

BIORENEWABLE LONG-CHAIN NYLONS

**Process for Producing AA-11 and DDDA
from Castor Oil**

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Long Chain Nylons and Monomers

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Nylon 11 or PA 11



Nylon 12 or PA 12

AA-11

11-Aminoundecanoic Acid

Lauro lactam

Nylon 6,**12** or PA 6,**12**

1,6-Hexamethylenediamine
Dodecanedioic Acid **DDDA**

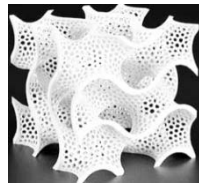
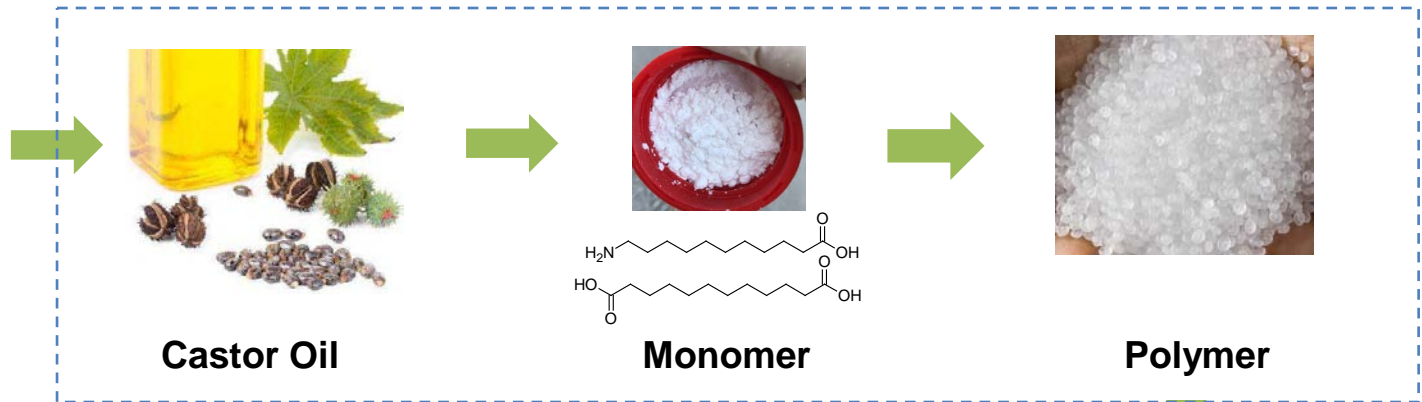
Note: PA11 and PA12 are interchangeable in most applications.

Vitaworks Long Chain Nylons: Biorenewable Chain

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Castor

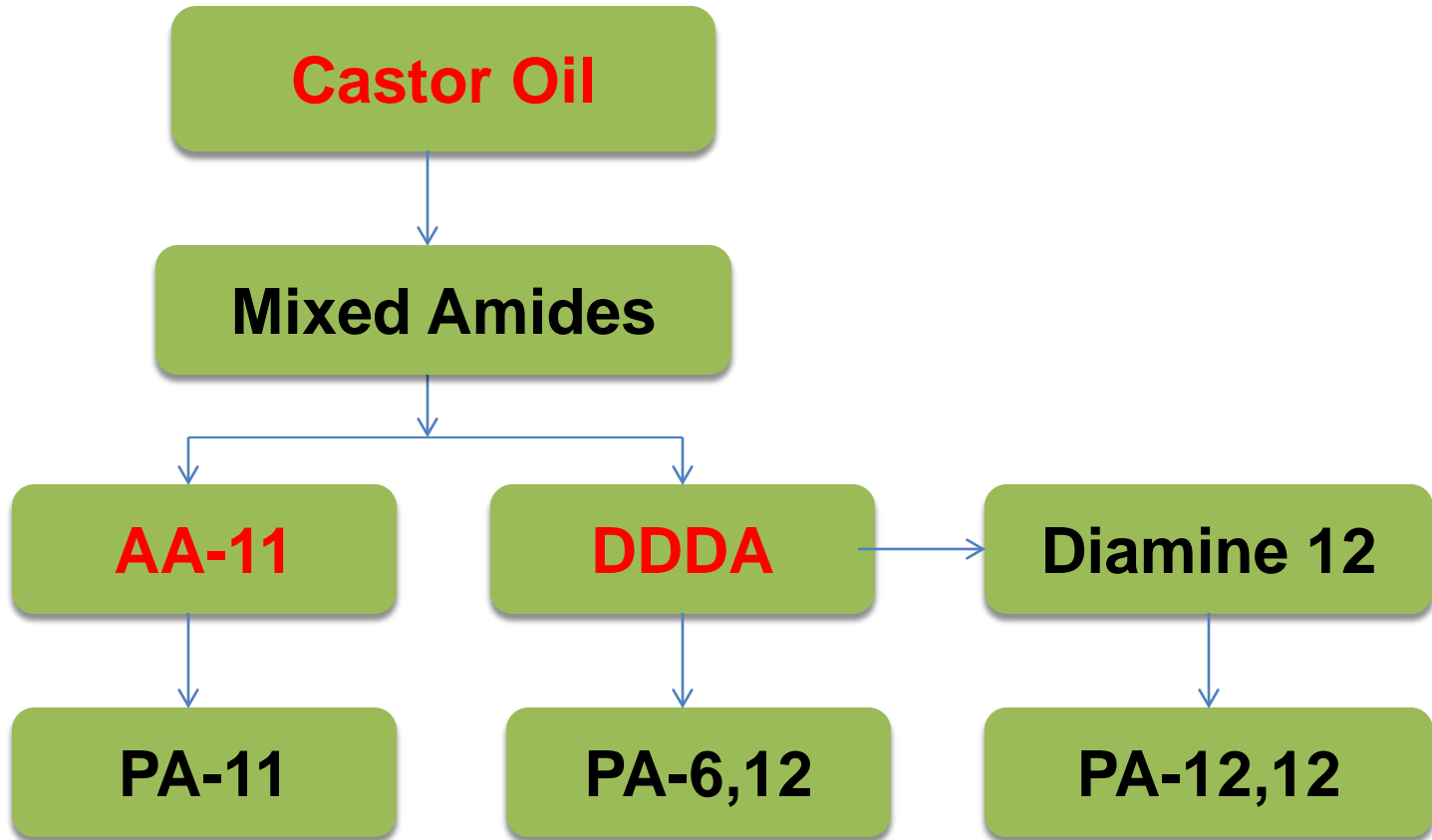


Products



Products from Vitaworks Process

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Vitaworks Process: Advantage

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- ❖ **Coproduction of AA-11 and DDDA**
- ❖ **Mild Process Conditions**
- ❖ **Proven Industrial Reactions**
- ❖ **High Reaction and Overall Yield**
- ❖ **Efficient Separation Technologies**
- ❖ **Little or No Process Waste**