

**VS/AD/HM Series**
**THERMOLAST® K**

The VS/AD/HM Series is your material solution for applications where a velvet surface, excellent adhesion to polar thermoplastics, excellent wear resistance as well as very good chemical resistance in particular against sebum are required.

**Typical applications**

- Automotive Interior
- Cell phone cases
- Cosmetic packaging
- Headphones
- Remote controls
- Soft touch surface (thumb wheels, push buttons, switches)
- Wearables

**Material advantages**

- Chlorine-Bromine test: (Cl+Br) < 900 ppm
- Easy coloring and excellent color-stability
- Easy processing
- Excellent abrasion resistance
- Excellent adhesion to PA6 and PA12
- Excellent adhesion to PC, ABS, PC/ABS, ASA, SAN
- Excellent mechanical properties
- Excellent scratch resistance
- Smooth and silky surface
- UL 94 HB listed
- Very good chemical resistance against sebum and sun screen

**Processing Method:** Injection Molding

	Color / RAL DESIGN	Hardness DIN ISO 7619-1 Shore A	Density DIN EN ISO 1183-1 g/cm <sup>3</sup>	Tear Resistance ISO 34-1 Methode B (b)(Graves) N/mm	Adhesion to PC <sup>1</sup> VDI 2019 two-component injection molding N/mm	Tensile Strength <sup>2</sup> DIN 53504/ISO 37 MPa	Elongation at Break <sup>2</sup> DIN 53504/ISO 37 %
<b>TC6CEN</b>	natural	61	1.150	27.0	6.0 (C)	14.0	600
<b>TC6CEZ</b>	black	62	1.150	27.0	6.0 (C)	14.0	600
<b>TC7CEN</b>	natural	71	1.190	30.0	10.0 (D)	19.0	650
<b>TC7CEZ</b>	black	72	1.190	30.0	10.0 (D)	19.0	650
<b>TC8CEN</b>	natural	80	1.200	35.0	9.0 (C)	18.0	580
<b>TC8CEZ</b>	black	80	1.200	35.0	9.0 (C)	18.0	580

<sup>1</sup> The adhesion quality depends on mold design, product geometry and process parameters.

<sup>2</sup> Deviating from ISO 37 standard test piece S2 is tested with a traverse speed of 200 mm/min. Specimens were tempered for 20 hrs at 100°C (212°F).



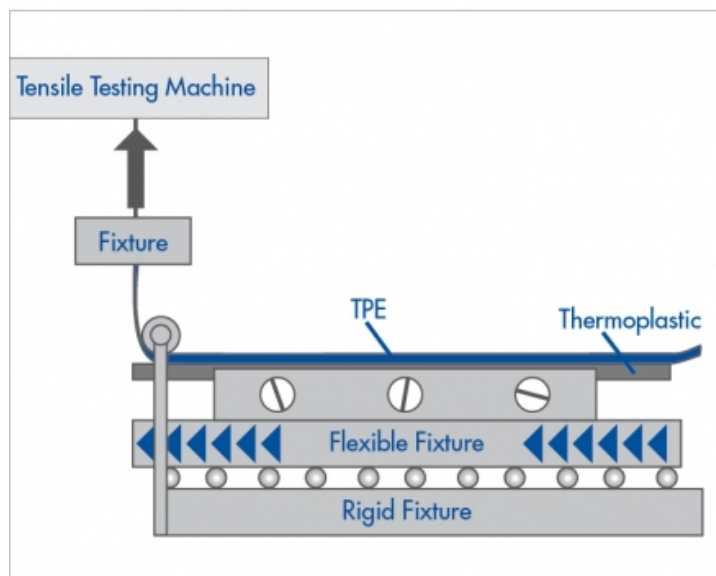
TC6CEN passed tests for irritation and skin sensitization according to ISO 10993-10

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

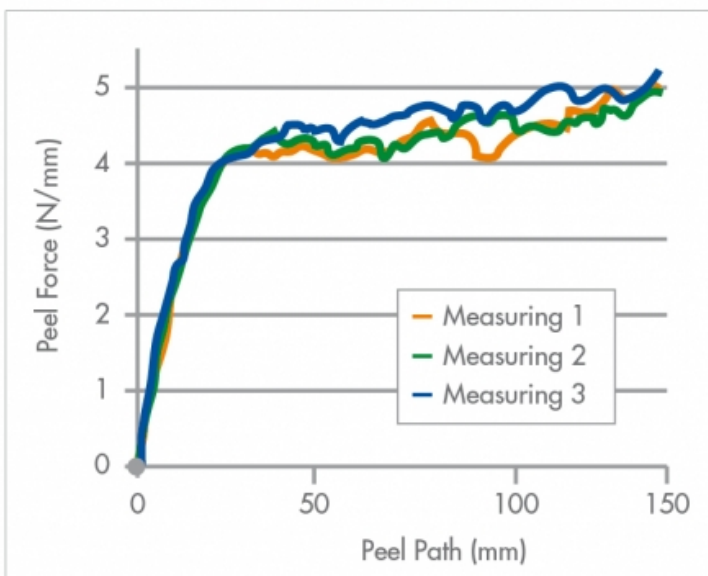
## Description peel test

# Peel test according to VDI guide line 2019

## Test Setup



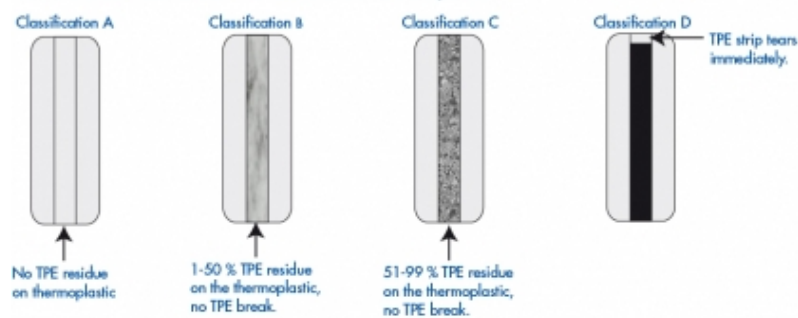
## Example diagram for results of a peel test



## Classification

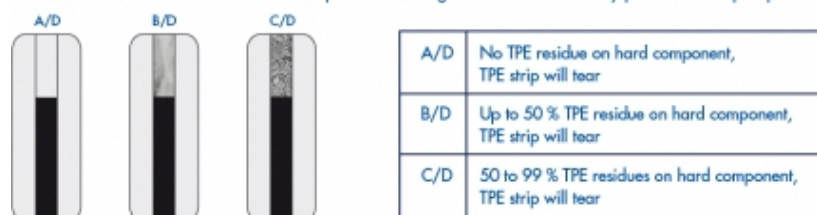
### Peel test according to VDI Guideline 2019

For the VDI peel test we add two characters to the peel force 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.



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**Processing Guideline Injection Molding**

Cylinder temperature	180 - 190 - 200 °C, max. 220 °C (360 - 370 - 390 °F, max. 425 °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	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 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 2-6 hrs; maximum dew point of the inlet air: -25 °C. The maximum residual moisture of the material should not exceed 0,02%.
Needle valve	The use of a needle valve nozzle 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.

