

Softell replaces engineering plastics for Audi exterior application

Mark Nowag
Business Development Manager VW Group
New Business Development / APS Europe
Basell Deutschland GmbH

Matthias Kiehner
Kostenmanagement, Wertanalyse Auf- / Unterbau,
Ausstattung, Elektrik / Elektronik
AUDI AG / I/BK-2 / Ingolstadt

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Evolution = development in all areas

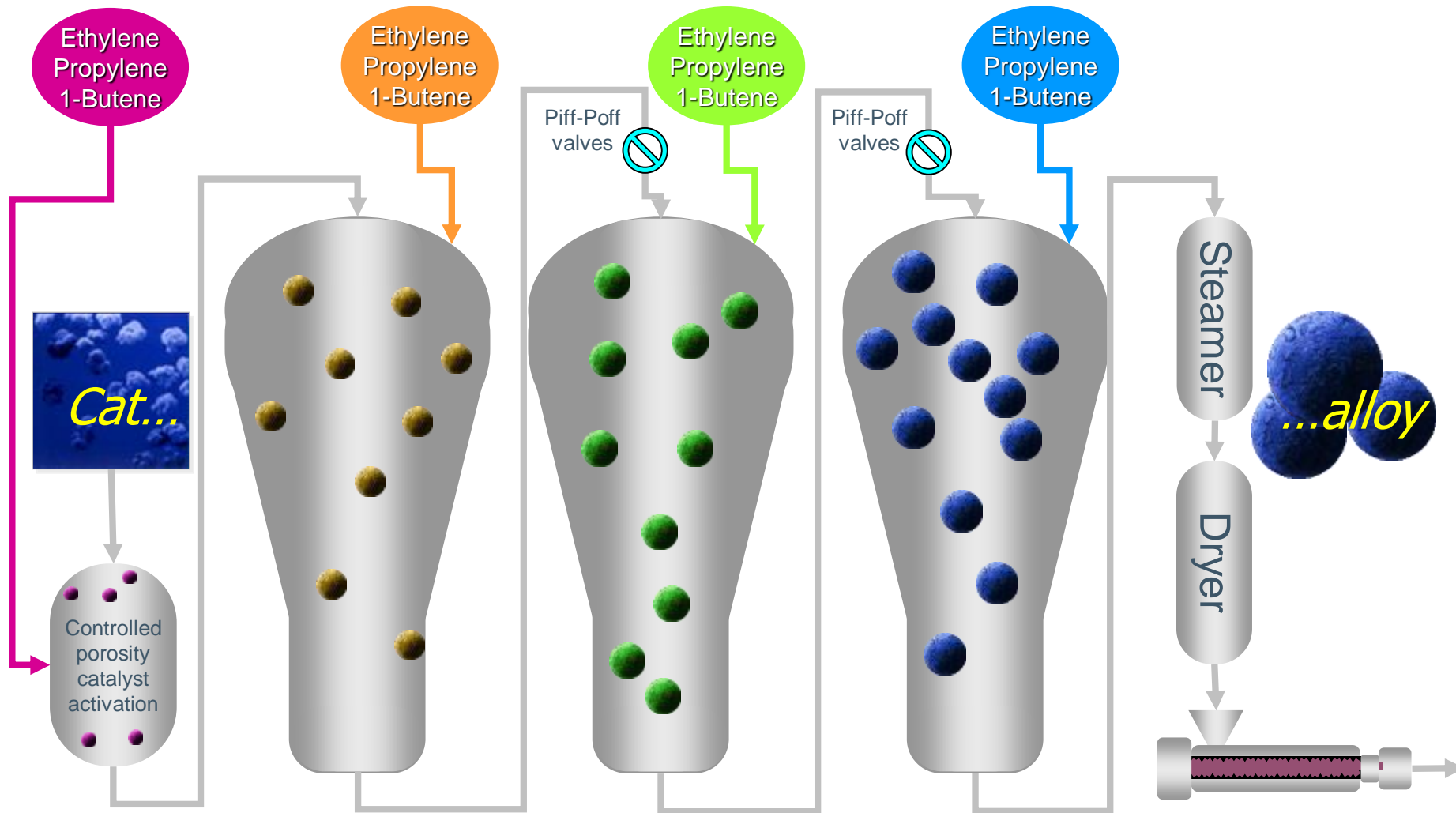


Evolution sometimes causes problems

Identification of cost drivers and potentials



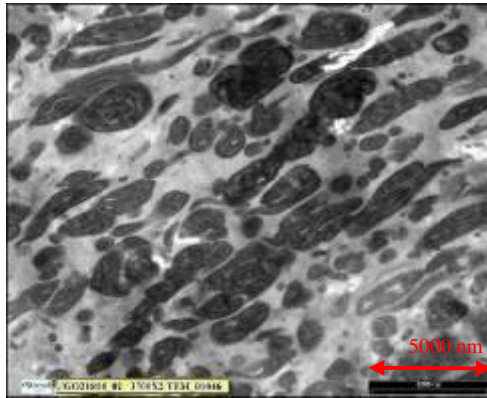
Cataloy Process Technology



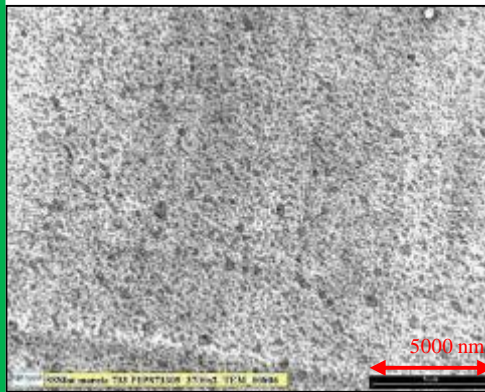
Softell Maximizing Value for Customers

Differences between classical PP Compounds

Classical PP Compound
compounded blend of
PP and impact modifier



Softell is a PP EPR
*With fine dispersed
rubber*



Soft touch

Matt surface

Scratch resistance

Mechanical property's

...and more

Softell: Some examples on serial production



Source:www.bmw.de



Source:www.bmw.de



Source:www.mercedes-benz.de



Source:www.mercedes-benz.de



Source:www.a2mac1.com



Source:www.audi.de



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Source:www.volkswagen.de



Source:www.a2mac1.com



Source:www.volkswagen.de



Source:www.toyota.de



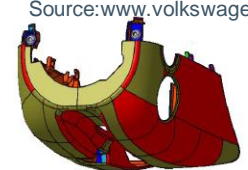
Source:www.toyota.de



Source:www.opel.de



Source:www.audi.de



Material Development: Requirements for A1 Grill



Source:www.ompg.de



Source:dorisdembosky.blog



Source:www.salzburg-fibel.at



Source:www.wn.de



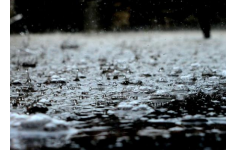
Material Development of *Softell* TKG 2148P

Technical Data Sheet
Softell TKG 2039N C12546

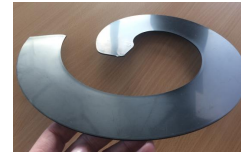
Polypropylene Compounds



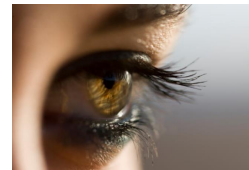
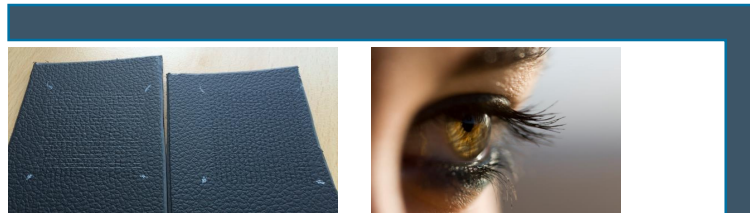
Source:dorisdembosky.blog



Source:www.salzburg-fibel.at



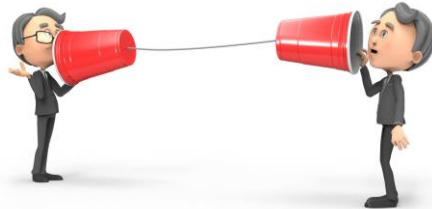
lyondellbasell
Advancing Possible



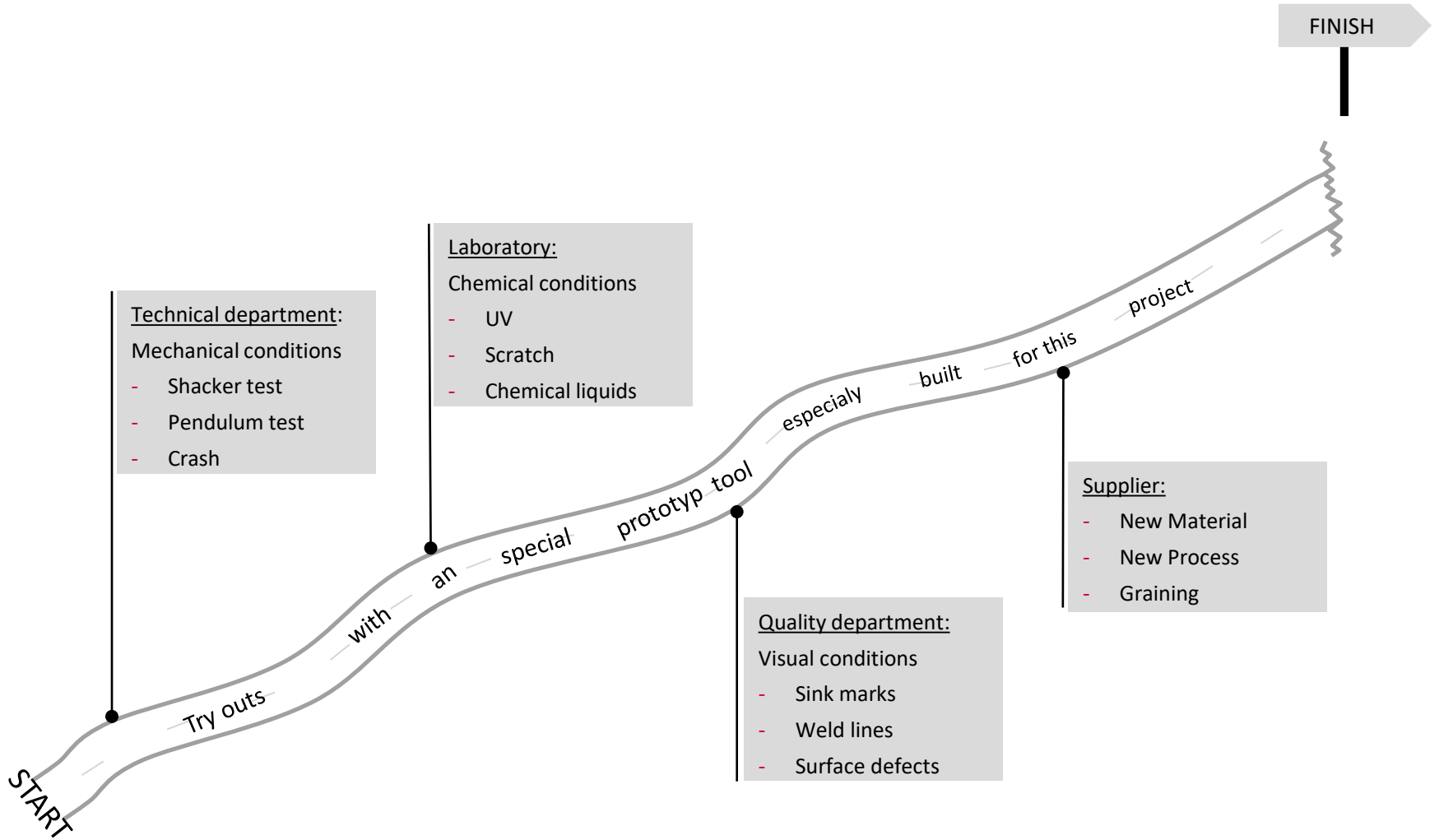
Technical Data Sheet
EXP 5823/02
Polypropylene Compounds



Technical Data Sheet
Softell TKG 2148P C12958
Polypropylene Compounds



A long way to have a release for a new type of plastic



LyondellBasell supports Customers through CAE simulation process

Material data specifically measured for CAE methods

Data for injection molding simulations

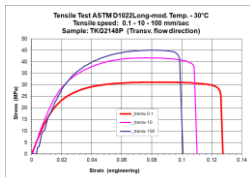
- .udb for Moldflow (w/ or w/o CRIMS)
- Raw data for Cadmould, Moldex3D

Data for structural FEA simulations

- Static and strain rate dependent tensile, incl. optical strain measure
- Flexural creep
- CLTE
- All data measured on specimens cut from plaques along different directions with respect to flow
- All data measured at application specific temperatures



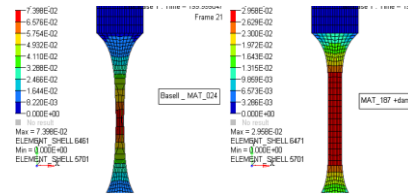
Source: LyondellBasell



New methodology development and validation

Examples:

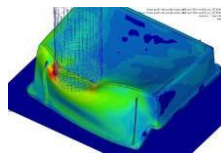
- Advanced material laws for polymers



Source: LyondellBasell

Traditional approach: Wrong transverse strain
Advanced laws: Correct transverse strain

- Anisotropic material laws, importing results from moldfilling into structural simulation, validated on parts

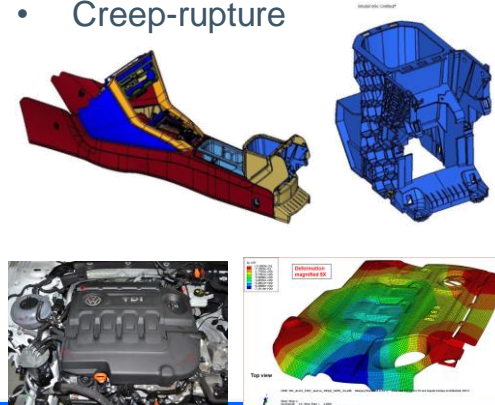


Source: LyondellBasell



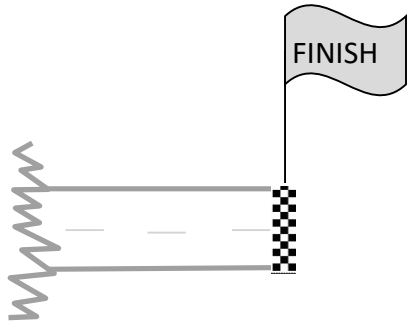
CAE simulations for part and mould design

- Mold filling, packing, cooling, warpage
- Stiffness, strength
- Vibration
- Impact, crash
- Creep deformation
- Creep-rupture



Full set of CAE data is available for *Softell TKG 2148P*, incl. CRIMS and high speed tensile

A long way to have a release for a new type of plastic



- **Technical department** ✓
- **Laboratory** ✓
- **Quality department** ✓
- **Supplier** ✓

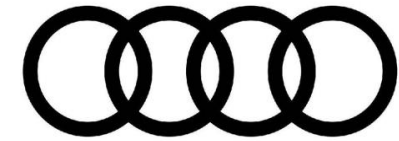


release for a brand new exterior material

Softell TKG 2148P C12958

Polypropylene Compounds

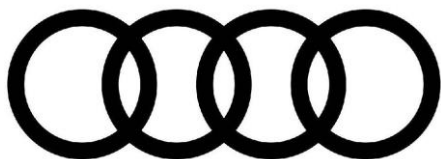
Result of a great job between AUDI AG and LyondellBasell



Front Grill
of new AUDI A1 Sportback
Start of production in 2018
without painting in Softell



What comes next? Next applications with *Softell* TKG 2148P



Source: .www.audi.de



Source: .www.audi.de

Next Q2 PA grill



Source: www.topspeed.com

New A3 base line grill

What comes next? Softell-GF20 for Exterior trims

What about Exterior trim parts, like door claddings ?



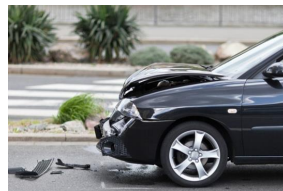
Source:dorisdembosky.blog



	Softell TKG 2148P
Talc /Glass(%)	20% GF
Density (g/cm³)	1,06
Flex. Mod.(MPa, @ 23 °C)	2650
Tensile Stress at Yieldt, (MPa, ISO 527-1 @ 23 °C)	32
Charpy notched impact 23°C (kJ/m²)	32
Charpy notched impact -30 °C (kJ/m²)	9



Source:www.salzburg-fibel.at



Source:www.wn.de



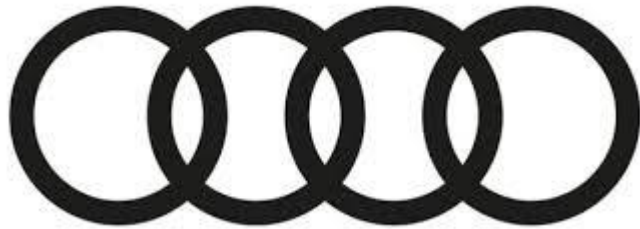
Source:wikipedia



Source:www.proweightless.de



Source:www.sto.at



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Thank you for your attention!

Mark Nowag
Business Development Manager VW Group
New Business Development / APS Europe
Basell Deutschland GmbH

Matthias Kiehner
Kostenmanagement, Wertanalyse Auf- / Unterbau,
Ausstattung, Elektrik / Elektronik
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