CONGRESSO

PLASTIX ECO

LA FILIERA DELLE MATERIE PLASTICHE IN UN MONDO PIÙ SOSTENIBILE

22 | 11 | 2021

Volvo Congress Center | Bologna

CONGRESSO DELLE MATERIE PLASTICHE XXVI EDIZIONE

Plastix

gruppo tecniche nuove

MECSPE TECNOLOGIE PER L'INNOVAZIONE - INDUSTRIE 4.0

tmp ASSOCIAZIONE ITALIANA TECNICI MATERIE PLASTICHE

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Durethan Scope Blue – A new generation of sustainable high performance materials

Fabio Passeri, LANXESS High Performance Materials

PLASTIC INDUSTRY IN A MORE SUSTAINABLE WORLD - November 22nd, 2021

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There are two faces of sustainability …

LANXESS
Energizing Chemistry

Circular Economy

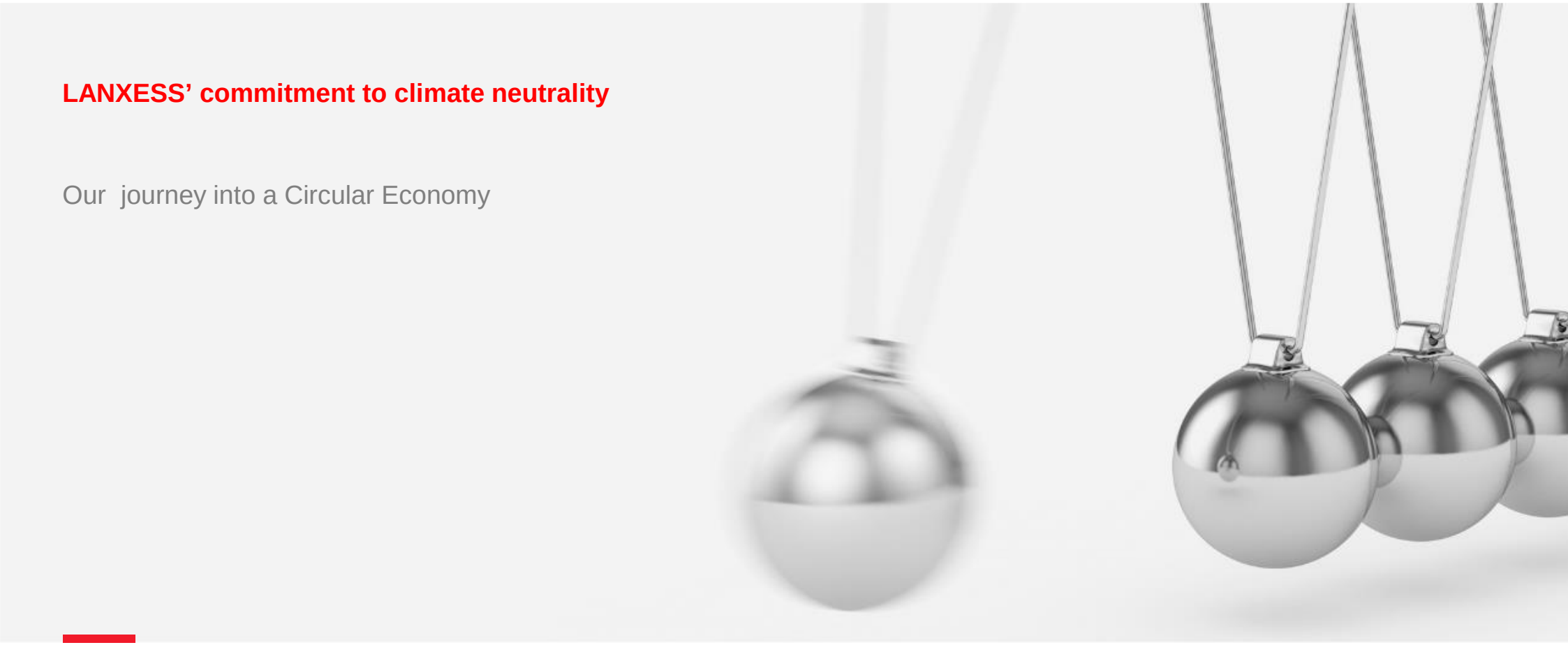
Climate Impact

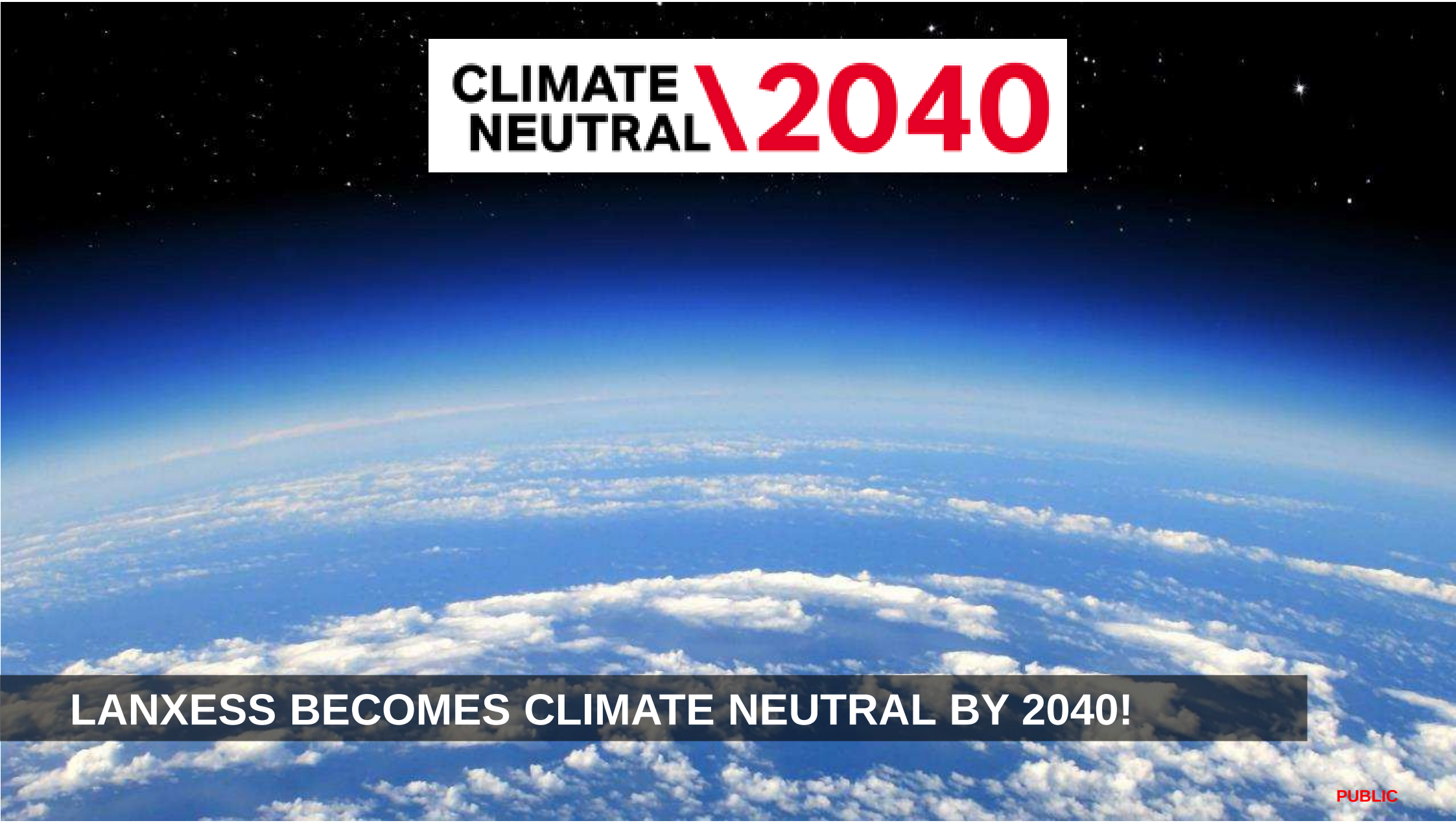
… 1. climate protection and 2. waste reduction!

Agenda

LANXESS' commitment to climate neutrality

Our journey into a Circular Economy




CLIMATE NEUTRAL \2040
LANXESS BECOMES CLIMATE NEUTRAL BY 2040!

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Awards in ratings and indices reflect high sustainability standards

LANXESS
Energizing Chemistry

Commitment and entitlement

THE GLOBAL GOALS
For Sustainable Development

THE GLOBAL COMPACT
WE SUPPORT

Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY

ISO

Awards in ratings and indices

MEMBER OF
Dow Jones Sustainability Indices
In Collaboration with RobecoSAM

Member DJSI World and Europe

TOGETHER FOR SUSTAINABILITY

EcoVadis Gold Recognition Level.

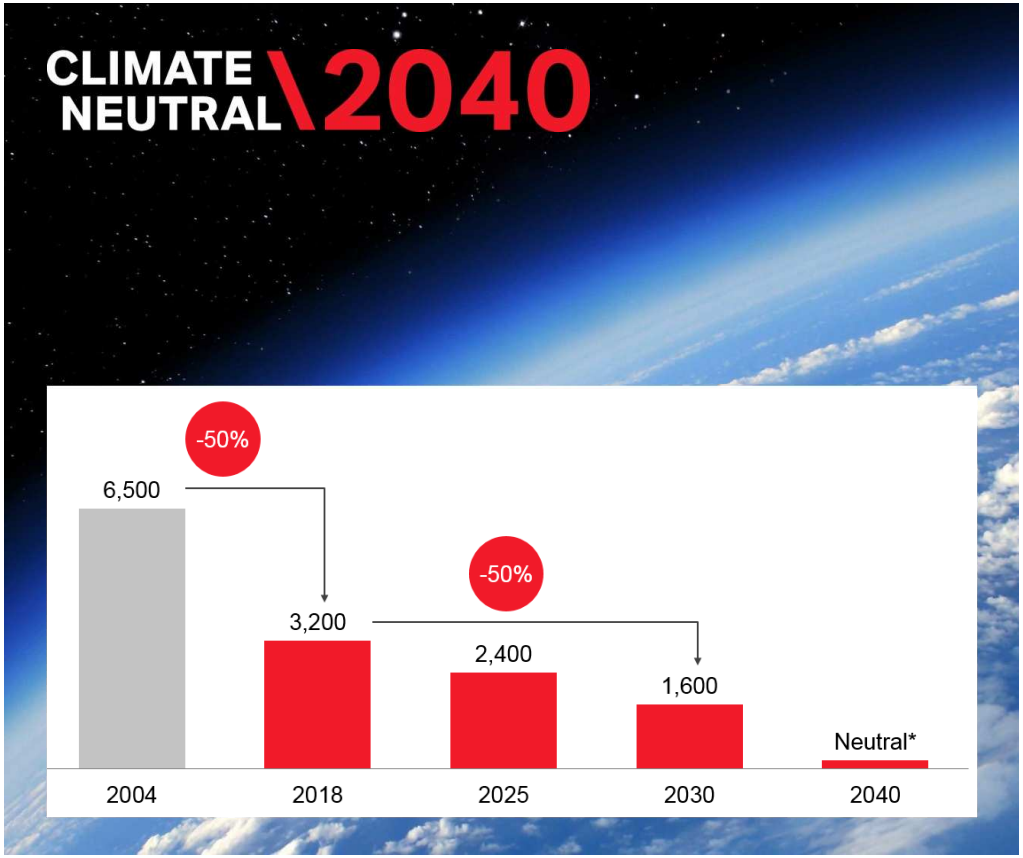
CDP
DISCLOSURE INSIGHT ACTION

Climate score A-

FTSE4Good

Index Member

Our goal: Climate neutral by 2040



Major achievements on our journey

- **Actions 2004 - 2018**
  - Nitrious oxide reduction plant in Krefeld-Uerdingen, Germany
  - Co-generation plant in Porto Feliz, Brazil powered by Biogas
  - Steam network in Antwerp, Belgium
  - Portfolio optimization
- **Actions 2019 - 2025**
  - Nitrous oxide reduction in Antwerp phase 1
  - Nitrous oxide reduction in Antwerp phase 2
  - Switch to renewable energies in India
- **The LANXESS three-pillar strategy**
  - Major impact projects (Antwerp, India)
  - Decouple emissions and growth
    - CO_2e footprint as a criterion for growth and acquisitions
    - CO_2e as management compensation criterion
  - Technological innovations

Our customers benefit from an efficient value chain combined with high-end engineering

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Raw materials

- Cyclohexane
- Sulfur
- Ammonia

HPM intermediates

- Caprolactam*
- Polyamide
- Polybutylene terephthalate

- Glass fibers

Engineering plastics/ advanced composites

Durethan®

Polyamide (PA)-based engineering plastics

Pocan®

Polybutylene terephthalate (PBT)-based engineering plastics

Tepex®

Continuous fiber-reinforced thermoplastic composites

Engineering know-how

HiAnt®

Excellent product and application development

Engineering know-how for all stages of advanced component development – integral to added value compounds business

Top quality and high security of supply combined with technical expertise

* Caprolactam is the starting material for the polymerization of polyamide 6

With our new plants in Antwerp we aim to reduce 450.000 t CO_2e per year!

- In Antwerp, production of caprolactam for high-performance plastics in lightweight automotive construction
- Production of caprolactam generates laughing gas (~300 times more harmful to the climate than CO_2)
- Clear 2-step reduction plan

1 **Plant significantly reduces emissions:**
150.000 t CO_2e / year less

2 **Second plant planned for 2023**
300.000 t CO_2e / year less

Our climate strategy for Polyamide 6

Scope 1	Double-digit million investment in Antwerp in the abatement of N_2O emissions
Scope 2	Replacement of coal-based energy through renewable energy sources
Scope 3	Sourcing of CO_2 neutral feedstock for the Polyamide 6 value chain

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Sustainable feedstock for more circularity at HPM

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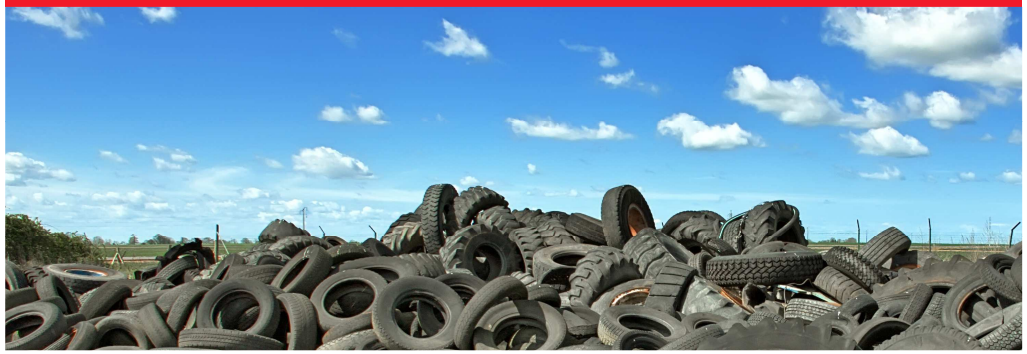
Chemical Recycling of plastic/organic waste into CX*



Post Industrial Recycling of glass fiber waste

Biobased feedstocks, e.g. BDO** by corn fermentation

Post Consumer Recycling of PET

** 1,4- Butanediol as raw material for PBT * Cyclohexane as raw material for PA6

The circular economy challange: Ensure Quality, Availability and Trustability

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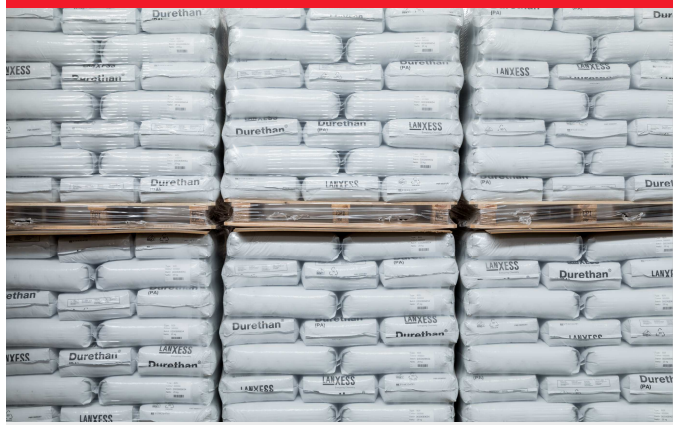
Quality

- Prime quality for drop-in projects
- No unwanted material ad-on due to wider specifications

Availability



- No dependency on limited recycling source
- Ability to deliver high volume projects

Trustability

- Transparency
- Compliance with regulations and standards
- Most established certifications

HPMs circularity approach: Sustainable materials by certified mass balance approach

Mass balance approach according to International Sustainability and Carbon Certification (ISCC)

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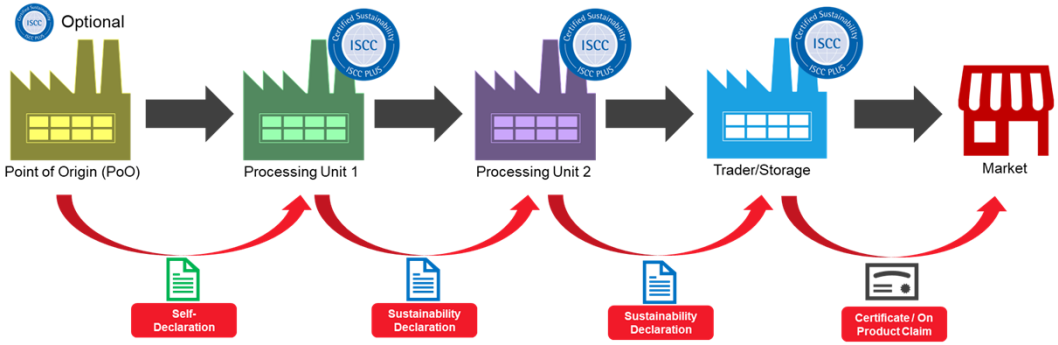
Mass balance

- Increasing circular feedstock
- Processing with existing equipment
- Constant production quality and efficiency

Certification by ISCC

- Multi-stakeholder initiative (incl. NGOs …)
- Traceability of materials along the supply chain
- Emerging standard in chemical industry



Continuously growing Circular Product Portfolio

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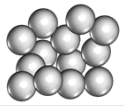
Circular Feedstock


Post industrial glass fiber


Post consumer PET


Post consumer glass balls


Post industrial PA6


Circular Cyclohexane

Circular Products

Durethan ECOBKV… **Durethan ECOAKV…**	▪ Up to 60% recycling content ▪ PA6 and PA66 ▪ Certified by ecoloop and ISCC +
Durethan ECOBKV20FN20	▪ 15% recycling content ▪ Containing flame retardant products
Pocan ECOB…	▪ 30% recycling content ▪ Certified by ecoloop and ISCC +
Pocan ECOT…	▪ Up to 30% recycling content ▪ Glass fiber recycling possible
Durethan BG30X…	▪ Up to 20% recycling content ▪ Containing flame retardant products
Durethan …….	▪ PA6 based on circular cyclohexan ▪ Product launch in preparation

BLUEBKV – what does it stand for?

HPM Premium Product at the top of a threefold sustainable HPM product portfolio

- Having all what is technically feasible today:
- Green feedstock or recycled raw materials like glass fiber and CPL up to 100% mid-term
- Materials and processes are ISCC certified
- Produced via mass balance approach
- With properties identical to prime materials
- And a modular system

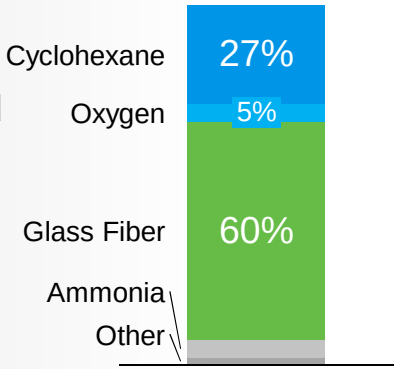
Durethan® BLUEBKV60H2.0EF
A member of Durethan® Scopeblue

First HPM Product: Durethan® BLUEBKV60H2.0EF

92 % based on sustainable feedstock – mass balanced

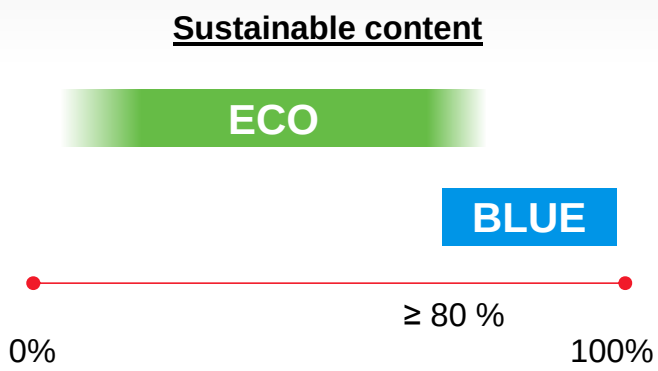
- Bio-based or circular cyclohexane
- Post industrial recycling glass fiber

- Audited and certified by ISCC+ and TÜV Nord



Durethan® BLUE-Products

- TOP-sustainable products
- At least 80 % sustainable raw materials – mass balanced



HPM´s key messages on Circular Economy

- Engineering plastics are valuable materials that can provide important contributions on our path to a carbon-free society.
- Plastics of various kinds constitute valuable resources which need to be re-used after initial usage.
- We envision to combine Circular Economy & Carbon Neutrality to position LANXESS as the supplier of choice for Circular Engineering Plastics.
- Circular Economy may provide opportunities for additional value generation – on the basis of new recycling technologies and new partnerships along the value chain & across industries.

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