Itaconix

Polymers for Better Living©

Mine is Smaller But More Sustainability - Adventures in Monodose Detergents

BIO Pacific Rim
October 10, 2012

Itaconix Corporation
is the world leader in
polymers from itaconic acid

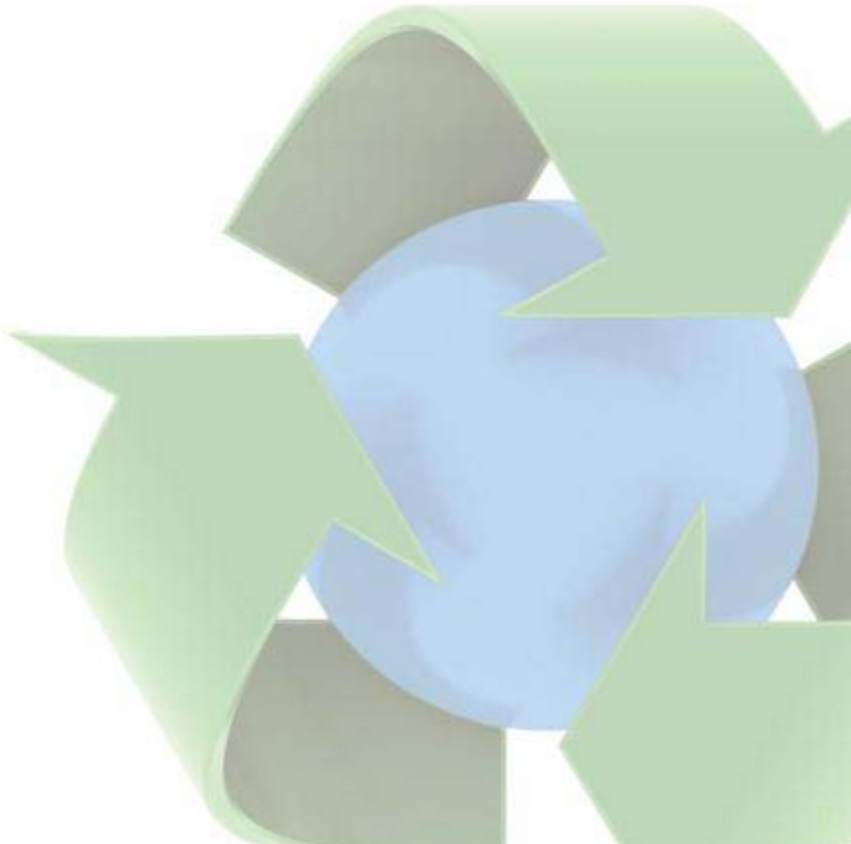
We produce polymers for everyday applications that achieve two essential objectives - performance and sustainability

Itaconix

Polymers for Better Living™

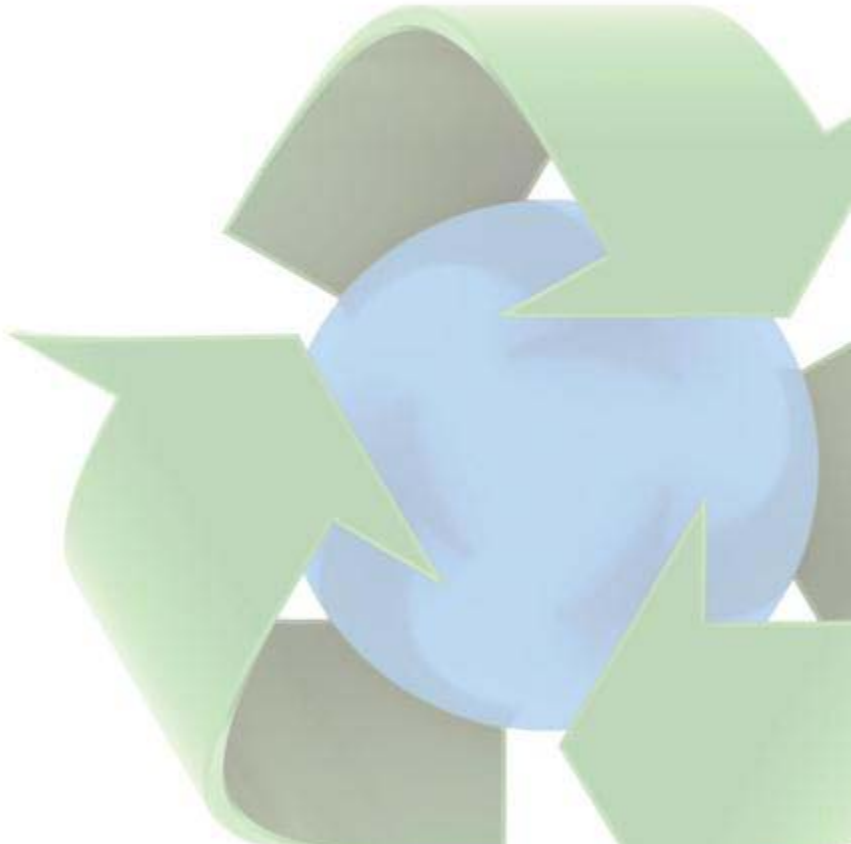
The Path to Monodose

- Formulating for Consumer Behavior
- Advances in Materials



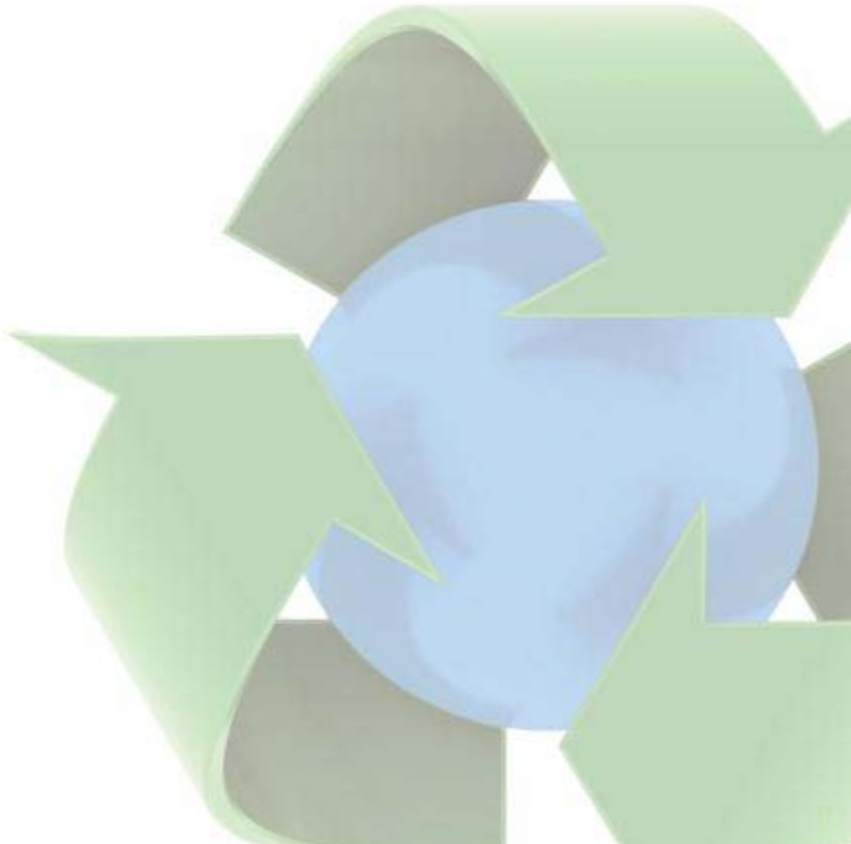
Formulating for Consumer Behavior

1. A cup of …
   - Tide powder
   - Electrosol
   - Spic N Span
2. Wisk to Tide liquid
3. Cascade gel to Cascade packets
4. Dropps to Tide 3-in-1



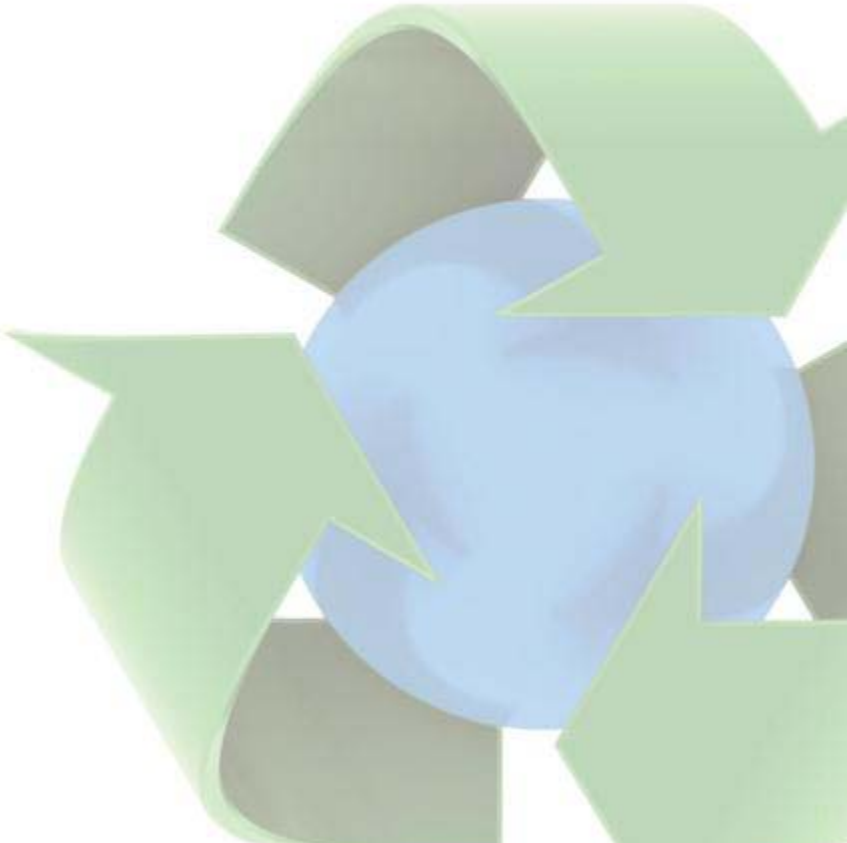
Advances in Materials

1. Less phosphates
2. Enzymes
3. PVA for water soluble packets



What Next?

- Performance
- Size
- Cost
- Sustainability



From Europe . . . Size, Format, Products

Automatic Dish

14 Grams

Bowl Cleaner

15 Grams

Water Softener

15 Grams

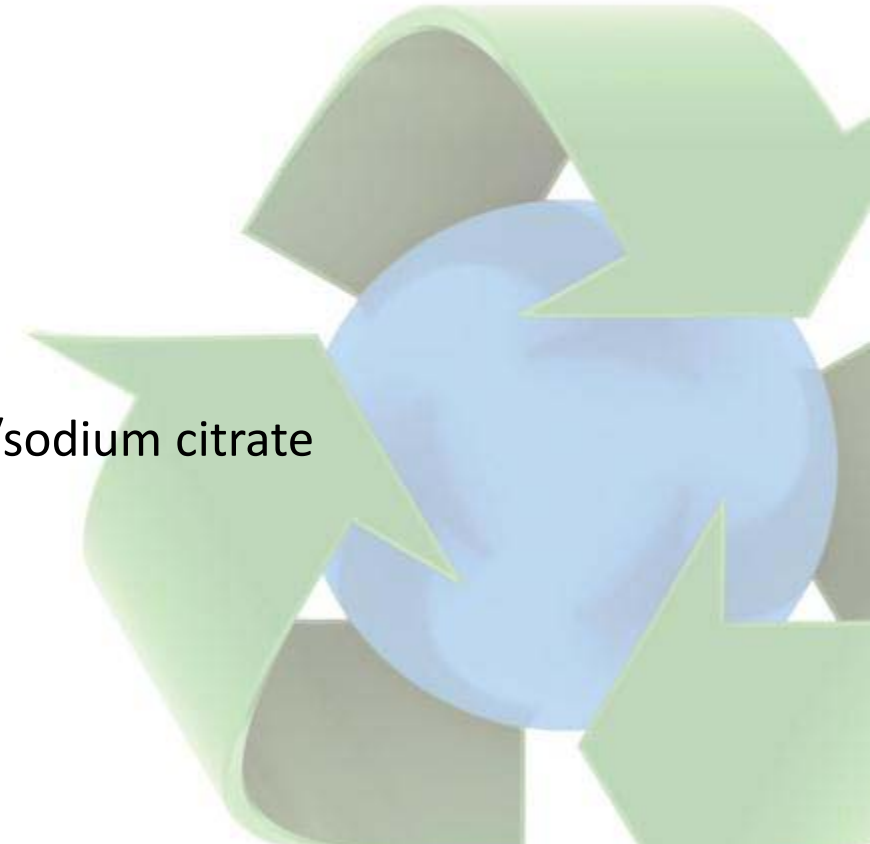
Changes in Builder Systems for Powders

First . . . . less phosphates

- acrylate polymers
- citric acid/sodium citrate
- NTA/EDTA
- zeolites

Then . . . . replace NTA/EDTA

- modified EDTA
- more citric acid/sodium citrate



Itaconix® Dispersant DSP 2K™

Low molecular weight linear polyitaconic acid partially neutralized with sodium salt

Physical Properties

- Off-white color
- No odor
- Granulated free flowing solid
- 100% water soluble
- 550 microns particles
- 84 wt. % solid, hydrate
- Granules density: 0.7 g/cm^3
- Bulk Density: 1.3 g/cm^3

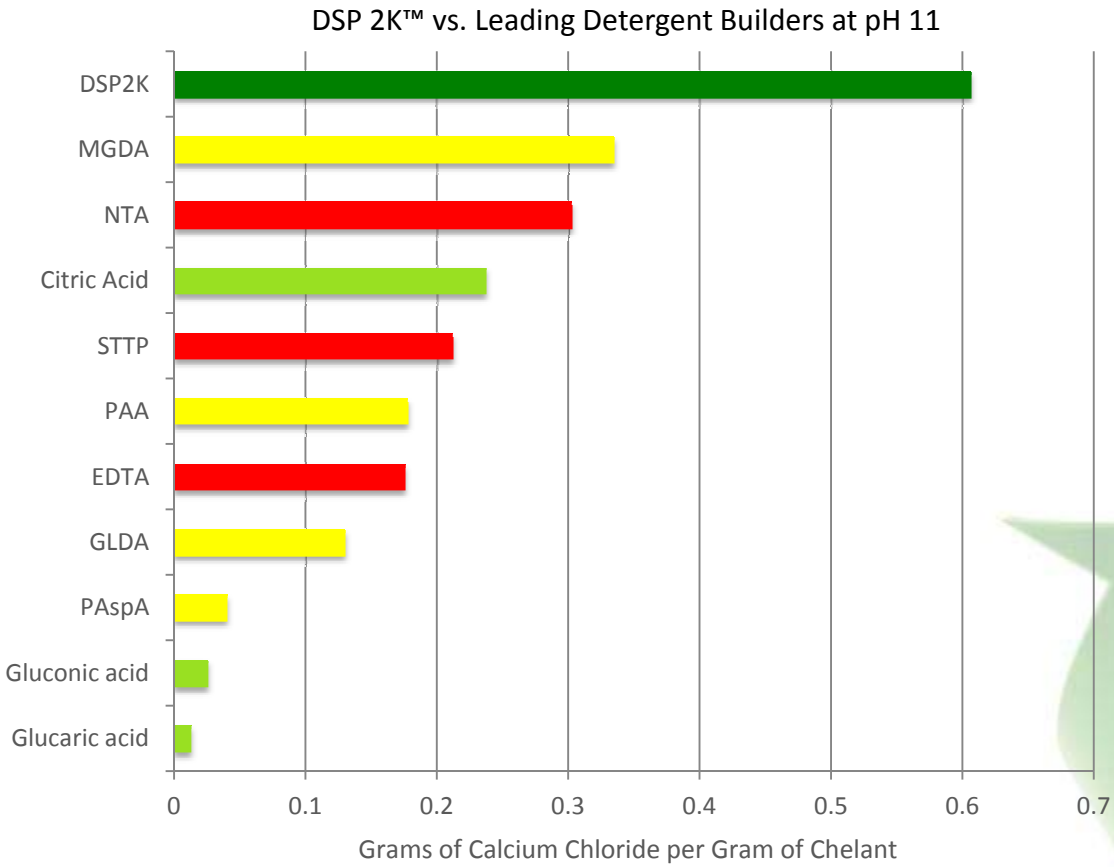
Product Highlights

- 100% bio-based
- Readily biodegradable
- Excellent capacity for binding metal ions
- Good hydrolytic, chlorine & thermal stability

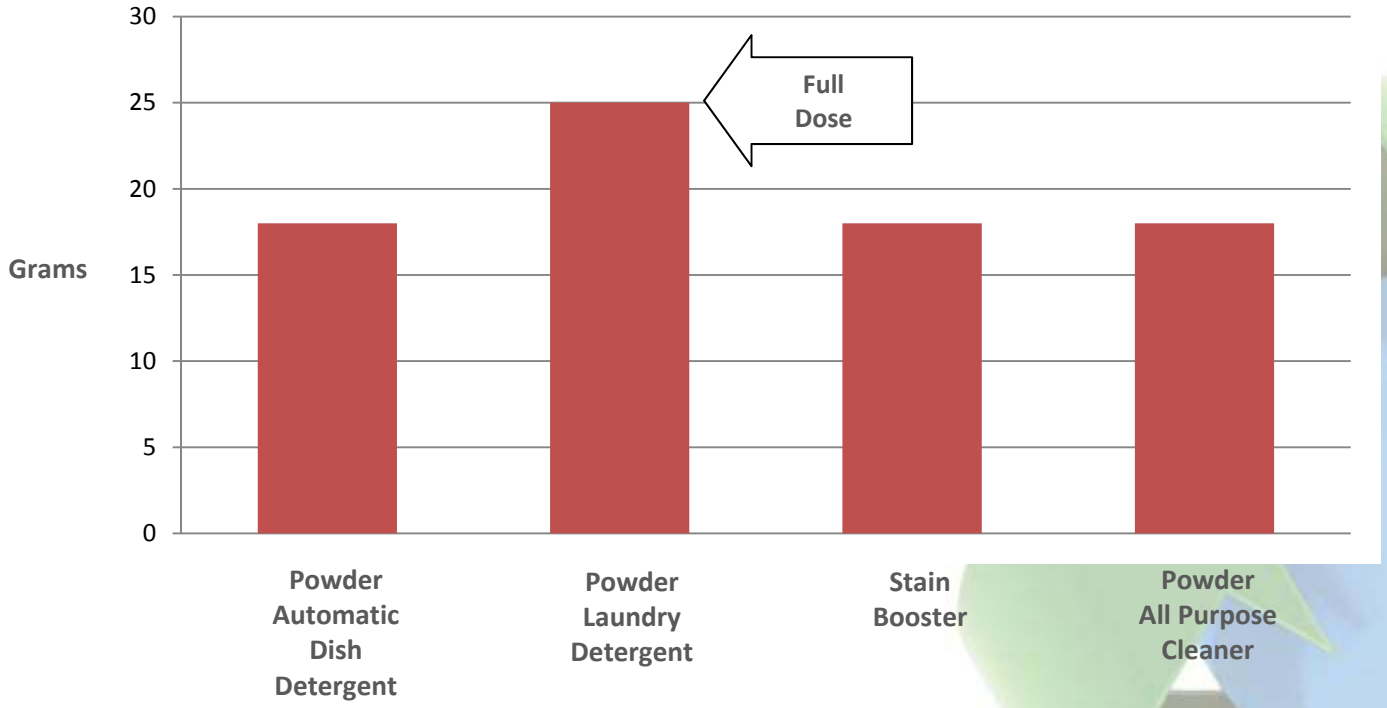
Chemical Properties

- CAS# 26099-89-8
- Number average molecular weight 2500g/mole
- Weight average molecular weight 5000g/mole
- Polydispersity 2.0
- pH: 5.5 at 10% in water

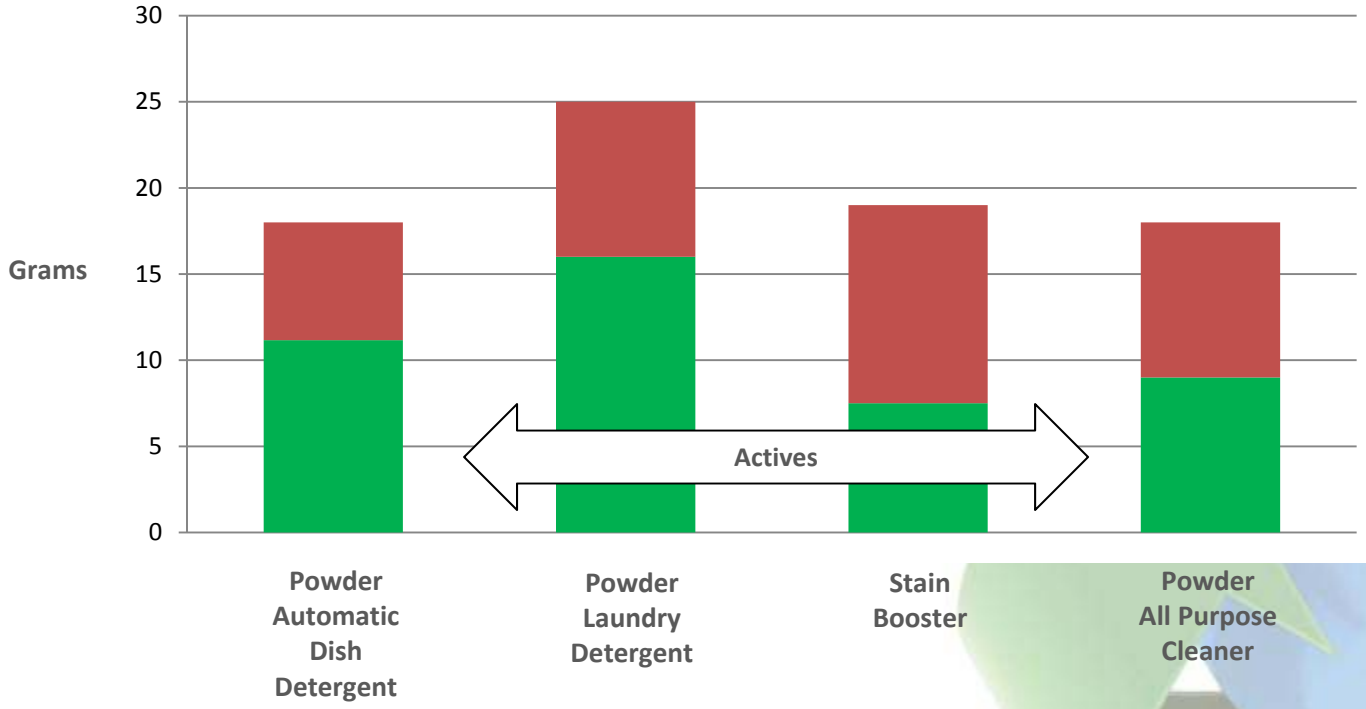
Calcium Binding Capacity



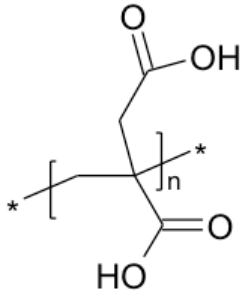
Monodose Formulating

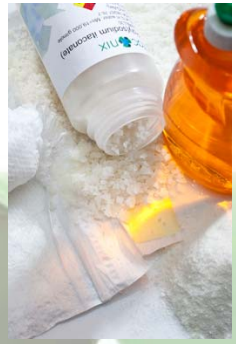


Monodose Formulating with Itaconix® Dispersant DSP 2K™



100% Sustainable Carbon

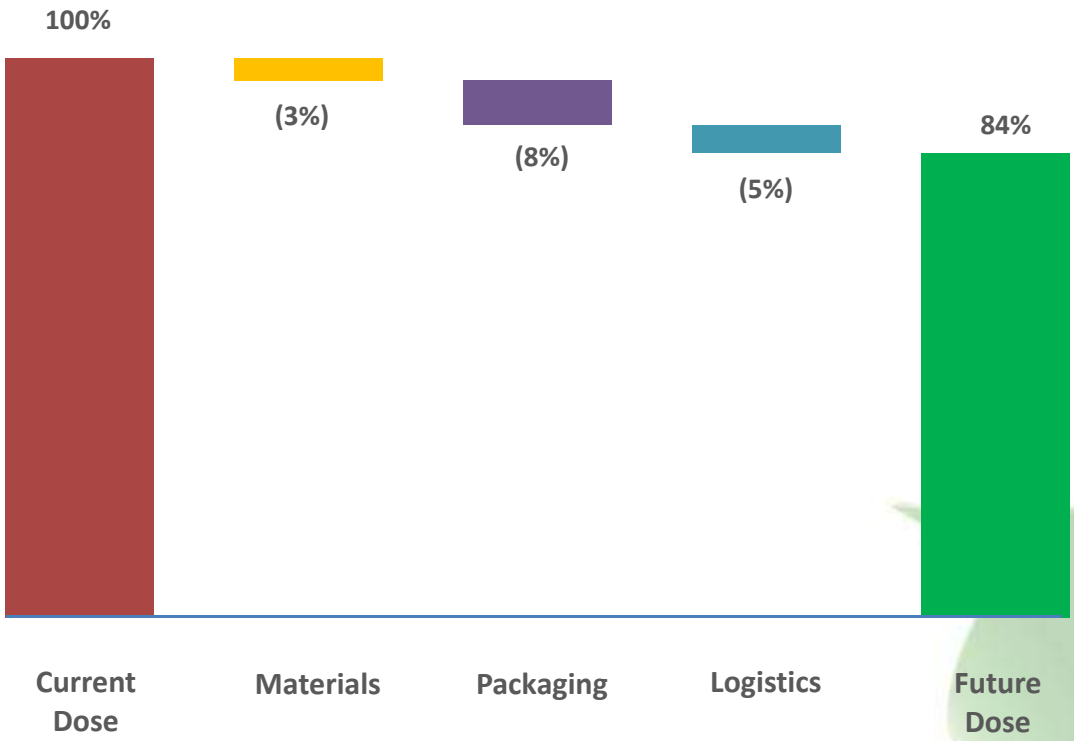




Itaconic acid is produced by fermentation with *Aspergillus terreus* using carbohydrates such as corn.

Polymers from itaconic acid are 100% sustainable - all of the carbon comes from renewable resources.

Sustainable Cost



What Next?

Performance

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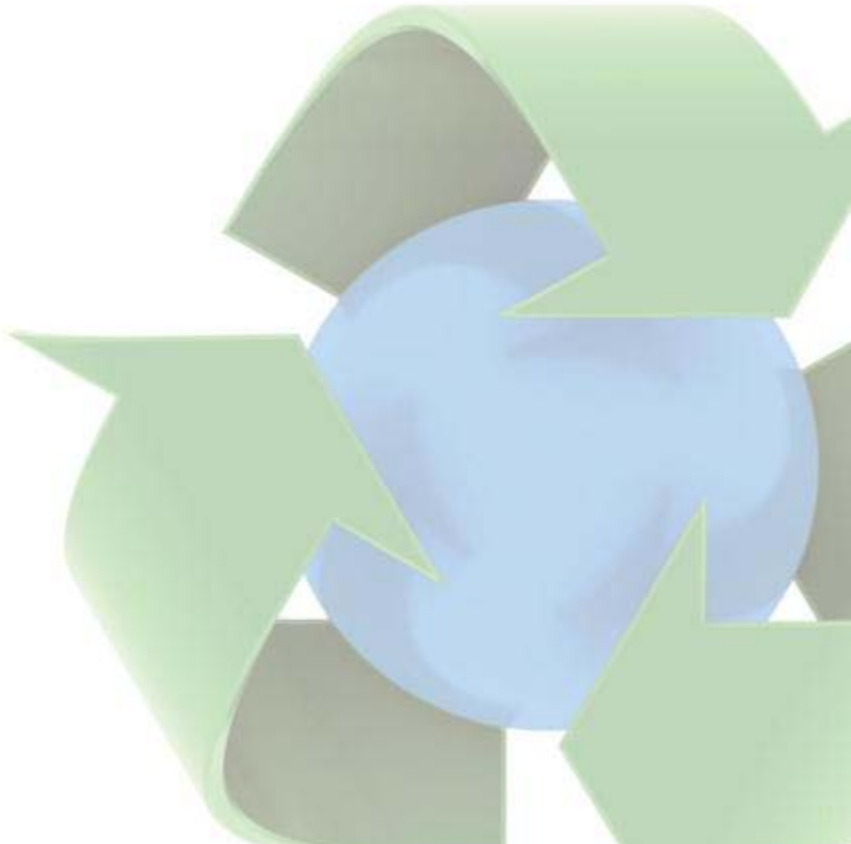
Size

Cost

&

Sustainability



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