13th PAGEV Turkish Plastics Industry Congress

Presentation:
Plastics of the Future

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what is precious to you?
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A GLOBALLY LEADING COMPANY IN SPECIALTY CHEMICALS

6377
Sales 2017 (CHF m) from continuing operations

302
Net result 2017 (CHF m) from continuing operations

974
EBITDA 2017 (CHF m) before exceptionals

15.3 %
EBITDA margin 2017 before exceptionals

4
Business Areas

156 in 52
companies countries

18135
Employees 2017
Four Business Areas

CARE CHEMICALS

CATALYSIS

NATURAL RESOURCES

PLASTICS & COATINGS
BU Additives is a global, diversified solution provider

ADVANCED SURFACE SOLUTIONS
We offer solutions that protect and enhance surfaces in plastics, coatings and inks, adhesives, agro and care.

FLAME RETARDANTS
Our patented halogen-free flame retardants provide environmentally compatible protection and pass demanding fire safety standards.

PERFORMANCE ADDITIVES
Our performance additives solutions prevent oxidation, dissipate electric charge accumulation and improve heat, light and weather resistance.

~ 800 Employees
7 Production sites
3 Application Development Centers
3 Research Centers
What is going on in the Plastic World
What’s going on in the Plastic World

- 2017 - steady but unspectacular growth in the plastic industry
  - Italian imports increase >23 % of plastics processing machinery the first half of 2018
- Plastics processing is arguably one of the largest industry/employer in most countries/regions. Food Production is the largest area of economic activity
- The industry has done a poor job of extolling its contribution and as a consequence is under increasing attack on environmental grounds (Lobbying)
- The debate regarding the circular economy will increase in the future, issues of “frictionless living” and “convenience” shaping the discussion and the opportunity
- In the medium term all regions will continue in growth but not all polymers can now anticipate future growth
Circular economy of plastics

- **Design:**
  - Reduce material input, reuse materials make recycling easier, implies:
  - Rationalise polymer types used
  - No multilayer materials or components

- **Limits on “single use plastics” (EU)**
  - By 2021, decision from 24.10.2018

- **Publicity - the emotional debate:**
  - We ingest more than 10,000 pieces of microplastic each year
  - By 2050 there will be more plastic in the sea than fish (by weight)
  - Plastics (packaging) will increasingly be taxed and become a source of government revenue
Ocean waste

– $8 \times 10^6$ [t] of plastic waste into the ocean each year
– Ten rivers take $\sim 90\%$ of the waste in the ocean

– **Waste river top five are:**
  - Yangtze ($1.5 \times 10^6$) [t/a]
  - Indus
  - Yellow
  - Hai he
  - Nile

– As a comparison the River Thames takes $\sim 18$ [t] in the ocean (source: AMI 2018)
Partners in the European Circular Economy

### Key Partners

#### Brand Owners
- Proctor & Gamble
- Unilever
- Ikea
- Henkel

#### Tailers & Traders
- Lidl:
  - Green Cycle GmbH
- Tönsmeier

#### PET bottles
- By 2025, 90% recycling rate and 35% recycled material in new bottles

#### Countries / Economies
- China
Clariant’s Focus on Sustainability
Sustainability is a Key topic in the Plastics Industry

The plastics industry plays a crucial role in meeting the needs of today’s society. It generates welfare & progress by saving energy & other resources through its inherent properties such as lightness and insulation.

Using natural resources more respectfully and sustainably is one of the world’s megatrends.

Customer feedback shows strong demand for renewable raw materials that come with leading performance levels.

Companies increasingly adopt bio-additives and biopolymers to improve their eco-friendliness.

Drivers: more responsible OEMs & consumers, climate change, regulations, corporate sustainable responsibility targets.
Clariant is committed to adjusting our business processes to meet evolving social and environmental needs

### Megatrend
- Global warming & Carbon emissions control
- Sustainable energy use, consumption and production
- Environmental protection and resource scarcity
- Health, safety and working conditions across activities and value chain

### Challenges
- Environment targets 2025, operational eco-efficiency and safe working conditions
- Responsible sourcing and addressing environmental and social performance across the supply chain
- Increased transparency and reporting on activities and impacts
- Safer, more sustainable and innovative solutions for our markets and new business development, e.g.
  - Energy-efficient processes & catalysts
  - Biofuels and light-weighting materials
  - Smart & eco-friendly products, e.g. using plant-based ingredients, reducing environmental impact and ensuring high performance and efficiency
EcoTain® Label – our approach to sustainability

EcoTain® is our flagship label for sustainability excellence products and solutions. It highlights solutions offering outstanding sustainability advantages and add value to customers and the society as a whole.

Each product and solution carrying the EcoTain® label has undergone a systematic, in-depth screening process using 36 criteria spanning all three sustainability dimensions: social, environmental and economic.

Its ambitious benchmark distinguishes products that

- significantly exceed market standards in general,
- have best-in-class performance in one or several criteria, and
- make overall sustainability contributions.

EcoTain® products actively support the sustainability efforts of our customers, without compromising on performance.
A strong foundation for adding value with sustainability

**FACTS AND FIGURES**

**By 2025**
ambitious Environmental Targets

75% of Product Portfolio meet Clariant’s sustainability definition

169 products excelled with the EcoTain® label

80% of product portfolio screened based on 36 sustainability criteria

Committed to **UN Global Compact, Responsible Care®** and member of **Together for Sustainability**

*Sustainability Dialog*
established to enable regular stakeholder dialog

*LTAR* = Lost Time Accident Rate
(the ratio of the number of occupational accidents where at least one day’s work was lost to every 200,000 hours of work).
Benefits for the Customer
EcoTain® creates credible value chain

ECOTAIN®

CREDIBLE AND RELIABLE SYSTEM

Warranty and credible proof points for sustainability claims on the products.

CONTINUOUS IMPROVEMENT

Ensured continuous product improvement and minimization of sustainability product risks.

TRANSPARENCY

Informed purchase decision with regards to sustainability performance of the product.

HOLISTIC AND LIFE-CYCLE VIEW

Easy matching of product sustainability benefits with the sustainability hot spots and needs of the customer.

The EcoTain® label as a clear sign for identifying sustainability excellence products.

Clariant as a reliable and sustainable partner (DJSI and EcoVadis).
Highly effective and sustainable Rice Bran Wax
This is why we are introducing RBW, a renewable non-food-competing solutions based on up-valued rice bran wax.

Clariant converts a by-product of rice oil production into high-performing lubricants and dispersing agents for engineering thermoplastics.
The idea behind of Rice Bran Wax

Our vision is to offer innovative solutions with best-in-class performance, high-level quality and without harmful substances.

We believe in improving technology with the help of renewable resources.

We create value by appreciating the needs of our customers and delivering best service with our long-term expertise, profound technical knowledge and market insights.

We aim for reduced energy consumption during manufacturing process and more efficient production.
Product Conversion: From rice grain to RBW

We **chemically & physically upvalue** crude rice bran wax into our high-performing Rice Bran Waxes to achieve the properties our **Plastics** customers need.
Clariant value proposition is simple: Improved plastics’ surfaces and processing, while more eco-friendly

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<th>CLARIANT OFFERS</th>
<th>YOUR BENEFIT</th>
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<tr>
<td>– Improvement of melt flow, mold release force and pigment / filler dispersion</td>
<td>– High shaping flexibility, low rejection rates, strong mechanical properties, and smooth surfaces</td>
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<td>– High thermal stability, low volatility and migration</td>
<td>– Maximum output &amp; controlled costs</td>
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<td>– Non-fossil wax derived from non-food-competing raw material with long-term availability</td>
<td>– Improvement of your supply chain’s eco-friendliness – Reliable &amp; steady supply</td>
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<td>– Global technical application support</td>
<td>– Winning formulations that support commercial success</td>
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- **HIGH-PERFORMING & MULTIFUNCTIONAL**
- **SMOOTH MANUFACTURING**
- **SUSTAINABLE**
- **CUSTOMER-FOCUSED**
Rice Bran Waxes are valuable for engineering thermoplastics, thermosets and biopolymers

**INTERNAL LUBRICATION**
- e.g. for geometrically complex parts

 RBW is compatible with the polymer matrix (similar polarity) and improves melt’s ease of flow by preventing «internal» friction between the individual particles of the polymer
- **Thermoplastics**: e.g. Polyamide, Polyester, TPU, PC, PC/ABS, PPA
- **Thermosets**: e.g. Epoxy
- **Biopolymers**: e.g. PLA

**EXTERNAL LUBRICATION**
- e.g. for smooth surface properties (i.e. gloss)

 RBW as an «external» lubricating film between the polymer and the hot metallic surfaces of the processing machine; prevents the polymer melt from adhering to the machine parts and reduces the demolding force
- **Thermoplastics**: e.g. Polyamide, Polyester, TPU, PC, PC/ABS, PPA
- **Thermosets**: e.g. Epoxy
- **Biopolymers**: e.g. PLA

**DISPERSION**
- e.g. for better optical & mechanical properties (i.e. color)

 Pigments and fillers are partially wetted by RBW which improves their compatibility with the polymer. Uniform dispersion leads to optimal color yield or strong mechanical properties
- **Thermoplastics**: e.g. Polyamide, Polyester
- **Biopolymers**: e.g. PLA
Disclaimer

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Thank you!