Making materials more sustainable with Bio-Plastics (PBS & PBAT)

Welcome to our next generation sustainable solution.

QIRA

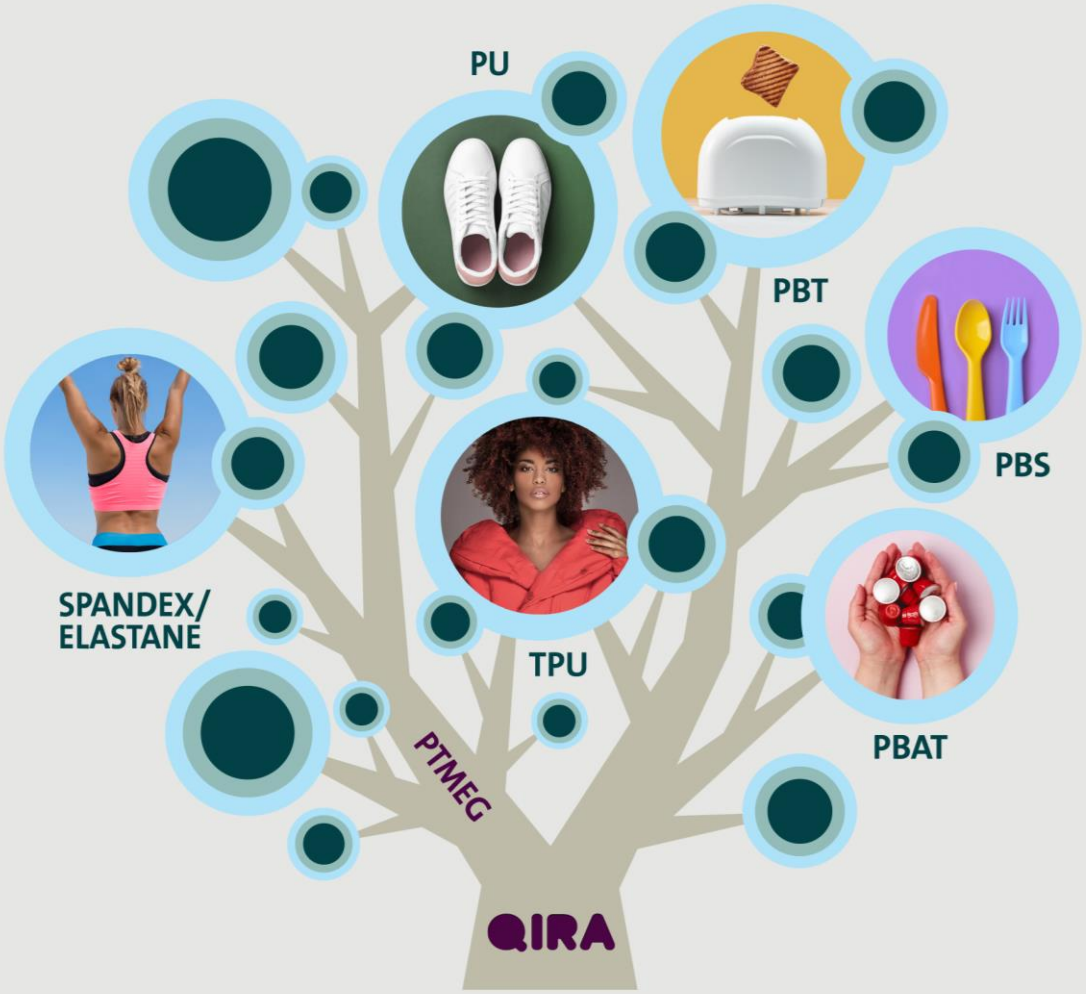
A next generation sustainable solution

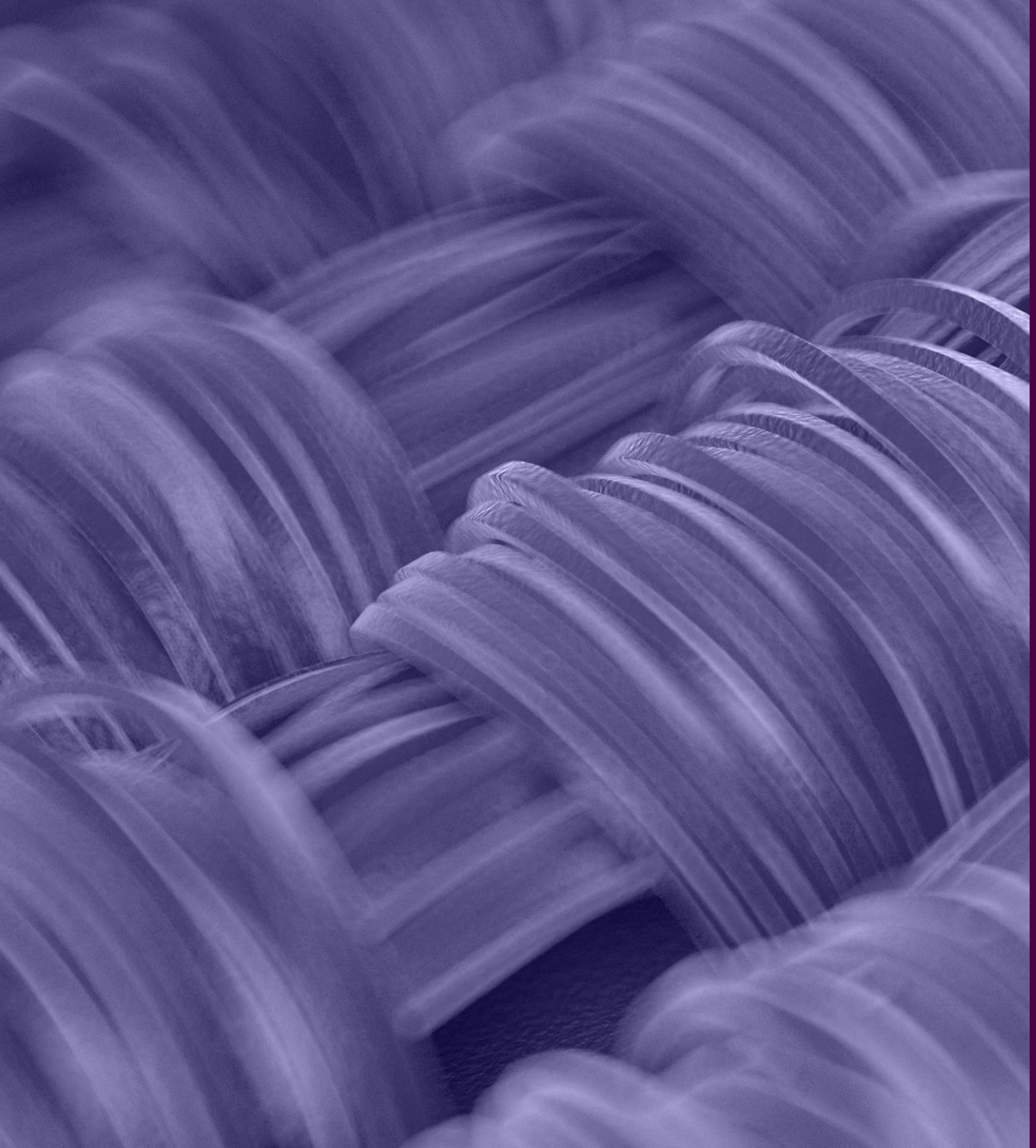
QIRA is the next generation of 1,4-butanediol (BDO) – an easy-to-implement, bio-based BDO made from renewable feedstocks that reduces CO_2 emissions compared to materials made using fossil-fuel based BDO.

As a key platform chemical, QIRA can be used in a wide variety of applications, including spandex fibers, bioplastics and polyurethanes.

Across a multitude of industries, ranging from fashion to automotive, packaging and electronics, QIRA delivers functionality without compromise through more sustainable solutions that are better for people and the planet.

QIRA can be used in a variety of applications





Our answer to complex problems? Simple solutions.

As our world is becoming more environmentally aware, the demand for sustainably manufactured materials is increasing rapidly. Yet, the trilemma of cost efficiency, quality standards and ecological impact prevents green transformation across a wide range of industries. Recognizing the need for lasting innovation, we have developed QIRA – a high quality, cost efficient and easy-to-implement bio-based BDO. Renewably sourced, it facilitates your next steps on our common journey to greenhouse gas emission reduction and a circular economy. Not only can bio-based QIRA be seamlessly integrated without transformation costs, it also delivers the superior functionality you need to maintain product quality.

As QIRA is suited to multiple applications, you can provide a differentiated offering to your customers enabling them to tap into new, diverse initiatives. With QIRA, you can keep delivering the quality and precision your clients deserve and at the same time enable them to reduce their CO_2 footprint.

Bio-Plastics
Enabling more bio-based products

QIRA enables two important bio-plastics, PBS & PBAT, to be both biodegradable and bio-based.

How QIRA can contribute to more sustainability

Bio-plastics describe those polymers that are either produced using renewable raw materials or are biodegradable.

PBS is a thermoplastic polymer that is in many uses comparable to poly-propylene. Its excellent biodegra-debility makes it a polymer of choice for food and cosmetics packaging.

PBAT is a thermoplastic co-polymer that is in many uses comparable to low-density polyethylene. Its flexibility and resilience make this polymer a preferred material in food packaging, compostable plastic bags and agricultural films.

How QIRA can contribute:
QIRA enables two important bioplastics, PBS & PBAT, to be both biodegradable and bio-based.

With QIRA a large variety of materials can become more sustainable

Coffee capsules

Paper cup coatings

Single use plastics

Agricultural films

How QIRA helps to become more sustainable

We believe that sustainability shouldn't be difficult. And being sustainable shouldn't compromise on quality. With material sourced by QIRA, you can keep delivering the quality your customers deserve and at the same time enable them to do good for planet and people.

CO_2 from the air is sequestered by the corn to form starch.

Corn starch is extracted and converted into glucose syrup.

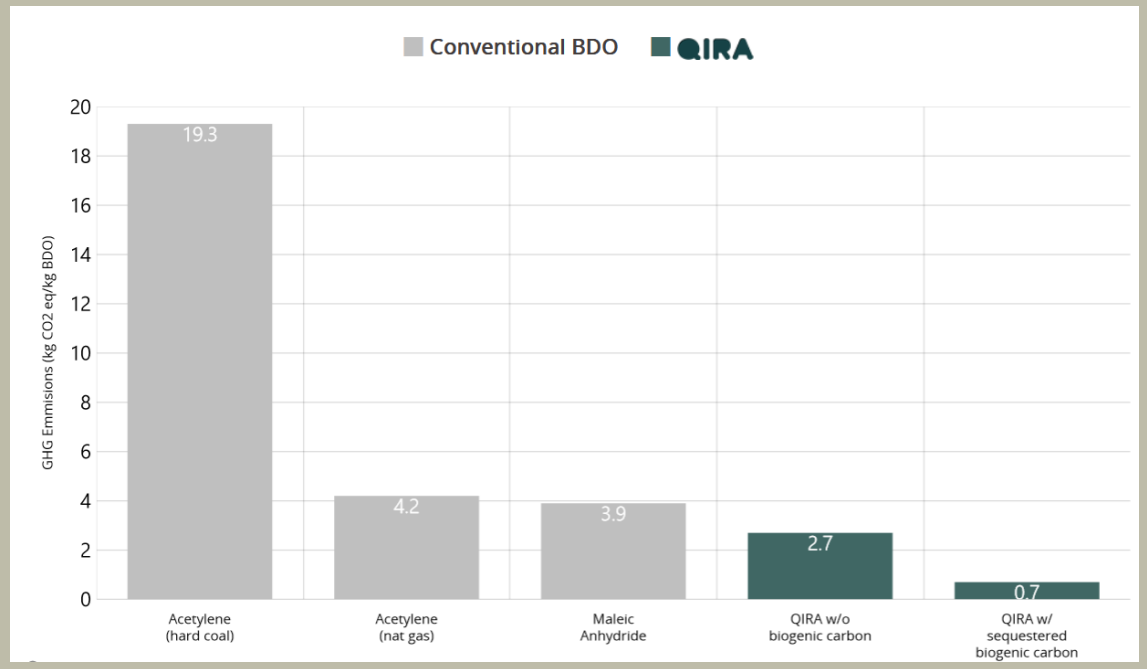
In a novel production process, glucose is fermented by microorganisms.

QIRA (1.4 butanediol) is extracted.

Reduced CO_2 footprint

Due to its unique manufacturing process and use of renewable plants, like corn, QIRA can lower a product's CO_2 footprint compared to products made with conventional BDO.

As QIRA can be used in a variety of industries, such as fashion, automotive, packaging and electronics, it can play an important role in making our planet more sustainable. We continue working with our supply chain partners to further improve QIRA's CO_2 footprint with the goal of becoming "net-zero" or even carbon negative.



Disclaimer: This information is based on preliminary evaluations and is provided for informational purposes only. Specific results for fossil-based products may vary. QIRA (bio-based BDO) GHG calculated based on site-specific data in North America and engineering design from 2021. QIRA (bio-based BDO) results are from an external commissioned study. Conventional BDO results were calculated internally using IPCC 100a method and data from EcoInvent database version 3, assuming production in China. The information in these graphs are based on publicly available sources and unpublished data and is believed to be true and accurate, however, Qore does not guarantee or make any warrant of accuracy or completeness.

Specification

QIRA has the same specification as conventional 1,4-butanediol. To guarantee the same quality of material, producers must ensure that the specification of their raw materials are within a defined range. BDO is globally specified by its purity, moisture content, color and appearance. QIRA offers the same or even higher quality than fossil-fuel based BDOs and therefore can be used as a direct replacement.

	QIRA (bio-based BDO)	Conventional BDO
Assay (wt % 1,4-butanediol)	> 99.5	≥ 99.5
Water (ppm)	< 500	< 500
Color (APHA)	< 10	< 10
Appearance	Clear, free of visible matter	Clear, free of visible matter

QIRA: The following test methods are used: GC, DIN 51777 and DIN EN 1557

Besides Bio-Plastics, a large variety of materials can become more sustainable

TPU: Increasing products' bio-content

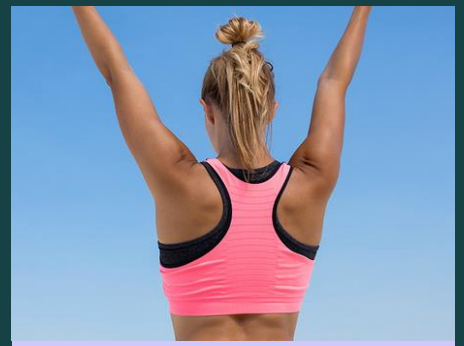
QIRA can play an important role and increase the bio-content of polyester- & polyether based TPU systems.

Usage in: textile coatings, golf balls, ski boots, shoe soles, phone cases, skate wheels

PU: Providing a variety of applications

QIRA is an excellent building block for polyols and gives additional benefits when used as chain extender

Usage in: PU Leather, mattresses, wall insulation, food bags, automotive seats, shoes



Spandex: An excellent blend with other materials

QIRA can increase the overall sustainable content of Spandex by up to 80%.

Usage in: denim, underwear, outdoor wear, suits, athletic wear, diapers

PBT: For components with high durability

QIRA can increase the bio-content of BDO by up to 40%.

Usage in: PBT fibers, bumpers, electronics housing, EV chargers, connectors

QIRA

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