

ARKEMA

Advanced Bio- Circular Materials

Healthcare Solutions

The story of Arkema's flagship polyamide 11 chemistry



Dave ALTHOUSE

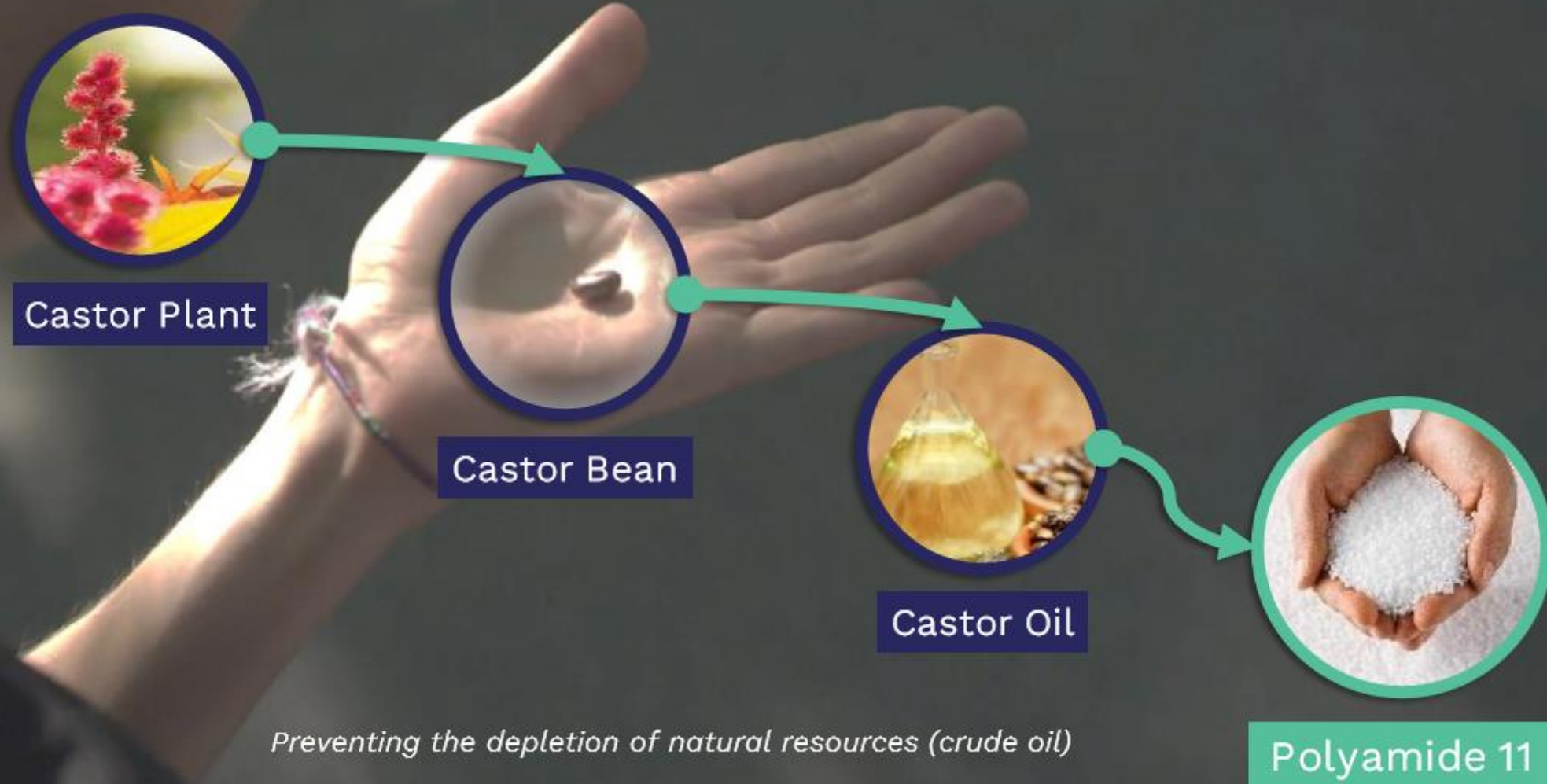
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From castor bean to advanced polymers – A miracle of science



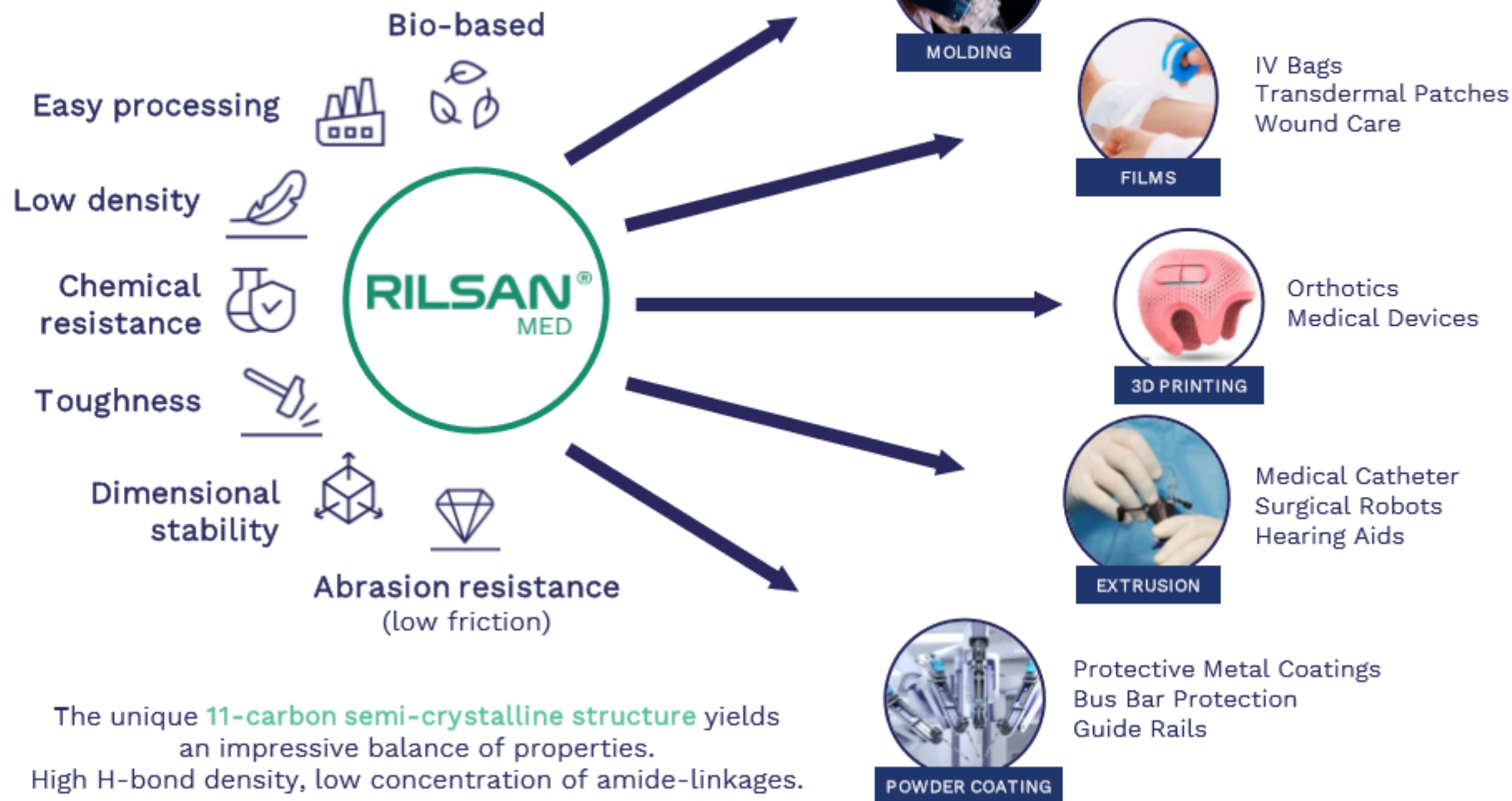


- 1 Advanced Materials
- 2 Bio-Based
- 3 Circular - Recyclable

Advanced polymers that pack a punch



ADVANCED



Technical Polymers – Healthcare Product Portfolio

100% Bio-based

PEBAX[®]
MED

RILSAN[®]
CLEAR MED

RILSAN[®]
MED

RILSAMID[®]
MED

KYNAR[®]
MED

Thermoplastic
Elastomers
(TPE)

Transparent
Polyamides

Polyamide 11

Polyamide 12

Polyvinylidene
fluoride
(PVDF)

USP CLASS VI AND ISO 10993-4 AND -5 TESTED



One (1) year change notification



Chemical resistance



Sterilization (Gamma, ETO, Steam)



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Castor – The magic bean

The castor bean is actually a seed.
Plant it, and more seeds grow.
The circle of life.



No competition with food / feed



Grown mainly in India (Gujarat region) – mainly in the poorest soil



No deforestation



The beans are crushed to make ~45% oil and 55% cake (sold as fertilizer)



Highly profitable for the farmers (the main reason they grow castor)



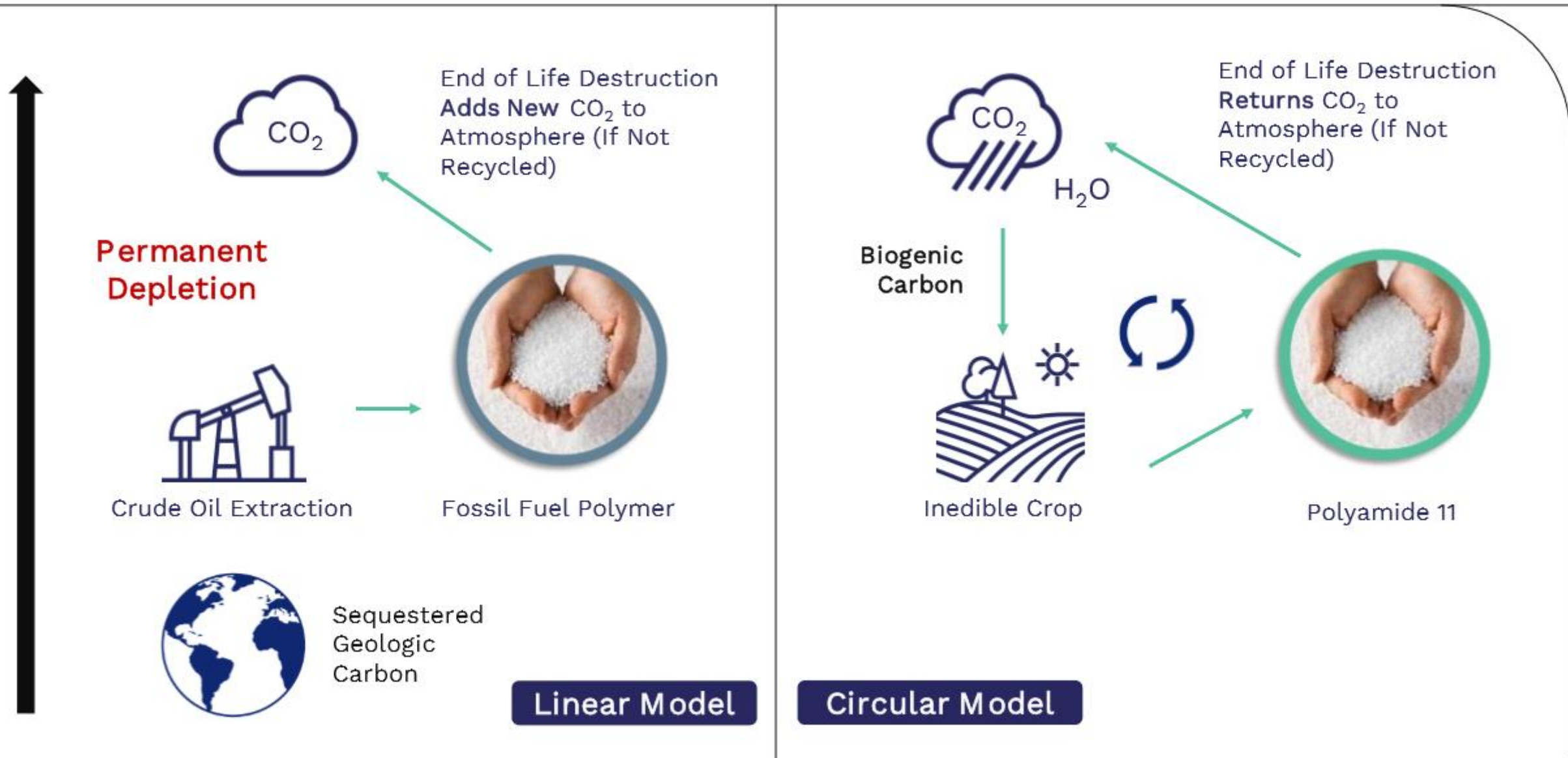
We make this shoe out of beans.
It seems like magic...
but in fact, it is science.



ON RUNNING



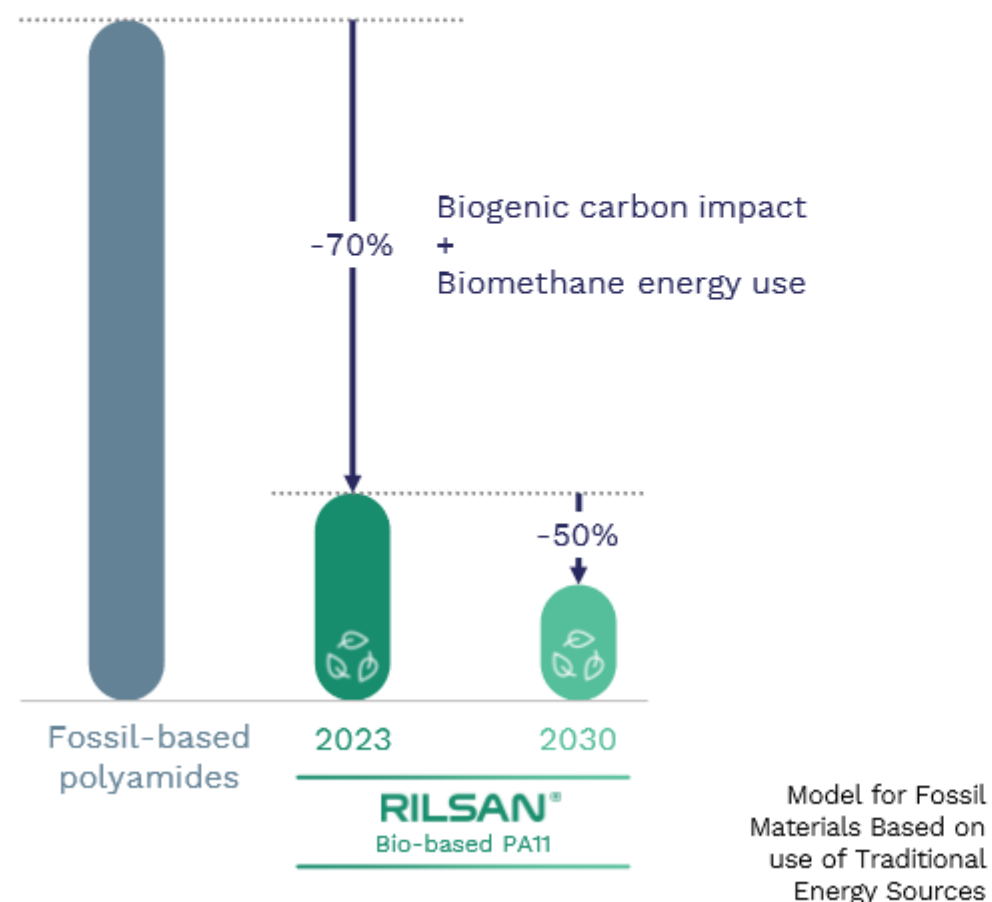
The BIOGENIC BENEFIT – Turning Atmospheric CO₂ into Advanced Materials



Climate Change Impact Reduction and Other LCA Benefits

Carbon footprint

(comparative data vs standard fossil-based polyamides)
Standard ISO 14040/44 (kg eq. CO₂/kg)



- Rilsan® PA11's carbon footprint reaches < 2 kg CO₂e/kg
 - Applies to the entire global production (not limited to a selection of grades)
 - Continuous action plan for further reduction by 2030
- Agricultural land use
 - Castor grows best in marginal soils
- Water depletion
 - Castor takes advantage of the natural rainy seasons



More than just bio-based – The Pragati Initiative



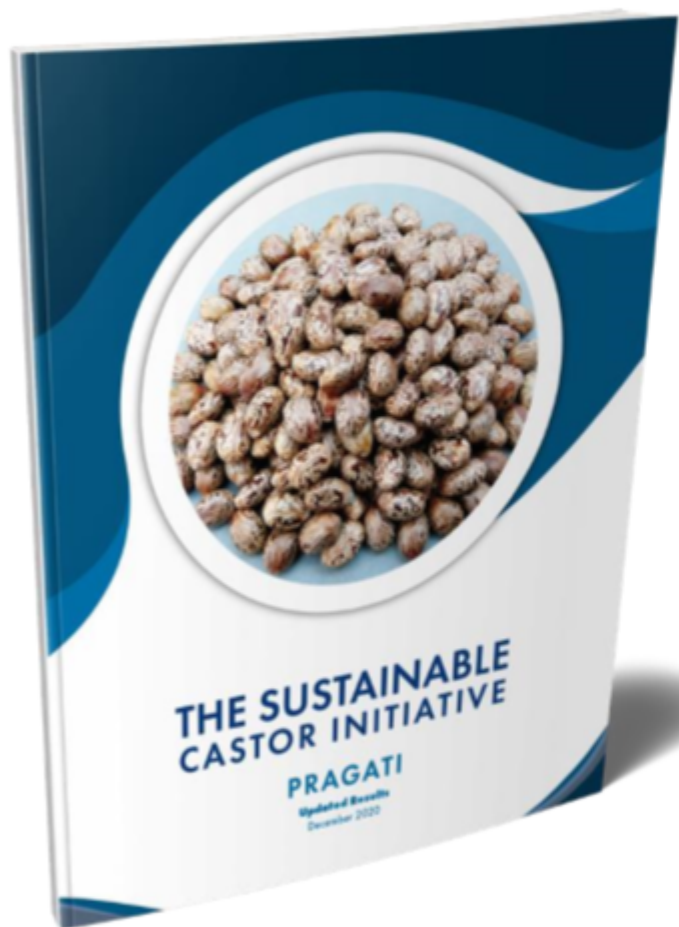
Arkema has been recognized by BMW and many others for pioneering work in Sustainable Farming and bio-circular polymer technology.

Arkema takes its sustainability role seriously – driving improvements in sustainable castor farming.

Bloomberg







Pragati – Driving more sustainable castor farming



80% of the world's castor is grown in Gujarat, India



Enabling sustainable castor crop production by:

-  Using good agricultural practices to increase yield and farmer income
-  Efficiently using water resources and Maintaining soil fertility
-  Driving adoption of good waste management practices
-  Enabling better health and safety practices, and respecting human rights

*Launched in 2016, Arkema is a founding member of the Pragati Initiative with BASF, Jayant Agro-Organics Ltd., and Solidaridad

Pragati impacts and results – As of September 2023

More than **74,500 tons** of certified castor beans cultivated from 2017 to 2023

Over 7,000 Farmers

have been trained, audited, and certified

More than **7,000 hectares** are now being regularly farmed in accordance with the SuCESS sustainable castor code (see www.castorsuccess.org) – more than 27,000 hectares cumulatively; Pragati farmers are increasing their land dedicated to castor farming as it is seen as a profitable crop.

36%

Year 7 yield is 36% higher than that published by the local government for this region.

380

More than 380 capacity-building training sessions were held this year with farmers.

100

villages

Farmers from more than **100 villages** in North Gujarat now participate in the program

475

lead farmers have been identified and trained to guide certified farmer groups

Approx.

7,000

safety kits and crop protection product boxes have been distributed free of charge



100



medical camps organized in all project villages this year successfully monitoring of 8,500+ farmers, workers, and their family members, of which 65% were farmers enrolled in the Pragati program

H₂O

As compared to the previous year, water consumption has been **lowered by approx. 21%** in the demo plots where accurate measurement and control are in place



Arkema's Castor Ambition

Explore New Territories

(Supply Chain Versatility and Assurance)



Focus: South America, Africa

Begin pilot purchases

No Compromise

- Quality
- Social and sustainability profile
- Competitiveness

Continued Commitment to More Sustainable Farming

- Proliferate SuCESS® code
- Expand scholarships for the children

10%
sourced from at least one new region by 2025

>20%
Of castor farmers globally to be trained, certified

Drive Farmer Education Fund, Continuous Improvement



- Voluntary Fund for All Castor Stakeholders
 - Focus on training farmers on SuCESS® code for sustainable castor farming
- Take Advantage of Digital Tools
 - Smart-phone app to be developed and deployed
 - Online training and verification
- Focus on Impacts
 - Water consumption, Chemical use...
 - Yield improvement...
- Raise the Sustainability Standards of Entire Supply Chain



CYCLON, the world's first subscription model shoe designed to be 100% recyclable.

ON Running

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A new integrated & internal alliance to offer recycled solutions

Arkema invests in recycling of advanced polymers.

AGIPLAST®



Acquisition – June 1, 2021



With this acquisition, Arkema will be the first fully integrated high performance polymer manufacturer offering both bio-based and recycled materials in order to address the challenges of resource scarcity and end-of-life products



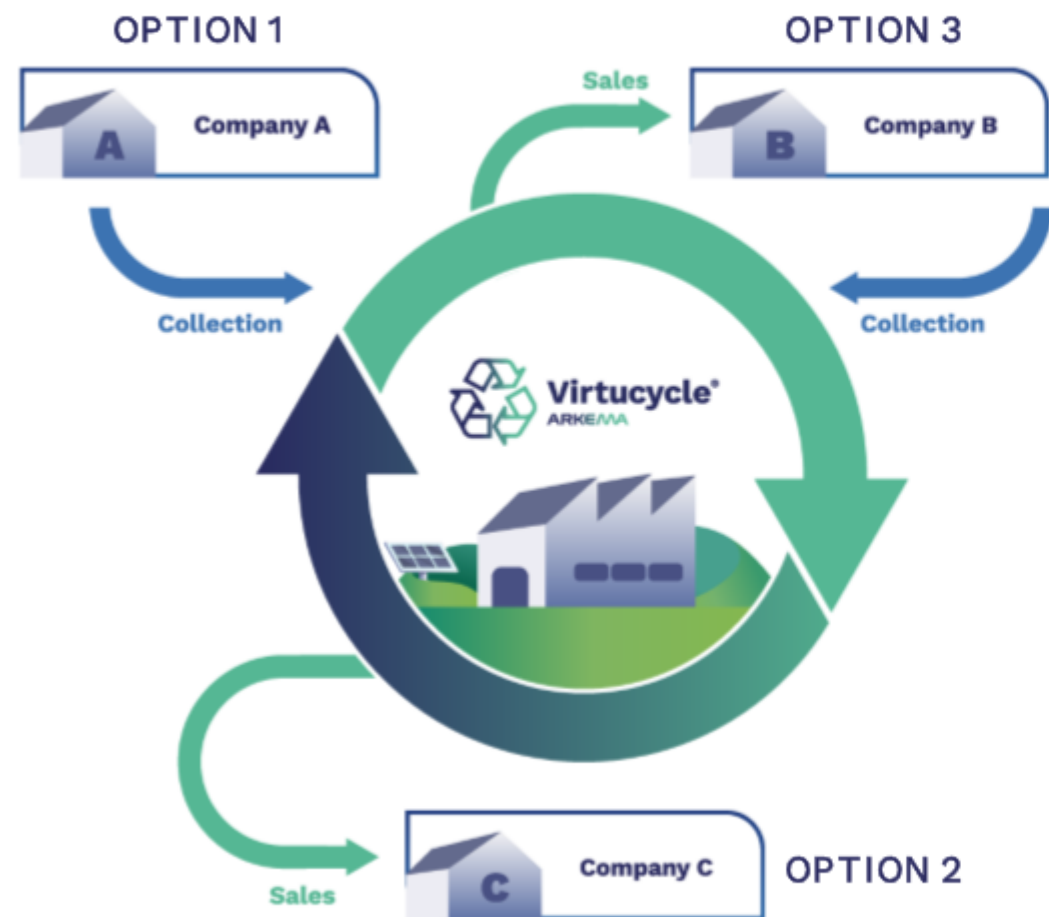
Circular – “cradle to cradle”



CIRCULAR



Our Offer Adapted to Your Business Needs



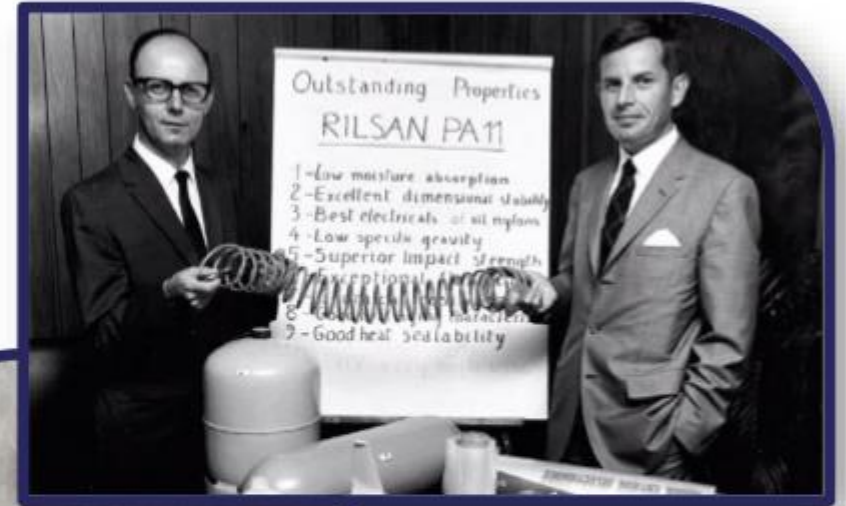
Virtucycle® Program Offer

- We can **collect** and **recycle** advanced materials
- We can **provide recycled** advanced materials
- We can collect and provide recycled advanced materials in an **open, closed or semi-closed loop model**

ARKEMA

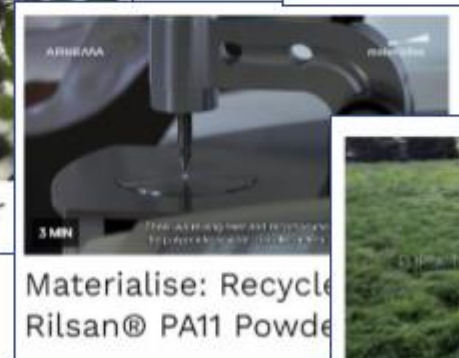
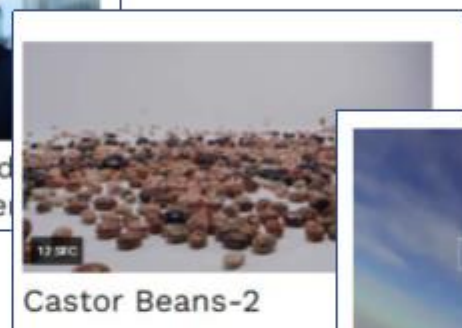
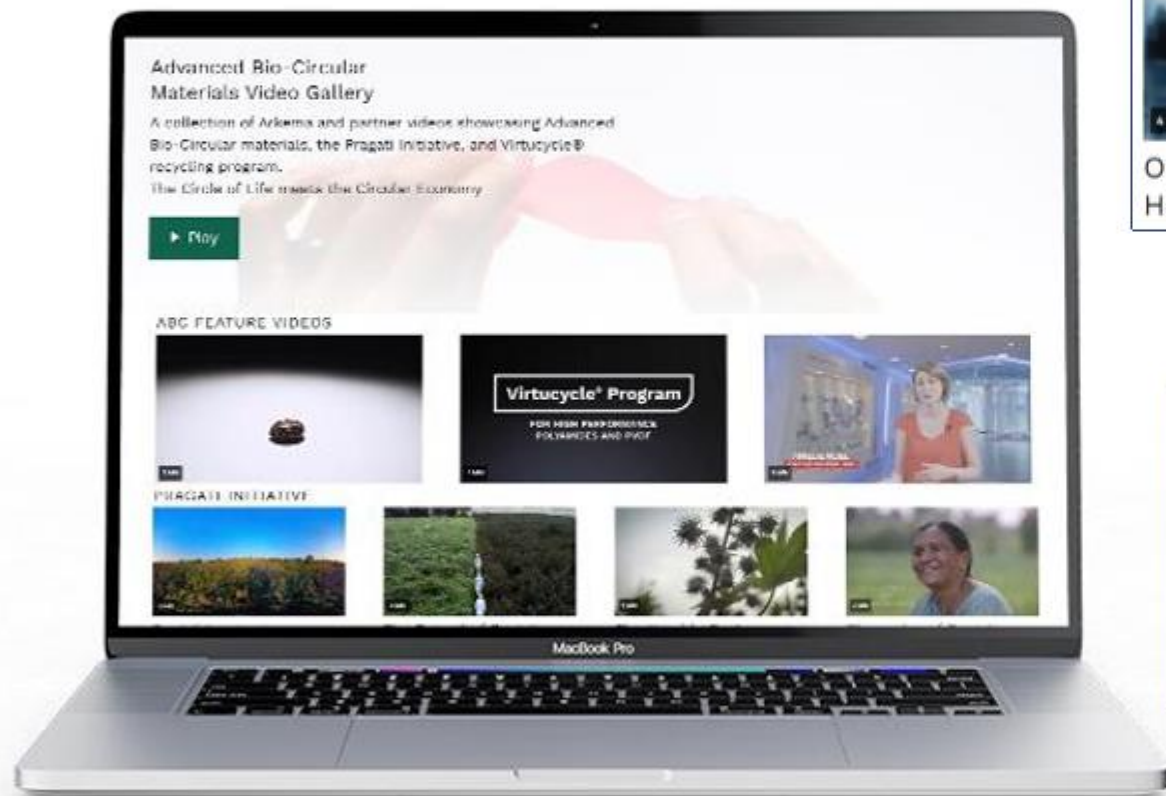
An Arkema original

- Since 1947, Arkema remains the only industrial producer of Polyamide 11
- Rilsan® brand named after **La Risle** river that flows next to Arkema's Serquigny, FR plant
- Committed to bio-based from the beginning!



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ARKEMA

Summary of Arkema's Policy Regarding Medical Device Applications of Arkema Products

Arkema seeks business relationships with customers who participate in the health care industry. Arkema is committed to maintaining safety in supplying the health care industry, and works with the regulatory agencies and its customers to deliver high quality products.

Arkema's core principles that guide its behavior with respect to the use of its products in medical device applications are provided below.

Non-Temporary Implants

Arkema does not supply any products to be used in medical device applications that constitute a non-temporary implant (i.e., that, in whole or in part, may be in contact with a patient's skin, body fluids or tissues for more than 30 days).

Temporary Implants

Arkema may supply products to be used in medical device applications involving temporary implants (30 days or less) in contact with a patient's skin, body fluids or tissues. Arkema only supplies customers with products for temporary implants in accordance with its medical contractual provisions, and where other specific corporate risk management conditions are met.

Other Medical Device Applications (Non Implant)

Arkema may supply products for use in all other medical device applications. Arkema will use its good business judgment to set specific Arkema corporate risk management conditions in such circumstances.

Design, Manufacture and Sale of Medical Devices

Arkema does not design, manufacture and/or directly sell any medical devices. Arkema also does not co-design, or offer assistance to any purchaser of Arkema products, in their design, manufacture and/or sale of products for medical devices.

Medical Grade Products

Arkema has designated specific medical grade compositions for its products. Customers who intend to use Arkema products in a medical device application will only be supplied with these specific medical grade compositions. No other Arkema products may be supplied for use in medical device applications.

Appropriate Use of Arkema Products

Arkema will not itself perform clinical medical studies concerning the use of its products for any particular medical device application. Arkema will not engage in any type of suitability determinations for the use of its products in any medical device applications.

Responsibility of Medical Device Manufacturer

It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade Arkema products, in order to ensure that the final end-use product is safe for its end use; performs or functions as intended; and complies with all applicable legal and regulatory requirements.

It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections and to evaluate the medical device under actual end-use requirements and to adequately advise and warn purchasers, users, and/or learned intermediaries (such as physicians) of pertinent risks and fulfill any postmarket surveillance obligations. Any decision regarding the appropriateness of a particular Arkema material in a particular medical device should be based on the judgment of the manufacturer, seller, the competent authority, and the treating physician.

Trade Names

Unless Arkema expressly agrees by written contract, Arkema product names, trademarks and the Arkema name shall not be used with any medical devices, and customers should not represent to others that Arkema permits, recommends, or endorses the use of our products in any medical devices.

Warranties

ARKEMA WILL NOT WARRANT THAT ITS PRODUCTS ARE SUITABLE FOR USE IN ANY MEDICAL DEVICE OR MEDICAL APPLICATION.