Renewable Packaging Materials From a Brandowner’s Perspective

Pacific Rim BIO Conference

October 2012
15
206
3,500
700,000
20,000,000
1,800,000,000
Primary packaging globally
(% volume delivered)

- NR PET: 51%
- RR PET: 14%
- Cans: 12%
- NR Glass: 10%
- RR Glass: 7%
- Fountain: 1%
- Other: 5%

NR: non-refillable bottles
RR: refillable bottles
PlantBottle™ is Better By Design…

PlantBottle PET is chemically & physically **THE SAME AS** petroleum-based PET:

- Same PET resin suppliers
- Same bottle conversion process
- Same bottle filling process
- Same material performance
- Same recyclability
- Like petro-based PET **IS NOT** biodegradable
2020 Goal: To have all plastic PET bottles include responsibly sourced plant-based materials that are fully recyclable.
Technology

Plant-Material (sugars)

Petro-Material (oil, natural gas)

Bio-MEG (30%)

Bio-PTA (70%)

Ingredient 1 [PTA] 70% by Weight

Ingredient 2 [MEG] 30% by Weight

Recycled PET

PET Plastic

Bottle

Consumer

* Patent pending on claim “Plant-based PET material with 1% to 100% plant based content from bio MEG and/or bio PTA”
Innovation Collaboration:  Technology

Understand research and development landscape

- Technical Advisory Board (TAB)
- Supply Base
- 3rd Party Consultants
- IP landscape review and deep dive

PlantPET Technology Collaborative (PTC)
**Biomass**
- Cellulose
- Hemicellulose
- Lignin

**Sugars & Lignin**
- C$_5$ sugars
- C$_6$ sugars
- Lignin (& other co-products)

**Syngas**
- CO/H$_2$

**“BTX”**
- Benzene
- Toluene
- Xylene

**Algae**
- [multiple routes]

**PET precursors**
- Ethanol / MEG
- Paraxylene / PTA

**Methods**
- Enzyme hydrolysis
- Acid hydrolysis
- Sub/super critical water
- Gasification
- Catalytic reaction
- Fermentation