

TPE-Materials from
KRAIBURG TPE –
New Possibilities in
Food Contact Applications



KRAIBURG Holding – History Dating back to 1947 . . .



KRAIBURG Holding

Employees:
2381 worldwide

Sales in 2017:
€ 545 Mio.

Established:
1947



Technical rubber compounds



Thermoplastic Elastomers (TPE)



Tire retreading



ERGOLASTEC® workplace mats



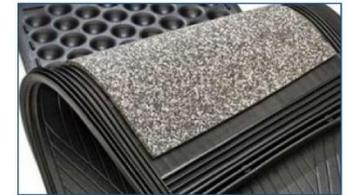
Insulation systems



Products for rail systems



Rollers and roll coverings



Stable flooring



BELMONDO® Rubber flooring
for horses



Polyurethane products



EPDM floor coverings



Composite Applications

Global Presence of KRAIBURG TPE



In addition KRAIBURG TPE is also represented by distribution partners in numerous countries.

Core Competences – Our Commitments



Customer Orientation

Personal contacts, understanding individual requirements, responding quickly and delivering in-time to develop successful working relationships.



Customization & Innovation

New ideas and engineered solutions tailor-made for customer's requirements.



International Network

Production locations and sales offices in Europe, North & South America and Asia with high and certified quality standards. Effective coordination for the benefit of multinational customers.



Specialization & Know-How

Competent customer support by expert teams for different markets as well as focused product ranges.

Product Lines

Multi-purpose TPE

THERMOLAST® K

THERMOLAST® K are our multi-purpose TPE Compounds with specialized series well-established in various applications in the Automotive, Consumer & Industry Markets.
You can choose from our product portfolio or individual custom engineered solutions.



Adhesion



Touch



Drinking Water



Compression Set



Flame retardant



Coloring



Food contact



Requirement: Purity

THERMOLAST® M – TPE for the medical and pharmaceutical industry providing a high standard of safety with medical approvals like ISO 10993-4, -5, -10, -11 and USP class VI.

THERMOLAST® M



Requirement: Surface feel & resistance

COPEC® - TPE with sebum resistance and silky surface for consumer electronic applications.

COPEC®

For Tec E® - TPE with excellent processability and adhesion to semiaromatic Polyamides, Polyarylamides and Polyamides for consumer electronic applications.

For Tec E®



Requirement: Performance

THERMOLAST® V - TPE with excellent longterm performance at high temperatures for sealing applications in the automotive industry.

THERMOLAST® V

THERMOLAST® A – TPE with excellent UV-resistance and adhesion to engineering thermoplastics for outdoor applications in the automotive and construction industry.

THERMOLAST® A

HIPEX® - TPE with longterm oil-resistance and thermal stability up to 150 °C for engine and gearbox applications.

HIPEX®

Automotive

- Material approvals by OEM standards
- Excellent weathering resistance
- Adhesion technology, superior haptic, low fogging, excellent processing
- Temperature and chemical resistance
- Optimized Compression Set

Sales Proportion Automotive: 46%



Industry

- Adhesion technology
- Material approved according to flame retardancy, UL 94, glow wire, RAL-GZ 716/1, CSTB and the DW approvals
- Improved Compression Set
- Optimized for extrusion processing

Sales Proportion Industry: 24%



Medical

- Medical approved series
ISO 10993-4, ISO 10993-5,
ISO 10993-10, ISO 10993-11,
USP class VI
- Sterilizability
- Exceptional resealing properties

Sales Proportion Medical: 2%



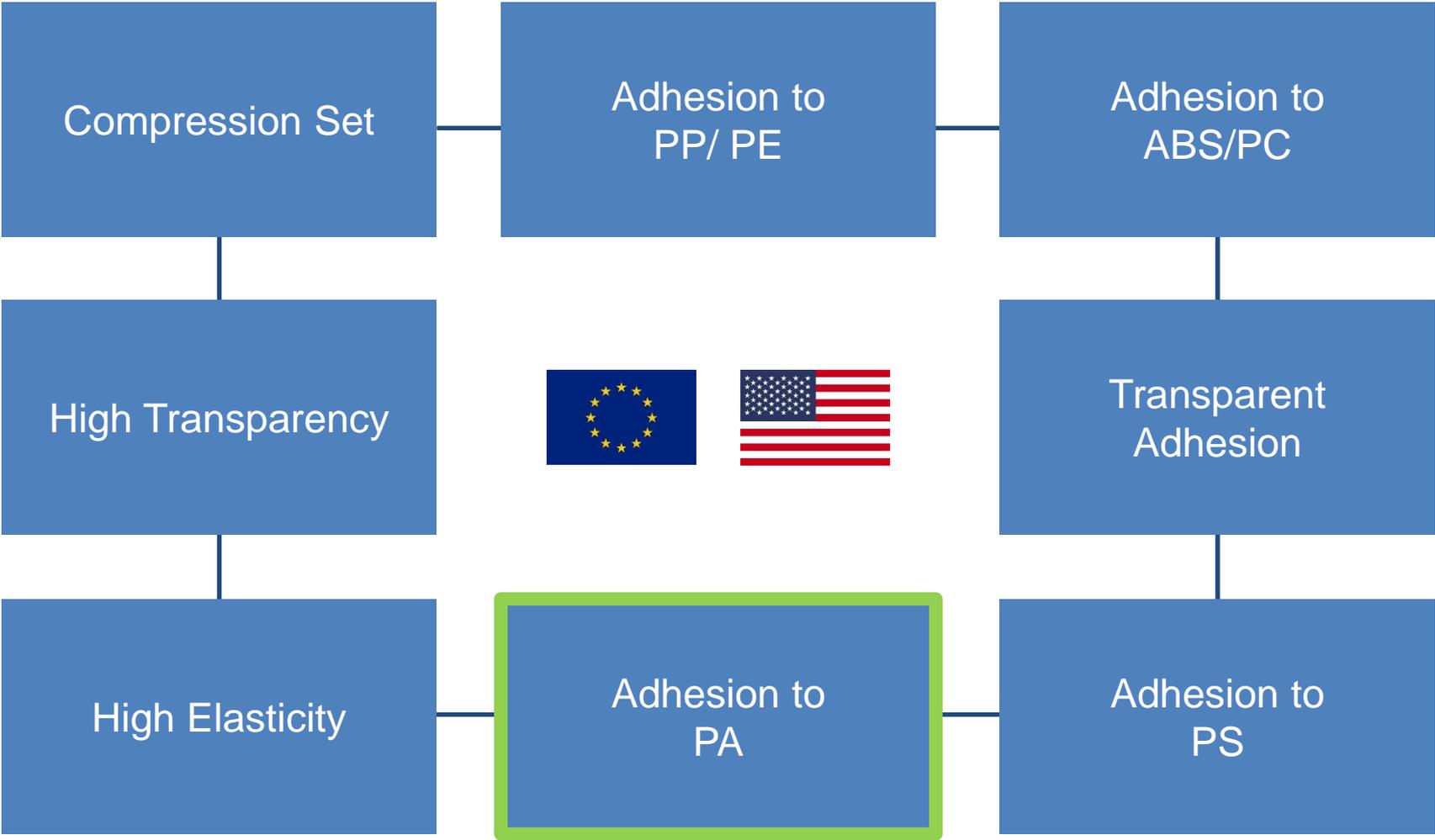
Consumer

- Compounds with food approval according (EU) No. 10/2011 and FDA
- High transparent materials
- Customized haptic
- Wide hardness range

Sales Proportion Consumer: 28%



KRAIBURG TPE Food Contact Portfolio



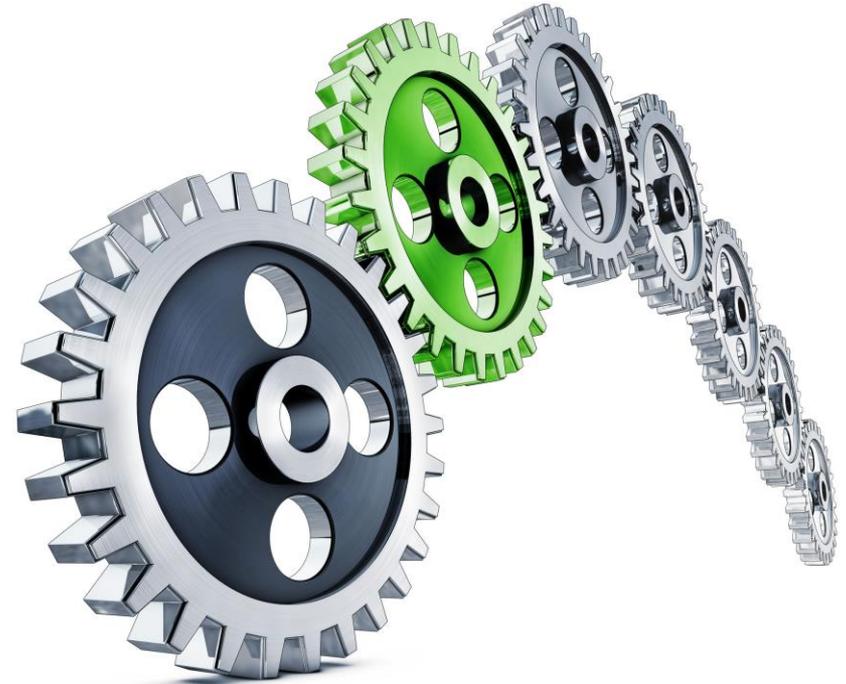
New Material Series FC/AD/PA



- Hardness range: 40 - 80 Sh A
- Excellent adhesion to polyamides
- Good mechanical properties
- Translucent to opaque materials
- Food conformity: Regulation (EU) No 10/2011
- Low density → Reduced part weight
- Fully recyclable material

New Material Series FC/AD/PA

- Mechanical properties
 - Tensile strength up to 14 MPa
 - Elongation up to 750%
 - Tear resistance up to 25 N/mm
 - Low compression set



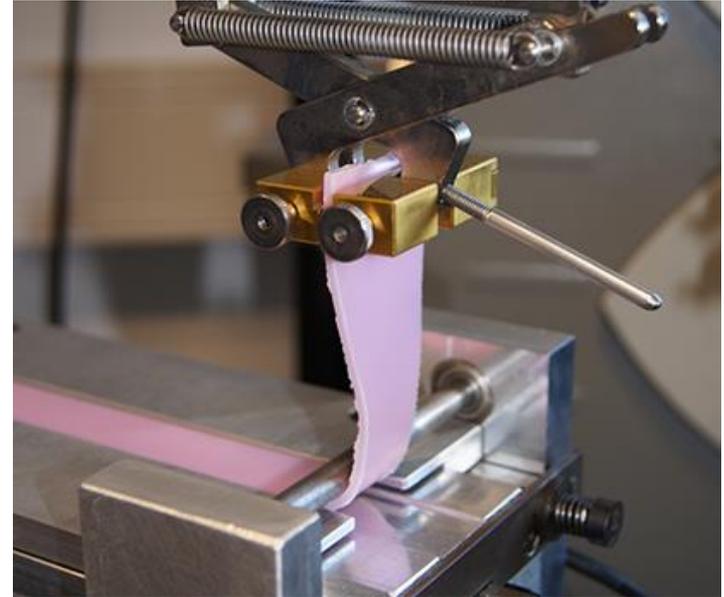
➔ Suitable to applications with high demands on mechanics

FC/AD/PA Series Property Overview

	TF4PAT	TF5PAT	TF6PAT	TF7PAT	TF8PAT
Hardness [Sh A]	40	53	63	73	83
Density [g / cm ³]	0.91	0.92	0.92	0.92	0.93
Tensile strength [MPa]	8	9	12	13	14
Elongation at break [%]	700	750	750	700	750
Tear resistance [N / mm]	10	12	15	20	25
Compression set 23°C / 72h [%]	16	20	24	29	40
70°C / 24h [%]	28	34	39	44	56
100°C / 24h [%]	54	55	59	60	71

New Material Series FC/AD/PA

- Two-component injection molding
 - ... to PA6
 - ... to PA66
 - ... to PA12
- ➔ High performance of adhesion
- ➔ Broad range of substrates
- ➔ Allows new design possibilities



FC/AD/PA Series

Two-Component Injection Molding

Adhesion to ...	40 Sh A	50 Sh A	60 Sh A	70 Sh A	80 Sh A
... PA 6 [N/mm]	4 (D)	5 (D)	6 (D)	8 (D)	10 (D)
... PA 6.6 [N/mm]	4 (D)	--	6 (D)	--	10 (D)
... PA 12 [N/mm]	4 (D)	--	6 (D)	--	10 (D)

- Fracture Pattern „D“ indicates perfect adhesion to substrate
- Materials internal strength is limiting factor

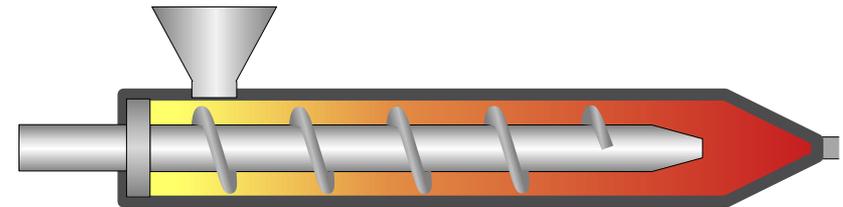
New Material Series FC/AD/PA

- Processing
 - Low mold pressures
 - Smooth filling of cavity
 - Perfect mapping of tool surface
 - Uniform surface appearance
 - Easy to color
- ➔ Economical processing
- ➔ Wide processing window



New Material Series FC/AD/PA

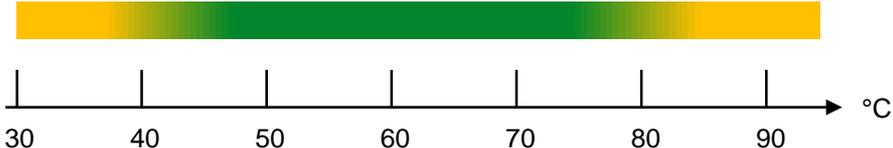
- High back pressure
- Medium injection speed
- Holding pressure ~ 75% of injection pressure
- Pre-drying to <0.2% residual moisture
- Keep residence time as short as possible (<10 min)
- Max. temperature: 250°C



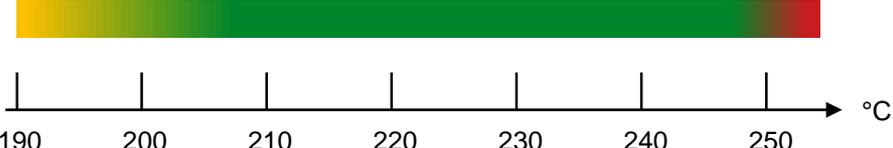
Temperature (°C)					
Zone	1	2	3	4	5
Target	40-70	180	200	210	220

Processing of FC/AD/PA Compounds – Processing Temperatures

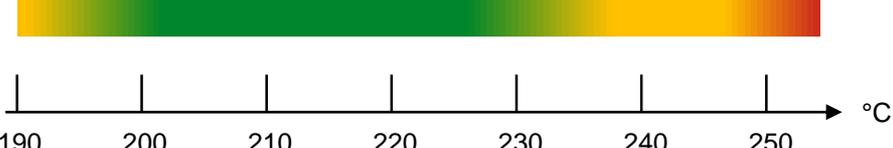
Barrel
1st
Zone



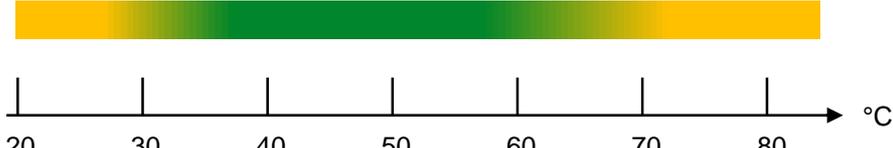
Barrel
5th
Zone



Hot
Runner



Mold



Application Example

Product:

Interdental Brush



Our Advantage:

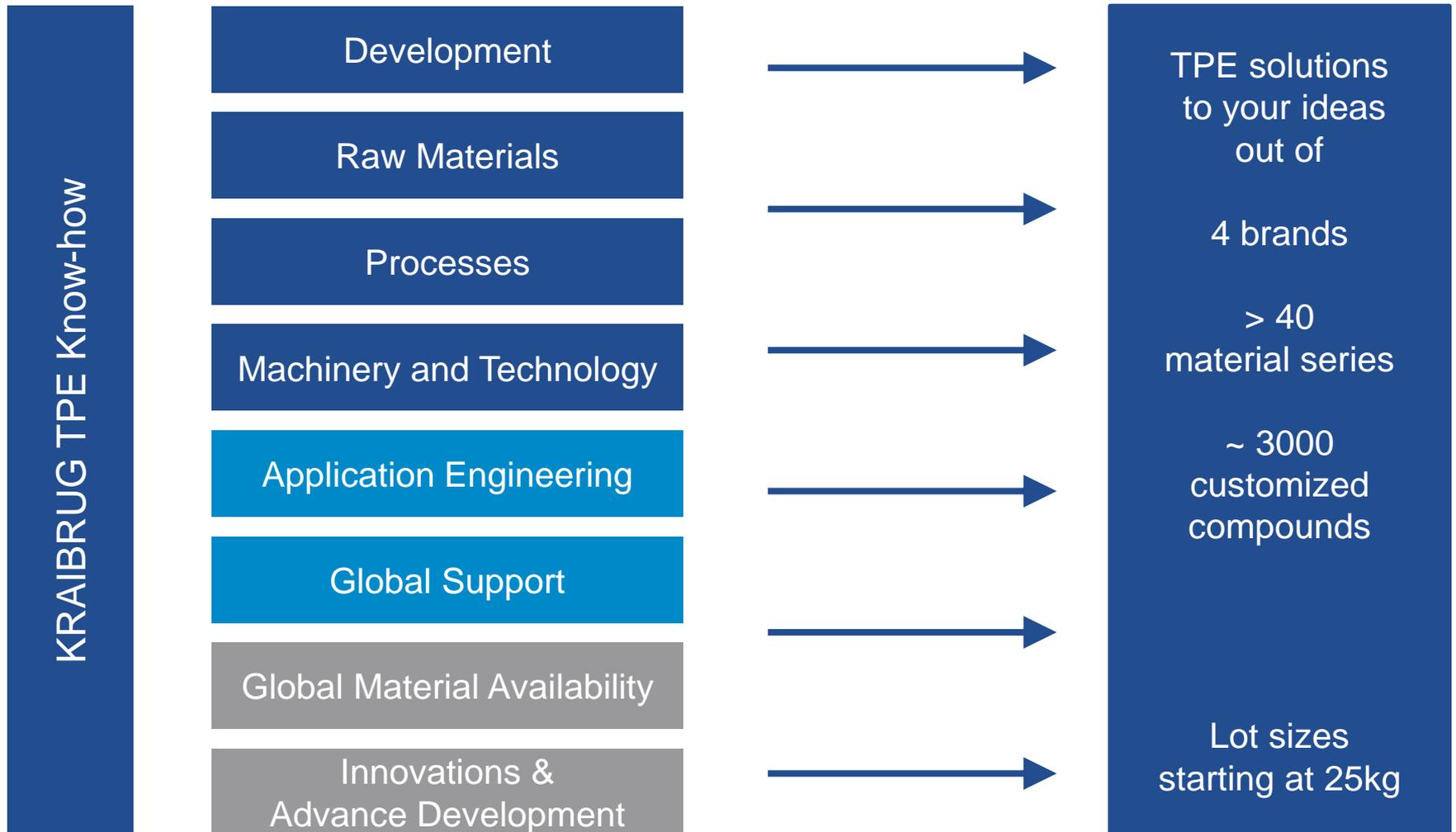
Adhesion to PA6

Series FC/AD/PA

Key Requirements

- ✓ Two-component injection molding on PA6
- ✓ Conformity to Regulation (EU) No. 10/2011
- ✓ High tear resistance
- ✓ Coloration possibilities

What's about KRAIBURG TPE?



KRAIBURG TPE Products and Brands

KRAIBURG TPE Products and Brands

THERMOLAST® A
THERMOLAST® K
THERMOLAST® M
THERMOLAST® V

COPEC®

For Tec E®

HIPEX®

Disclaimer

The information provided in this document correspond to our knowledge on the subject at the date of ist publication and may be subject to revision as new knowledge and data become available. All values reported are typical values based on sample test resultsand are not a guarantee of performance. The responsibility to conduct testing to determine suitability of use for the particular process or end-use application remains with the customer. KRAIBURG TPE does not warrant or assume any liability with regards to the use of the information presented in this document.

This document is valid until: December 2018

For more information please visit: www.kraiburg-tpe.com

