



Markets

Enabling Biobased Nylons, Polyurethanes, Plasticizers, and Other Sustainable Materials

Rennovia is developing adipic acid and hexamethylenediamine (HMD, or HMDA), two important building blocks for a wide range of functional materials including nylons and polyurethanes

The combination of Rennovia's biobased adipic acid and hexamethylenediamine will enable the production of 100% biobased nylon-6,6

Supplying our future customers with existing chemicals, renewably derived, will help meet future consumer demand for greener products

- › Nylon Engineering Resins
- › Nylon Fibers
- › Coatings, Adhesives, Sealants & Elastomers
- › Non-Phthalate Plasticizers
- › Phosphate-Free Detergents

- › Biodegradable Cleaners
- › Biodegradable Corrosion Inhibitors
- › Cement & Concrete Additives
- › Food Ingredients
- › Animal Feed Acidulant



Nylon Engineering Resins

Global Nylon-6,6 engineering resin market is approximately 1.3 million metric tons (2.9 billion pounds) per year, predicted to grow at 4 to 5 % CAGR to 2022

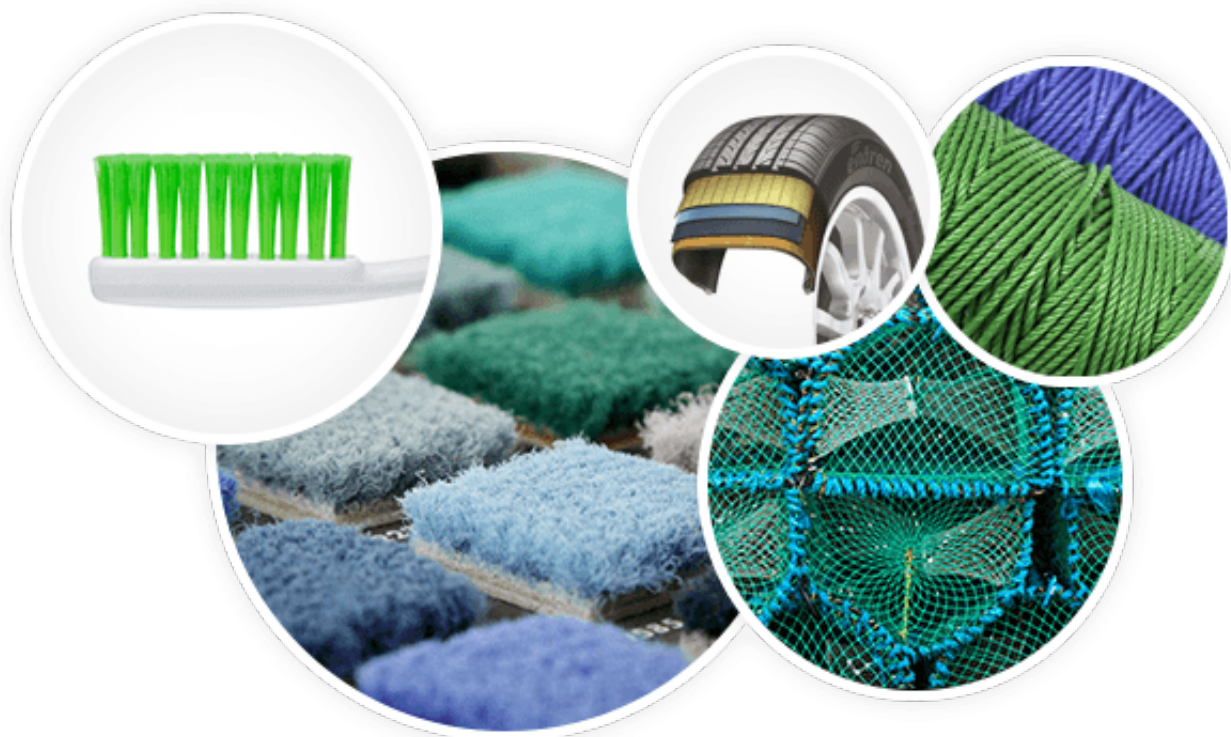
Nylon-6,6 is a widely used high performance engineering resin, used especially in the automotive market for its strength, light weight, and performance at high temperatures



Nylon Fiber Applications

Global Nylon-6,6 fiber market is approximately 1 million metric tons (2.2 billion pounds) per year, predicted to grow at 2 to 3 % CAGR to 2022

Nylon fiber applications include textiles, carpets, technical fibers and tire cord



Polyurethane Applications

Rennovia is developing biobased adipic acid, 1,6-hexanediol (1,6-HDO) and hexamethylenediamine (HMD) to enable the production of a wide range of polyurethane products, especially in the high value Coatings, Adhesives, Sealants and Elastomers (CASE) markets

Global polyurethane markets for adipic acid, HMD, and 1,6-HDO total approximately 900,000 metric tons (2 billion pounds) per year, predicted to grow at about 4 to 5 % CAGR to 2020



Plasticizer Applications

Rennovia's biobased adipic acid will enable the production of non-phthalate plasticizers

Global adipic acid market for plasticizers is approximately 350 thousand metric tons (770 million pounds) per year



Glucaric Acid Applications

Rennovia is developing sustainable, cost advantaged, biobased glucaric acid

A large early market for glucaric acid will be as an intermediate for Rennovia's biobased adipic acid

- A world scale biobased adipic acid plant will consume about 500 million pounds per year of glucaric acid

Additional addressable global markets for glucaric acid are predicted to be greater than 350 thousand metric tons (770 million pounds) per year, including:

- Phosphate-Free Detergents
- Biodegradable Cleaners
- Biodegradable Anti-Corrosion Additives
- Cement & Concrete Additives

- Food Ingredients
- Animal Feed Acidulant

Rennovia's efficient, scalable and low cost process for production of glucaric acid will enable its widespread use in these and other applications



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