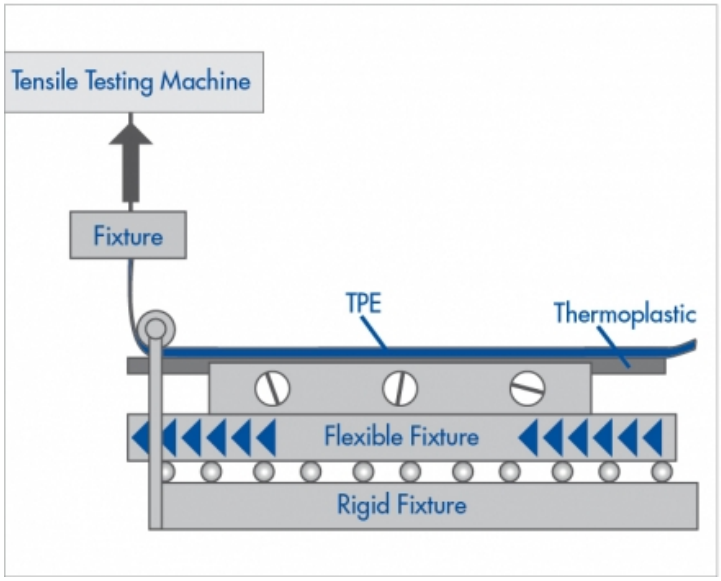
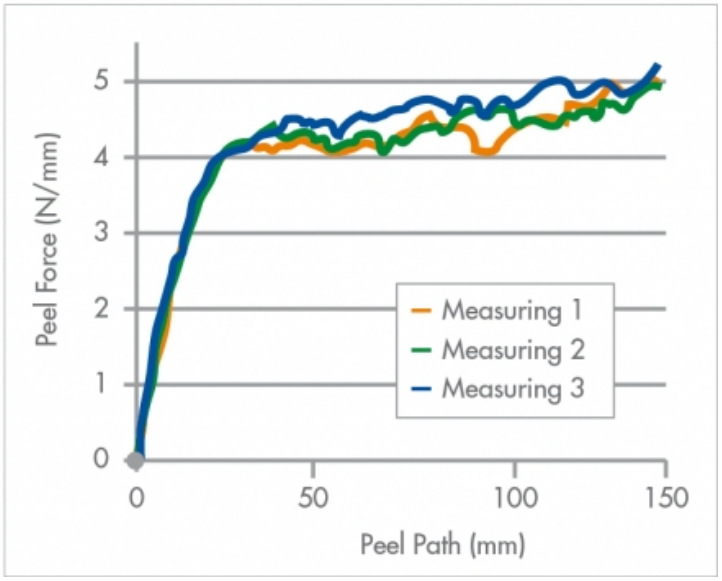
Description peel test

Peel test according to VDI guide line 2019

Test Setup



Example diagram for results of a peel test



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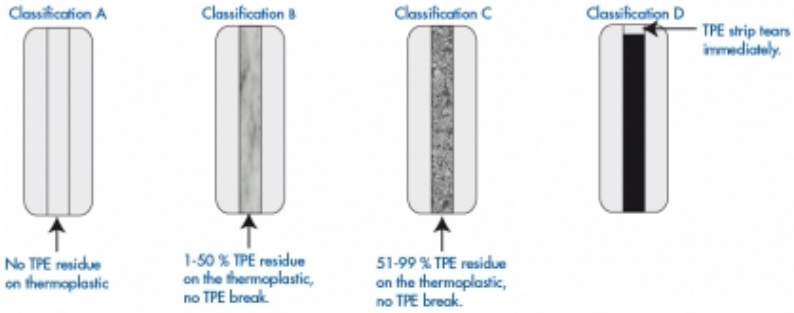
Classification

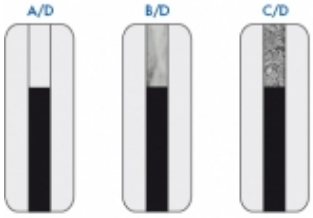
Peel test according to VDI Guideline 2019

For the VDI peel test we add two characters to the peelforce value.
The first character describes the TPE residue on the hard component.



A	No TPE residue on hard component
B	Up to 50 % TPE residue on hard component
C	50 to 99 % TPE residue on hard component
D	TPE strip tears immediately

The second character describes if the TPE strip will tear during the measurement at any position on the peel path.



A/D	No TPE residue on hard component, TPE strip will tear
B/D	Up to 50 % TPE residue on hard component, TPE strip will tear
C/D	50 to 99 % TPE residues on hard component, TPE strip will tear

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Processing Guideline Injection Molding	
Cylinder temperature	PA 6: 230 - 250 - 260 °C , max. 270 °C (450 - 480 - 500 °F, max. 520 °F) PA 6.6: 245 - 260 - 270 °C , max. 280 °C (470 - 500 - 520 °F, max. 540 °F)
Hotrunner	Hot runner temperatures: PA6 max. 270 °C (520 °F); PA6.6 280 °C (540 °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	The mold temperature depends on the hard component. A temperature exceeding 80 °C (175 °F) should be avoided. The common temperature is 40 - 60 °C (105 - 140° F).
Predrying	To achieve optimum mechanical values, drying the material for 2 - 4 hours at 60 - 80 °C (140 - 175 °F) is recommended.
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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