Reaching out for renewable chemicals

July 2017

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Global RD&I Director
AkzoNobel Specialty Chemicals
Safe Harbor Statement

This presentation contains statements which address such key issues as AkzoNobel’s growth strategy, future financial results, market positions, product development, products in the pipeline, and product approvals. Such statements should be carefully considered, and it should be understood that many factors could cause forecasted and actual results to differ from these statements. These factors include, but are not limited to, price fluctuations, currency fluctuations, developments in raw material and personnel costs, pensions, physical and environmental risks, legal issues, and legislative, fiscal, and other regulatory measures. Stated competitive positions are based on management estimates supported by information provided by specialized external agencies. For a more comprehensive discussion of the risk factors affecting our business please see our latest Annual Report, a copy of which can be found on the company’s corporate website www.akzonobel.com.
The world of AkzoNobel

AkzoNobel
Leading global paints and coatings company and a major producer of specialty chemicals

€14.9 billion revenue
80+ countries
45,600 employees
# 1 Dow Jones Sustainability World Index for 4 years; Top 10 for 11 years

Specialty Chemicals
Essential ingredients for paper, plastics, detergents, construction, agriculture, pharmaceuticals

€4.8 billion revenue
80+ sites
9,000 employees
9% improvement CO2(e) per ton of sales since 2012 – cradle to grave

All figures are based on year-end 2016
We believe that breakthrough solutions require collaboration across the value chain, and we continue to forge resilient partnerships through a model of open innovation.
### 25 technology-market combinations

<table>
<thead>
<tr>
<th>Base chemicals</th>
<th>Inter-mediates</th>
<th>Performance/functional chemicals</th>
<th>‘End’-products</th>
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</thead>
<tbody>
<tr>
<td>Alkali pellets</td>
<td>Microspheres</td>
<td>Colloidal silica</td>
<td>HPLC silica packing</td>
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<td>Microspheres</td>
<td>Bleaching chemicals</td>
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<td>Chlorine</td>
<td>HCl</td>
<td>Metal alkyls</td>
<td>Dimethyl ether (DME)</td>
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<td>Industrial Salt</td>
<td>MCA</td>
<td>High-purity metal organics</td>
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<td>NaOH</td>
<td>Chloromethanes</td>
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<td>Salt Specialities</td>
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<td>Ethylene oxide</td>
<td>Ethanolamines</td>
<td>Ethylhydroxyl ether cellulose</td>
<td>Chelates and micronutrients</td>
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<td>Carboxymethyl cellulose</td>
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<td>Polysulfides</td>
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<td>Biobased and synthetic polymers</td>
<td>Biobased and synthetic nitrogen derivatives</td>
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Developing bio-based solutions together

Deployment of bio-based chemicals in core markets with partners:
- Leverage market innovation
- Focus on channels & applications
- Work across the supply chain
AkzoNobel N.V.
Specialty Chemicals

Media release

July 26, 2017

AkzoNobel and Itaconix finalize first bio-based polymer application agreement

AkzoNobel’s Specialty Chemicals business has finalized the first application agreement for bio-based polymers to result from its collaboration with specialty polymers company Itaconix.

Announced earlier this year, the joint development agreement involves AkzoNobel’s Performance Additives unit developing applications for Itaconix polymers to be used in the coatings and construction industries.

“We are pleased to be announcing the first in a series of agreements to develop these polymers for commercial use,” said Peter Nieuwenhuizen, RD&I Director for AkzoNobel’s Specialty Chemicals business. “Being able to incorporate polymers made from renewable bio-based raw materials will give a
Open, collaborative approach to innovation

- ICOS III Collaborative Venture Fund
- Technology Program (CBBC, IMPULS, ...)
- Screening-Scouting & Venturing
- Deventer Open Innovation Center
- Imagine Chemistry

Specialty Chemicals innovation programs

Challenges
Imagine Chemistry: Innovating with start-ups

Societal challenges
Increasing demands for:
- Better products
- More value for money
- Lower environmental impacts
- Contribute to employment
- Better lives

Start-up solutions
- Fresh ideas
  - New perspectives
- Passion and energy

AkzoNobel approach
- Collaborate as equals
- Listen & learn
- Offer experience and route to market
A unique approach

Aiming for global business impact
- Real-life business challenges
- Led by the business
- Solutions can be brought to market

Partnership mindset
- Focus on co-creation from the start
- Business-led final event: joint development of ideas
- Joint IP and no claims in advance

Become the preferred go to partner for Startups
- The second edition will kick off after summer and will take place Spring 2018.
7 sustainable challenge areas

Revolutionizing plastics recycling
- University of Denver, US;
- FiliGrade B.V., The Netherlands;
- Cadel Deinking, Spain;

Waste water-free chemical sites
- Drystill, Canada;
- InOpSys, Belgium;
- University of Twente – Enschede, The Netherlands;

Cellulose-based alternatives to synthetics
- PeelPioneers, The Netherlands;
- MISCQ, The Netherlands;
- Renmatix, USA;

Highly Reactive Chemistry and Technology
- ANTECY, The Netherlands;
- University of California Davis, USA

Bio-based and biodegradable surfactants and thickeners
- Logos Technologies, USA;
- The University of Manchester, UK;
- Ecovia Renewables Inc., USA; BioGel(TM)

Bio-based sources of ethylene and ethylene oxides
- Industrial Microbes, USA;
- RISE Research Institutes of Sweden, Sweden;

Sustainable alternatives to our current technologies
- uFraction8, UK;
- T2 Energy, USA;
- University of Graz, Austria;
Results

1000+ registered users on the online platform
200+ submissions from 36 countries
80 submissions met challenge criteria
20 start-ups invited to Deventer
> 2 Mln social media impressions

“Hand’s down, this is the best innovation event I have seen”
The awards: a true partnership

Prizes
- **Joint Development Agreements and Research Agreements**
- Chemical support – 2 prizes
- DOIC vouchers – 2 prizes
- Partner awards
  - Lux Research, KPMG, ICOS

Jury members
- AkzoNobel: Thierry Vanlancker, CEO
- Itaconix: John Shaw
- Lux Research: Mike Holman
- ICOS Investment Fund: Peter van Gelderen
- KPMG: Arjan de Draaijer
- AkzoNobel: Peter Nieuwenhuizen
Joint Development Agreement winners
AkzoNobel Specialty Chemicals is looking for sustainable solutions for our 25 constituent businesses.

We focus on collaborative, open innovation.

The Imagine Chemistry Startup Challenge is a key part of this approach.

We are open for business! Watch us at ImagineChemistry.com in January 2018.