

Innovation x Sustainability

ARLANXEO
webinar series



Sustainable Keltan® EPDM ARLANXEO



Ohio Rubber Group Winter Technical Meeting

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- Nomenclature change Keltan® Eco
- Summary sustainable EPDM offering ARLANXEO

ARLANXEO



Sustainability Roadmap

6 strategic building blocks



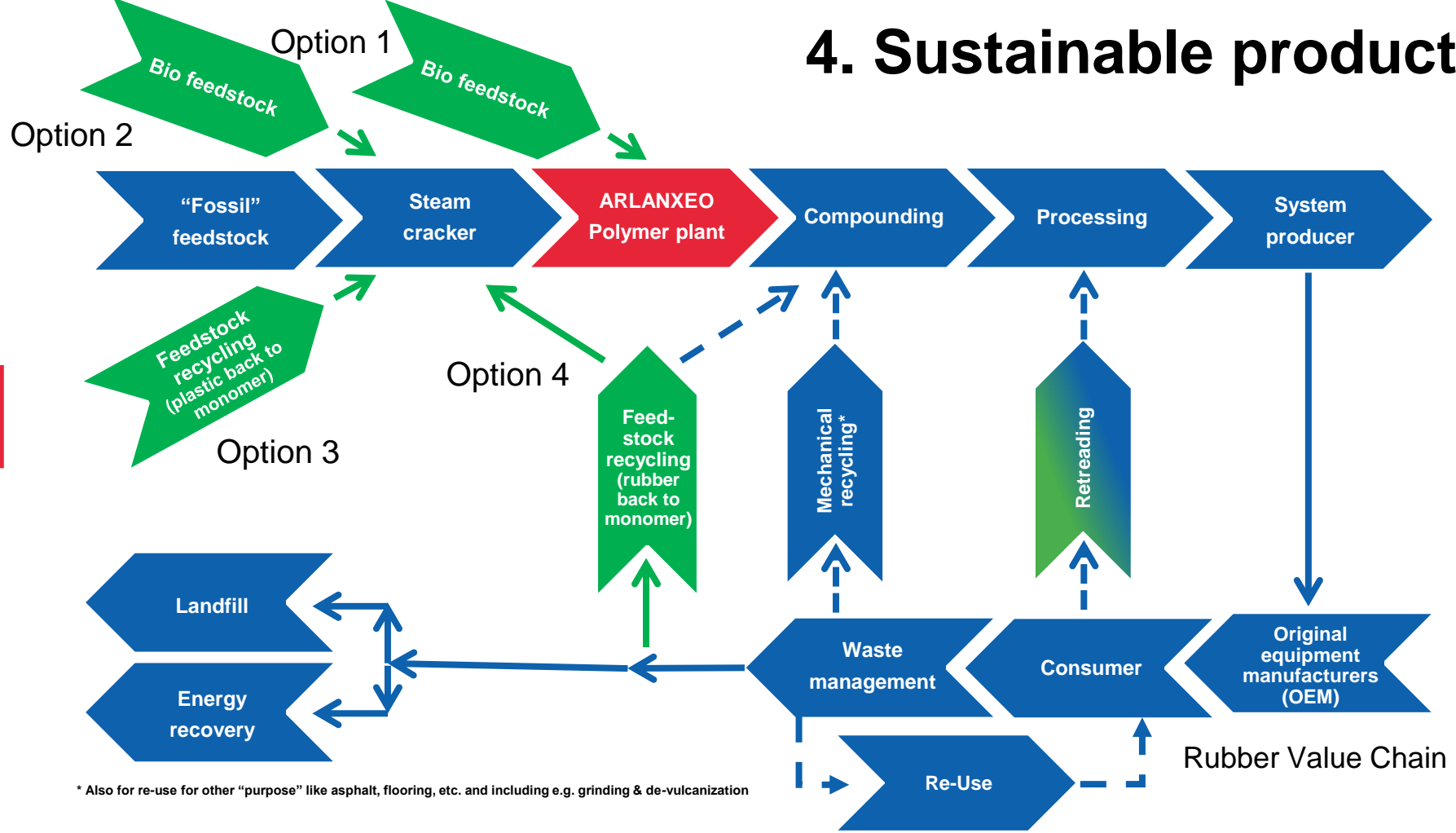
ARLANXEO's sustainability roadmap

Six strategic building blocks with defined goals

1. Driving towards 2050 carbon neutral (scope 1 + 2)
2. Providing to customers a Product Environmental Footprint for all ARLANXEO products in 2023
3. Aiming for safer chemistry by assessing our chemicals
4. **Shifting our feedstock gradually over time to bio-based and recycled materials, possibly CO₂ based**
5. Collaborating with the market for sustainable applications, developing new markets and supporting new mobility
6. Positioning ARLANXEO as committed supporter of local community programs and education

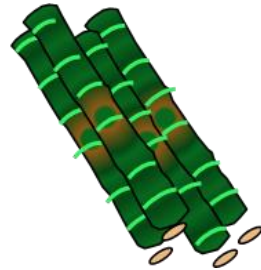


4. Sustainable products



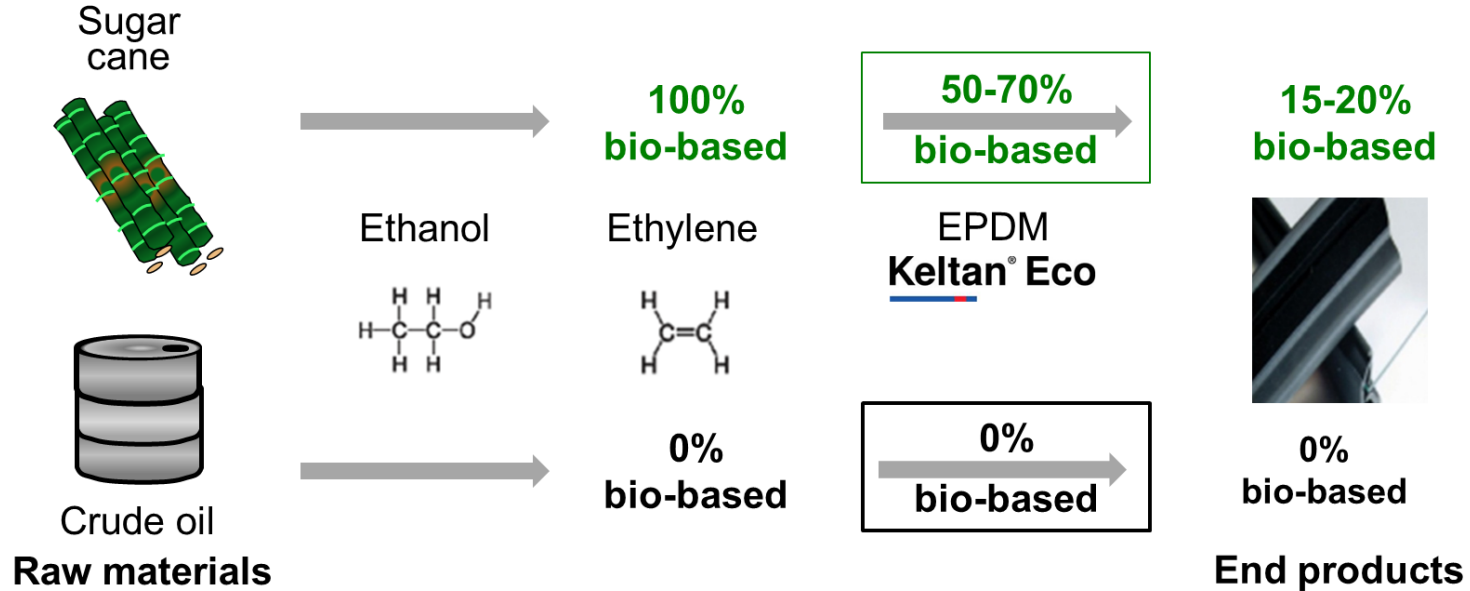
* Also for re-use for other "purpose" like asphalt, flooring, etc. and including e.g. grinding & de-vulcanization

Keltan[®] Eco



Keltan[®] Eco

The first bio-based EPDM



Reference: "The world's first bio-based EPDM", Montse Alvarez Grima and Philip Hough, Green Polymer Chemistry 2014, Cologne (Germany)

Keltan[®] Eco portfolio

3 Keltan[®] Eco grades

Available grades	Viscosity ML(1+4)(@ °C) [MU]	C2 [wt%]	ENB [wt%]	Key application
Keltan [®] Eco 8550	80 (125°C)	55	5.5	Dynamic solid profiles
Keltan [®] Eco 5470	55 (125°C)	70	4.6	Static solid profiles, TPE-V
Keltan [®] Eco 6950	65 (125°C)	48	9	Sponge profiles

- Sustainability level dependent on the amount of C₂
- **Technically identical** to conventional versions of these grades, (C₂ is C₂, regardless of where it is sourced). **Keltan[®] Eco from Brazil can be differentiated by Carbon-14 analysis**

Keltan[®] Eco

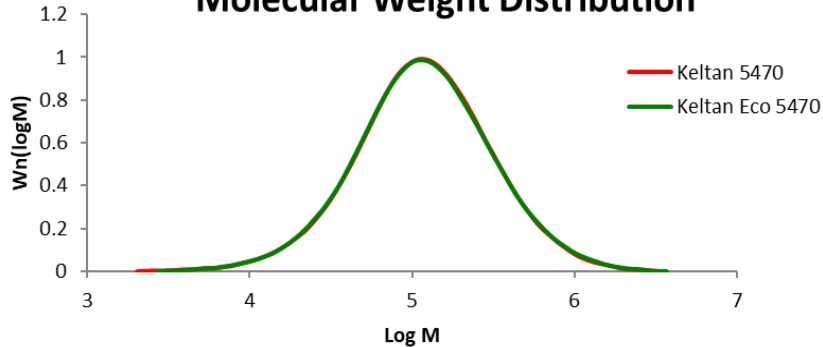
Bio-based content measured by C-14 (ASTM D6866)

Keltan[®] Eco

No compromise on performance

IDENTICAL POLYMER SPECIFICATIONS

Molecular Weight Distribution



ISO 17025 Accredited Testing Laboratory

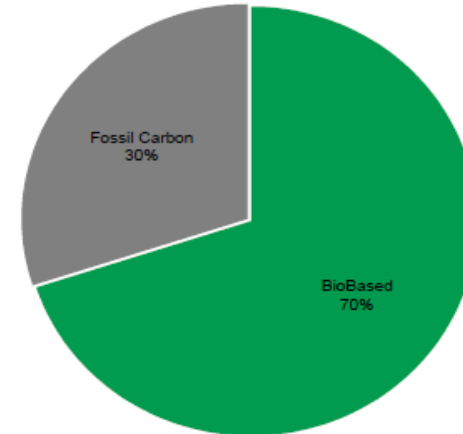
PUL/ISO/EC 17026:2006 Testing Accreditation# 59423

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Report of Biobased Content Analysis using ASTM-D6866-11

Mean Biobased Result : 70 % *

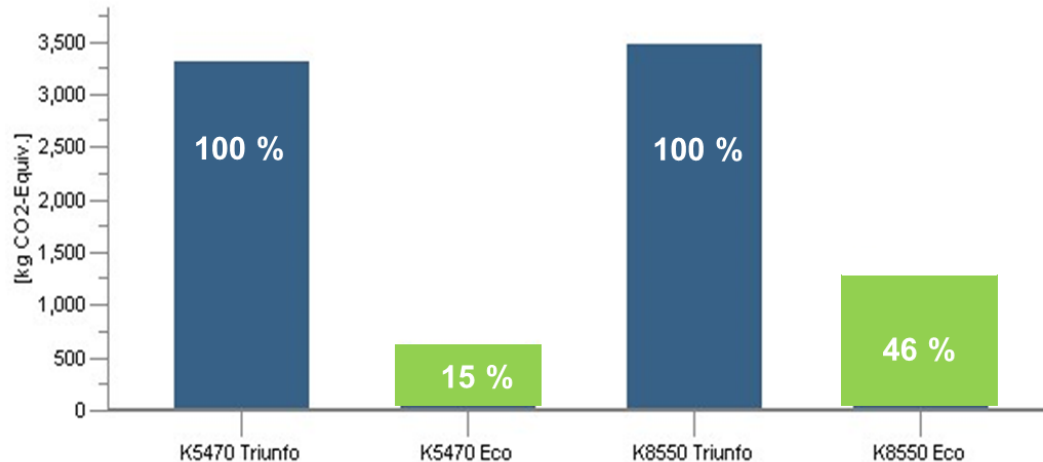
Proportions Biobased vs. Fossil Based
indicated by 14C content



Keltan[®] Eco

Carbon Footprint

Global warming potential/Carbon Footprint per 1t product



ISCC+ Certified EPDM



ISCC = International Sustainability & Carbon Certification

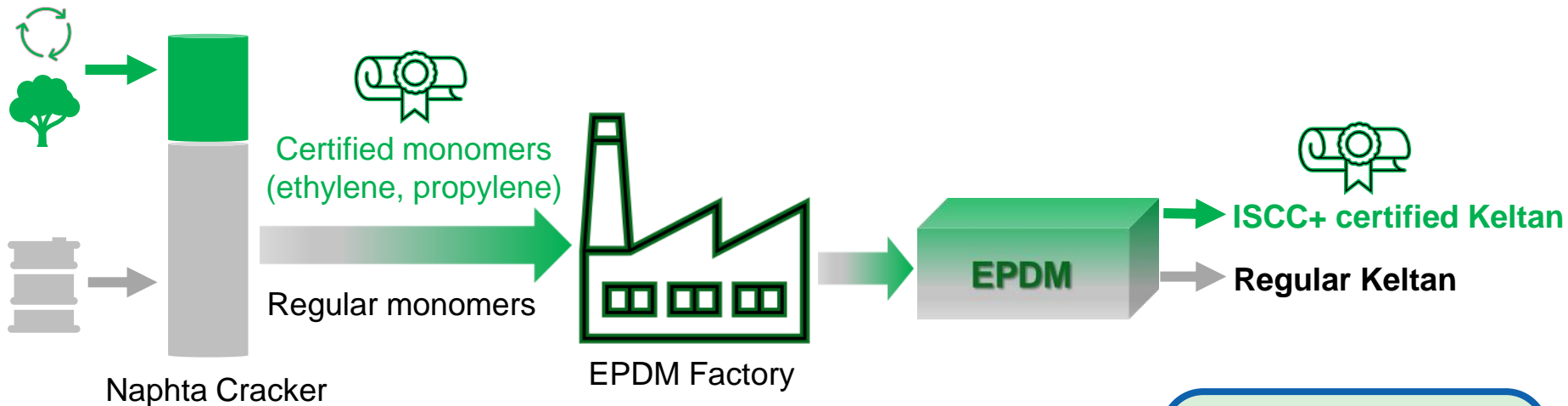
- ISCC's goals are to provide certification solutions for fully traceable and environmentally, socially and economically sustainable supply chains.
- With that ISCC supports companies by fulfilling the United Nations 2030 Agenda for Sustainable Development



SOURCE: ISCC website

ISCC+ certified EPDM & portfolio

Mass balance chain of custody



- Feedstock is a blend of fossil + certified product
- Certified monomers are technically identical to regular ones
- Traceability is carried out by mass balance method

Portfolio:
All Keltan® EPDM
grades produced
in Geleen
(the Netherlands)

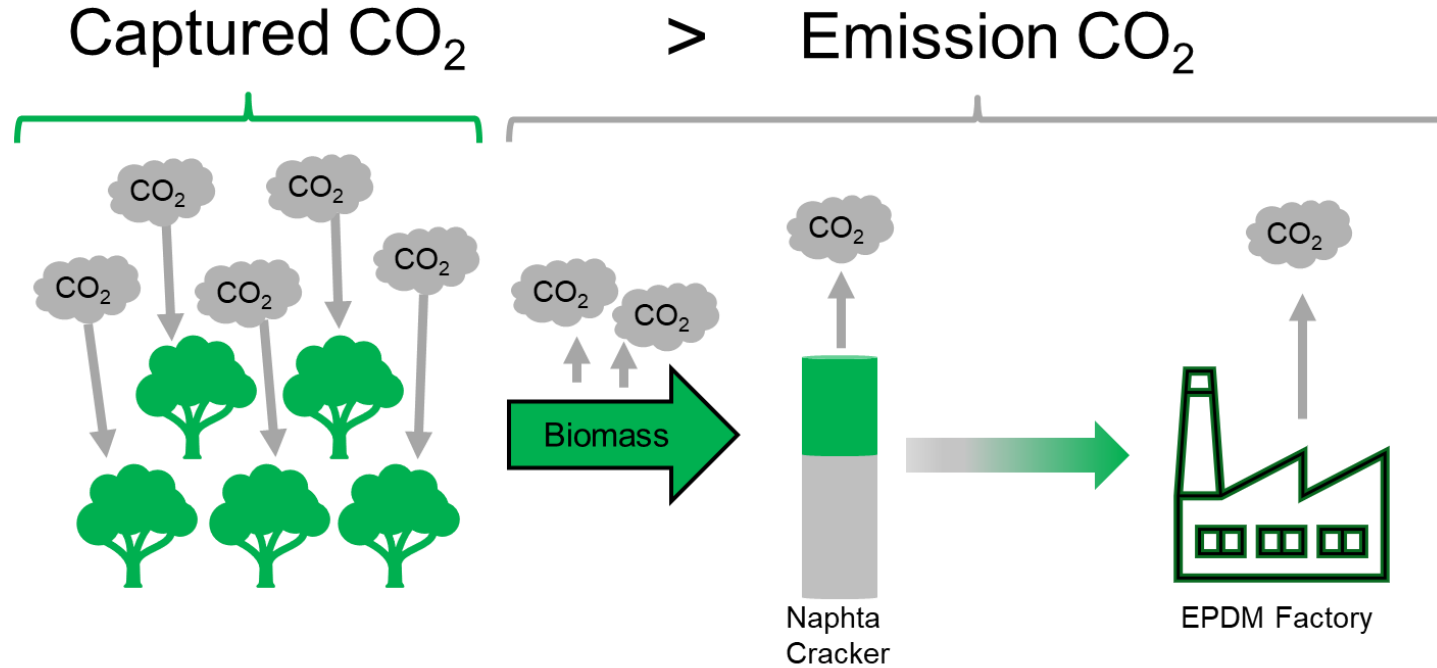
Certified Circular Product: feedstock from recycling materials

Certified BioBased Product: biobased feedstock which is not in competition with food

Classified as General

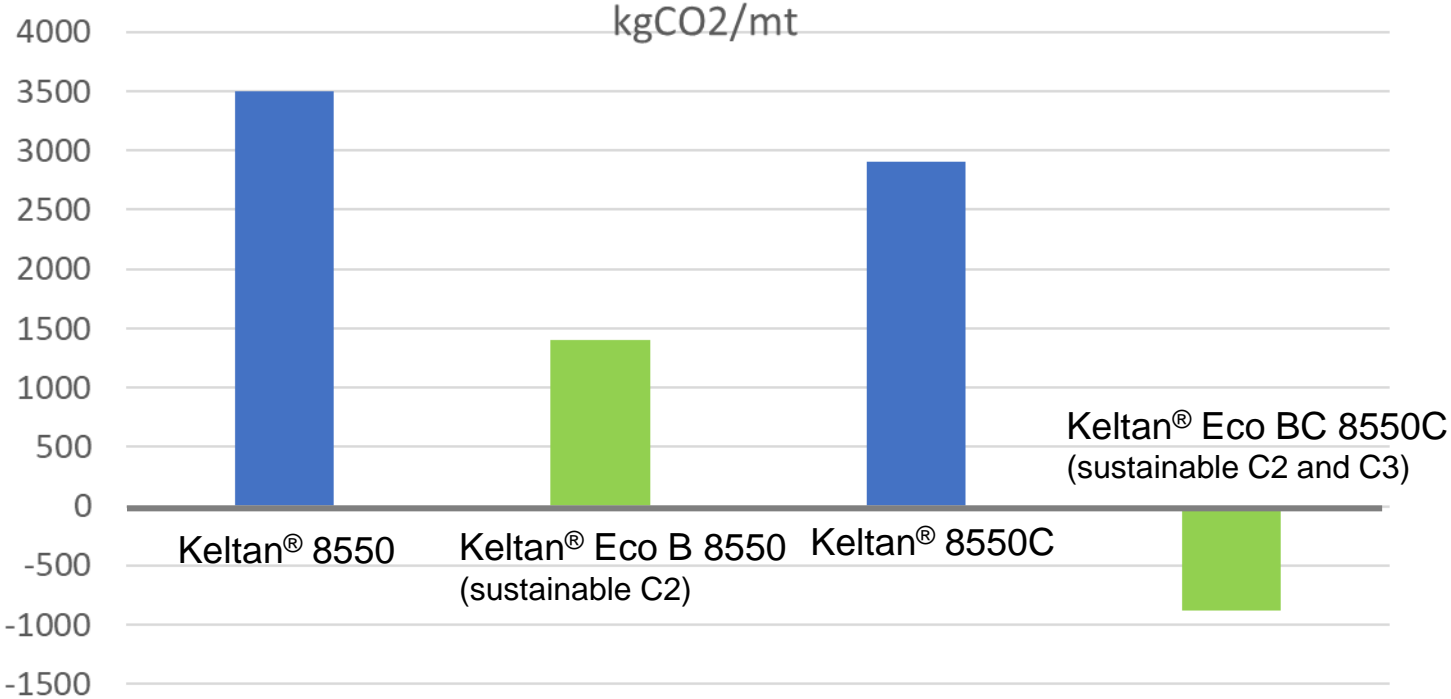
ISCC+ certified EPDM

Carbon Footprint, Negative CO₂ emissions



ISCC+ certified EPDM

Carbon Footprint



Classified as General

Nomenclature change Keltan[®] Eco

Keltan[®] Eco B and Keltan[®] Eco BC



Nomenclature:

1. Keltan[®] Eco-B 5470
2. Keltan[®] Eco-BC 5470C
3. Keltan[®] Eco-C 5470C

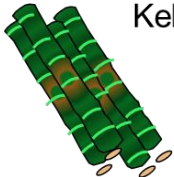
SOURCE: ISCC website, 3 feedstock categories

Summary sustainable EPDM offering

Keltan Eco B and Keltan Eco BC

Keltan Eco B

- **Based on biobased Ethylene from sugar cane.** Produced in Triunfo (Brazil)
- **Only ethylene** available
- Eco-content measurable **by Carbon-14 analysis**
- **3 grades** produced in Triunfo (Brazil)
 - K5470 Eco
 - K8550 Eco
 - K6950 Eco
- **Unique Eco EPDM** grades in the market
- **Technically identical** to fossil-based Keltan grades produced in Brazil



Keltan Eco BC (ISCC+ Certified)

- **Based on mixed fossil/non-fossil cracker output.** Produced in Geleen (The Netherlands)
- Based on both **Ethylene and Propylene**
- Based on **mass balance method** (ISCC+ certification)
- **Sustainability statement** indicating purchased quantity, hence **CO₂-savings** vs fossil-based
- **No Carbon-14** analysis
- **Whole Geleen portfolio** available
- **Technically identical** performance to fossil-based Keltan grades
- Available as of **Q1 2023**



Safe harbor statement

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