DuPont™ Renewably Sourced™ Materials
The Renewably Sourced Process

DuPont is bringing nature and science together to convert agricultural crop to high performance materials and fuels.

Microbes transform the feedstock into chemical building blocks

Feedstock is heated and/or reacted with other ingredients to create chemical building blocks

Building blocks are combined to create value added materials/fuels

Common crop sources are corn, soy, wheat, sugar beats...etc

Sustainable agricultural produces raw feedstock

Carbohydrates, oils, and/or proteins are extracted from crops

Overview  Seed  Crop  Separation  Fermentation  Chemistry  Products

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The Renewably Sourced Process

The tools and disciplines of chemistry, materials science, and chemical engineering are all critical to making renewably sourced products that meet all of the demanding requirements of our customers, with no compromise in performance or economics.

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**Crops**
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**Separation**
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**Fermentation**
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**Chemistry**
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**Products**
- Building blocks are combined to create value added materials/fuels
The Seed

Pioneer, a wholly owned subsidiary of DuPont, is the world’s leading developer and supplier of advanced plant genetics to farmers worldwide

Pioneer has developed high quality hybrid seeds that maximize desired traits, increase yields, and require less chemicals and water to successfully grow

Examples of common crop sources are corn, soy, wheat, sugar beets…etc
Crops

DuPont utilizes common crops such as corn and soybeans as sustainable agricultural feedstock for its renewably sourced materials processes.

Future feedstock could come from:
- Any farm grown crop
- Other non-food agricultural sources such as switchgrass
- Agricultural byproducts like straw and corn stover

DuPont helps growers nurture crops by providing advanced crop protection solutions for weed, pest and disease control, as well as facilitating crop health.
Processing - Separating

The crop goes through a milling and separation process to extract the feedstock. Carbohydrates (sugars), oils, and proteins are the most common agricultural feedstock.
Processing – Fermentation

Fermentation uses microbes that transform the feedstock to form building blocks, similar to the centuries old technology that uses yeast to transform sugar into alcohol.

Industrial Biotechnology uses genetic engineering to enhance the capabilities of natural microbes to metabolize feedstock.

DuPont has been investing in industrial biotechnology for more than fifteen years. This technology is critical to make renewably sourced materials commercially viable and an environmentally smart process.
Processing – Chemistry

To create the desired building blocks, agriculturally derived feedstock are heated and/or reacted with other chemicals using traditional thermo-chemical processes.

In many cases, fermentation processes are combined with thermo-chemical processes to create a useful building block.

DuPont has over 100 years of experience developing and applying a wide variety of chemistry and materials science to make high performance products.
Products

Some building block chemicals can be used directly after purification steps in certain applications.

In most cases further transformations are required to turn the building blocks into value-added materials.

DuPont has over 100 years experience in developing, manufacturing, and marketing a wide variety of innovative and value-added products.
An Icon of Added Value

Placement of the DuPont Renewably Sourced Materials icon on product literature and packaging informs DuPont customers and others that a product contains a minimum of 20% renewable content by weight; a number of the products that DuPont has introduced are 100% renewably sourced. The renewable content is verified by using carbon dating, a well-accepted analytical technique used by the ASTM and the standard used by the U.S. Department of Agriculture (USDA) for determining the renewable content of products for its preferential procurement program.