Green Chemistry Education Webinar Series

Building Market Share for Green Products

December 16, 2014



What is the GC3?

- Cross-sectoral, B2B network of over 70 companies and other organizations
- Formed in 2005
- Collaboratively advances green chemistry across sectors and supply chains





Today's Speakers

Steve Davies



Natureworks
Director of Public Affairs
and Communications

Saskia van Gendt



MethodCaptain Planet

Charlie Forslund



Steelcase
Principal, Material
Innovation Exploration



Ground Rules

- Due to the number of participants in the webinar, all lines will be muted
- If you have a question or comment, please type in the Q&A box located in the dropdown control panel at the top of the screen
- Questions will be answered at the end of the presentation





Steve Davies
Director – Public Affairs
NatureWorks LLC
December 16, 2014

www.natureworksllc.com

My Thesis:

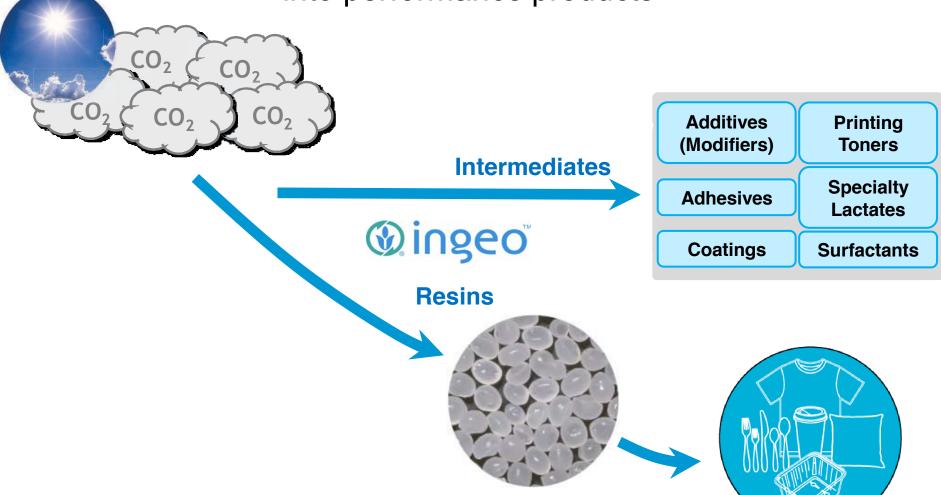
It's not about "green"

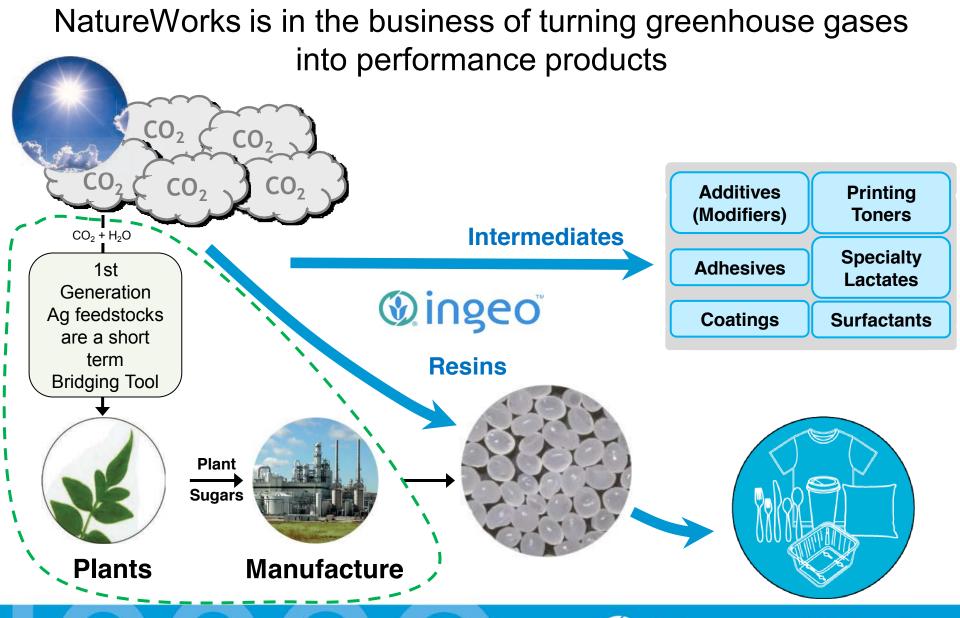
My Thesis:

It's not about "green"

It's about functionality, cost, and preference

NatureWorks is in the business of turning greenhouse gases into performance products

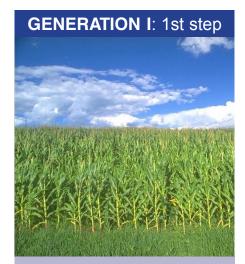




We are committed to feedstock diversification:

Performance materials made by transforming whatever are the right, abundant, local resources

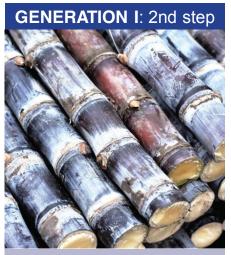
Investment in innovation and R&D collaboration to grow our Ingeo feedstock portfolio.



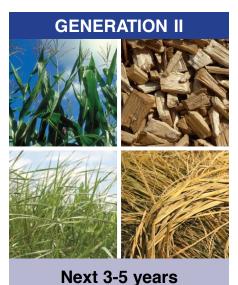
Where we are today

Dextrose from corn starch

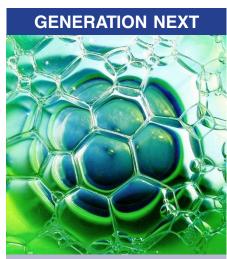
"Bridging Crops"



Where we are going now
Sucrose from locally
abundant materials such as
sugar cane



Lignocellulosics: Sugars from bagasse, wood chips, switch grass or straw.



CO₂ to lactic acid technology? CH₄ to lactic acid technology?

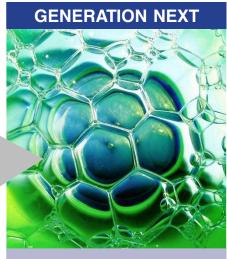
And next?

We are committed to feedstock diversification:

Performance materials made by transforming whatever are the right, abundant, local resources

Investment in innovation and R&D collaboration to grow our Ingeo feedstock portfolio.

- June 2013:
 - Long Term R&D Partnership Established Between NatureWorks & Calysta
- June 2014:
 - Lab Scale Lactic Acid Production Demonstrated
- October 2014:
 - \$2.5MM DOE Funding Announced



And next?

CO₂ to lactic acid technology?

CH₄ to lactic acid technology?

Ingeo in the Market

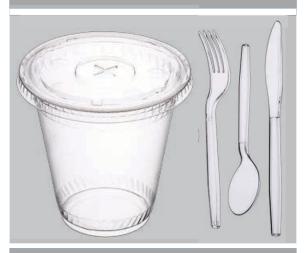
Rigids



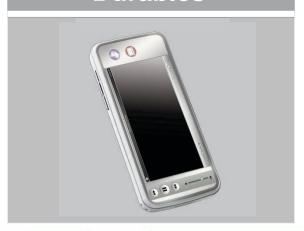
Nonwovens / Fibers



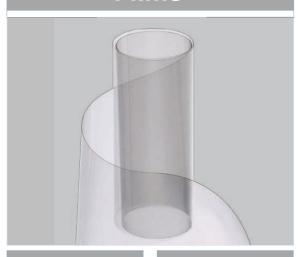
Food Serviceware



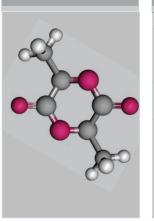
Durables



Films



Lactides



Incubator





What it's all about

"The 3 P's"

Properties

 Broad and adjustable physical property set

Price

Sugars vs oil

Favorable yields,

Economies of scale

Feedstock hedging capabilities

Cradle to cradle economics

Preferences

- Lower carbon footprint and energy usage
- Renewable feedstock
- Health Concerns
 - BPA free
 - Phthalates free
 - Acrylonitrile free





Innovation in Form-Fill-Seal Packaging











Danone's Stonyfield - in their own words: "IMPACT OF INGEO CONVERSION"

- Carbon savings Environmental
 - 75% reduction in CO2 emissions
 - Equivalent to 1,320 MT CO₂/year savings
- Ingeo out performs polystyrene
 - Stronger/less breakage
 - Better lid adherence
 - Lower temperature filling (less energy use)
 - Maintained line speed and shelf life
- Addresses consumer concerns
 - Well received by key opinion leaders
 - Reduction in human toxicity
 - Did NOT increase our retail price

Consumer & Cost

Stonyfield CEO Gary_Hirschberg, Innovation Takes Root Conference Keynote: "Inventing a WIN-WIN-WIN-WIN FUTURE", February 21, 2012

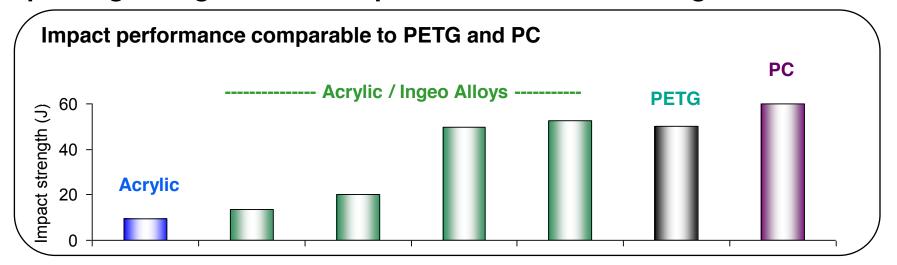








Improving Plexiglas PMMA Impact Performance with Ingeo







Source: Altuglas International a subsidiary of Arkema International



Shopping Bags Made from Naturally Advanced Ingeo There's no Better Way to Bring Home the Groceries

Introducing the BotanicBag™ a reusable bag made from naturally advanced Ingeo™ fibers. An innovative and more responsible material that satisfies practical performance needs while matching your environmental concerns. Ingeo delivers all the performance benefits of synthetic fibers with the reduced environmental impact and price stability offered by annually renewable materials.



Ingeo nonwoven bag performance characteristics

- · Prints with ease providing excellent color vibrancy
- Features strong UV resistance, good flame retardant performance and low moisture regain
- · Resists stains
- Repels odor
- · Brings price stability

Ingeo credentials

- · Made from renewable carbon
- Production requires less fossil fuel from cradle to pellet
- · Ok Biobased/Vincotte certified



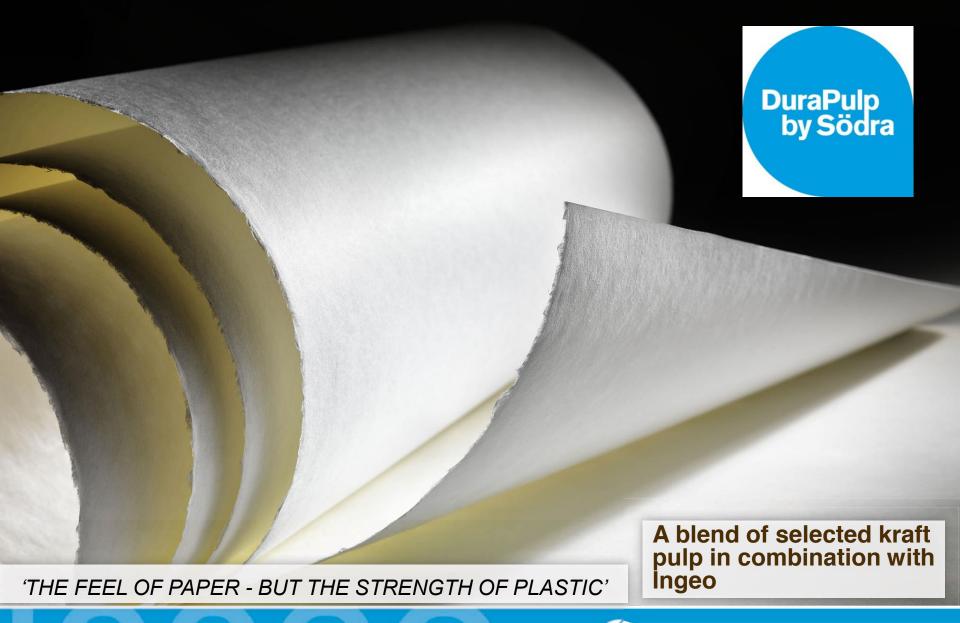
3M™ Steri™ Drape Surgical Drapes





"Now made with plant-based renewable resources, 3M Steri-Drape Surgical Drapes use fewer fossil fuels¹ and decrease CO_2 emissions to help reduce the environmental impact of medical disposables². Matching sustainability with improved product performance, the entire drape provides a high level of protection for patients and healthcare professionals ... "



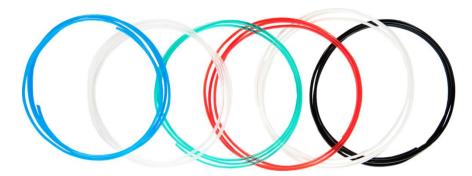




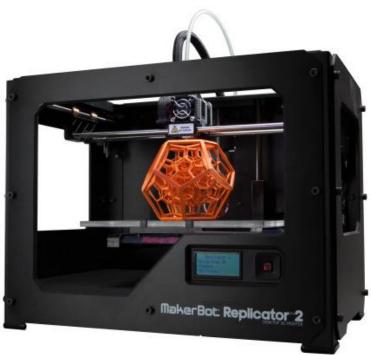
3D Printing - New Material Innovation Fueling Wholly New Markets ...

Ingeo Performance in a (rapidly) emerging end market

- Low polymer thermal shrinkage means high resolution printing of the most complex parts
- Strong Ingeo fusing performance means it's easy to use and performs well on most prints
- Low Ingeo melt point means safer, lower temperature printing.
- Very low emissions with Ingeo means no unpleasant odors









Ingeo in 3D Printing



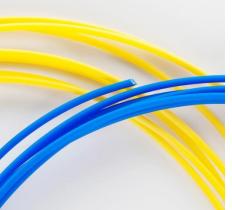


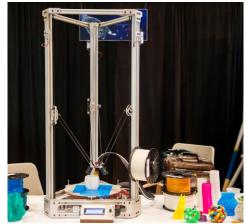


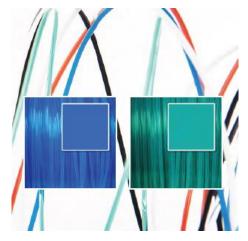








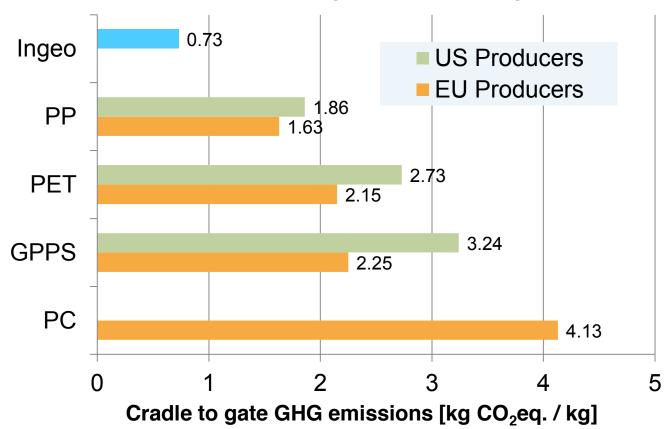




So is there a place for "green" credentials?

It's all about being specific.

Carbon footprint as a example



Data on EU production from Plastics Europe (http://www.plasticseurope.org/plasticssustainability/eco-profiles.aspx).

Data on US production: American Chemistry Council (http://plastics.americanchemistry.com/LifeCycle-Inventory-of-9-Plastics-Resins-and-4-Polyurethane-Precursors-Rpt-Only)















"Walmart Stores in 2010 has achieved a savings in fossil fuel usage of 25,971 barrels of oil per year, and a reduction in greenhouse gas emissions equal to eliminating the CO_2 emissions from driving a car 20,885,635 miles"

My Thesis:

- It's not about "green"
- It's about functionality, cost, and preference
- It's also about supporting & fueling innovation in the market

Sharing and the "Collaborative Economy"

 It's not exclusive to Uber & Airbnb





Sharing and the "Collaborative Economy"

 It's not exclusive to Uber & Airbnb





- Innovation Sharing and Collaboration in the materials space
 - "ITR"



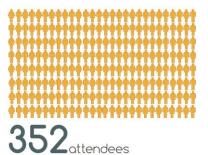
A Collaborative Biopolymers Forum for the Global Ingeo Community

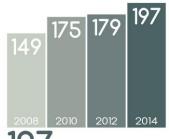
2008, 2010, 2012 & 2014

Coordinated by NatureWorks to facilitate biobased innovation sharing across the industry



TAKES ROOT BY THE NUMBERS





























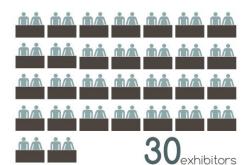














PlasticsTechnology

Bioplastics Conference Learns of New Additive to Enhance PLA Performance

"And for me, at least, this event is reminiscent of a time decades ago when the big polymer producers would gather together other segments of the industry —machine builders, additive suppliers, and processors—to help each other learn how to tap the potential of an upstart family of materials that was challenging the established order..."

Matthew H. Naitove
 Plastics Technology



"If you want to learn about biopolymers and Ingeo, this is the place, this is where the experts are... it's every part of the supply chain, there are people who are really thinking deeply about these issues."

Nancy Hirshberg
 Hirshberg Strategic



PackWebasia.com The News Network for the Asian Packaging Community

Innovation Takes Root 2014: NatureWorks Conference - Day One

"Brand owner and converter speakers at Innovation Takes Root 2014 turn the focus on PLA's technical functionality. It is almost as though PLA is now being treated as (gasp!) a 'normal commodity' plastic."

PackWebasia



My Thesis:

- It's not about "green"
- It's about functionality, cost, and preference
- It's also about supporting & fueling innovation in the market
- And it's about authenticity and transparency

Authenticity & Transparency

- Where we are now
- Where we're going





Questions?



Building Market Share for new-to-the-world materials

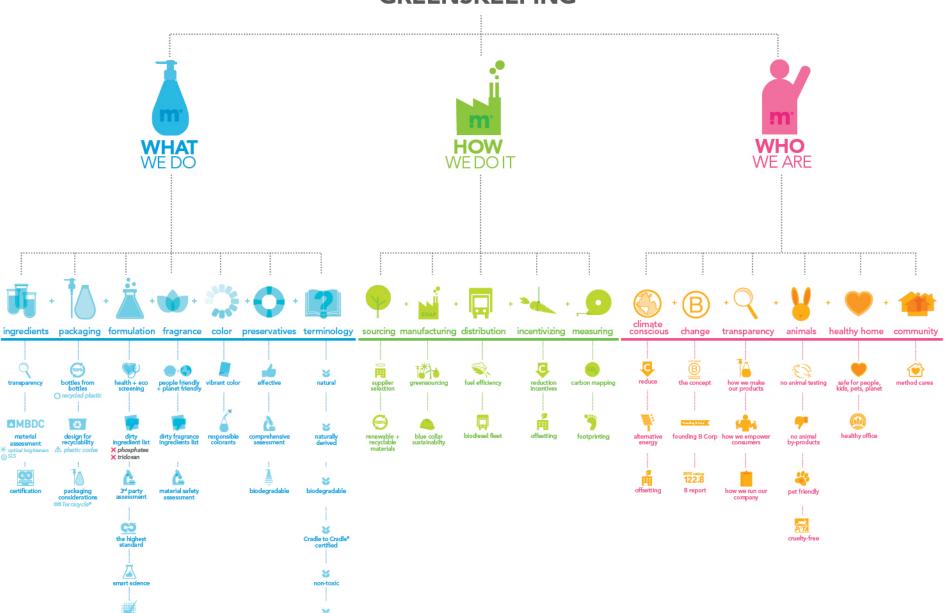
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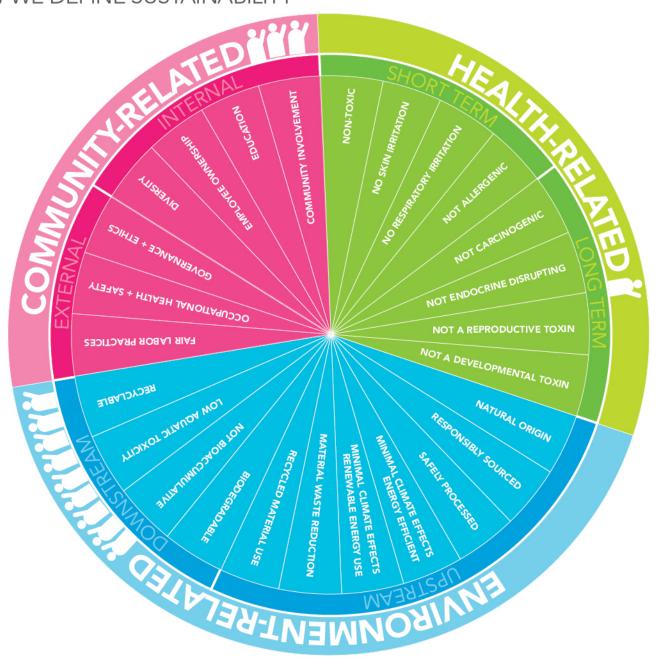


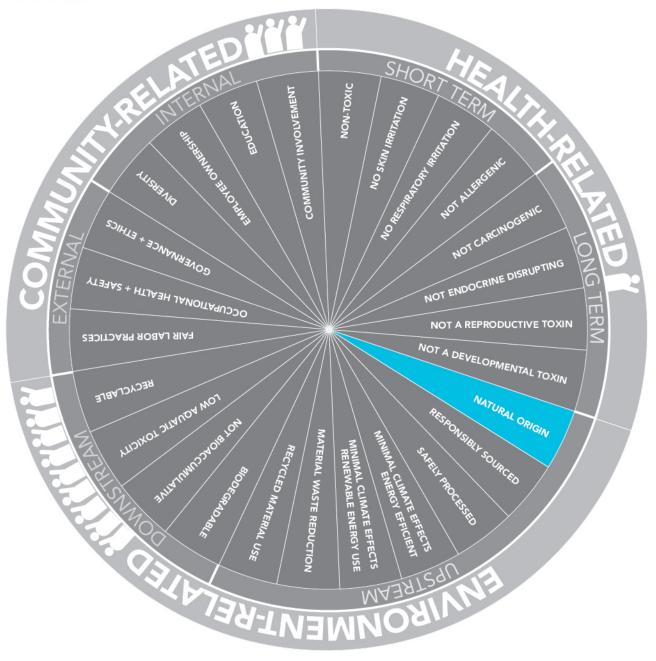




external validation









WHATWEDO















green chemistry + ingredients

recyclable packaging made from recycled materials

effective formulations made from approved materials

safe, phthalate-free fragrance

fragrance

colors that are safe for people + the planet preservatives assessed for safety + efficacy

clear + transparent terminology



sourcing



manufacturing



distribution



incentivizing



measuring

ethical sourcing

green manufacturing

efficient distribution

green incentives for suppliers

metrics for environmental progress

WHO WE ARE

















climate conscious

change transparency

animals

against all

happy, healthy (and non-toxic) homes are our mission

healthy home

community

climate conscious company

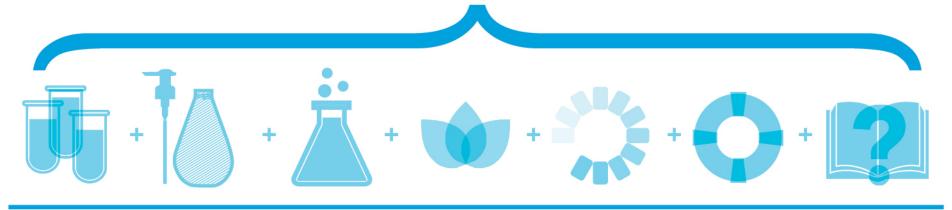
in business to change business in how we make our products and how we run our company

animal cruelty

contributing to our community







ingredients

packaging

formulation

fragrance

color

preservatives terminology











certification in every category

our line of more than 100 fabric care, personal care and home care products are C2C certified at the silver or gold level. this means an independent team of scientists at C2C Institute have rigorously assessed all ingredients, packaging materials, and design, processes and social practices used, making sure that we've designed for a maximum material reutilization rather than designing our products to go into a landfill.

ELECTRONICS

APPLIANCES

WOOD FURNITURE

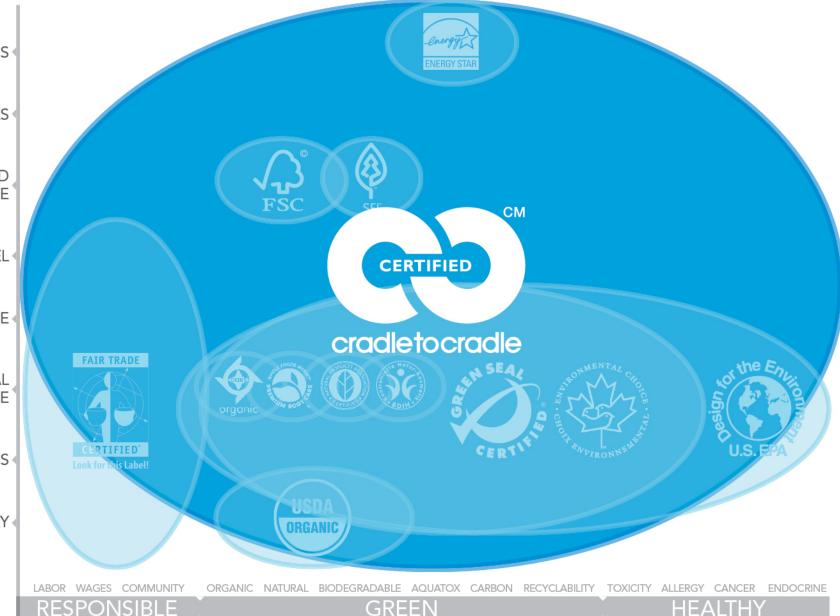
APPAREL

HOME CARE

PERSONAL CARE

COSMETICS

GROCERY











transparency

we believe in authenticity and in empowering our advocates to make fully informed decisions about the products they choose, so we disclose all of the ingredients in our products, the processes we use to make them, and the practices and values of **method** as a company.

MBDC material assessment

every ingredient used in a method product is comprehensively evaluated by an independent environmental research institute, MBDC. as a result of this rigorous material research process, we can be completely certain of the health and environmental safety of all method products.



certification

we have over 100 products Cradle to Cradle certified at the silver or gold level, this means a team of scientists at C2C Institute have rigorously assessed all ingredients, packaging materials and design, processes, making sure that we've designed for maximum material reutilization.



bottles made from bottles

method leads the industry in the use of 100% recycled plastic in our cleaning and hand wash bottles. this results in a brilliantly green trifecta: less waste in landfills, less energy needed to make the resin (70% less than virgin!) and beautiful bottles.

design for recyclability

closed loop packaging is our ultimate goal. so we have rigorously researched recycling systems across North America to fully understand which plastics + packaging materials actually get recycled and we design our bottles to be compatible with these whenever possible.

packaging considerations

every bottle we design goes through a rigorous process to ensure that it's as green as possible. considering carbon emissions, energy efficiency and material use, our packaging design team embodies comprehensive environmental benefit through recycled materials, refill designs and more compact product designs.



recycled plastic

recycled plastic has been recovered from either other bottles or industrial waste, saved from a landfill, and used in place of new plastic. this saves waste, reduces resource consumption and incentivizes recycling.

NOTE

PCR - Post Consumer Resin. this plastic has been recycled from materials after their use by consumers (like the soda bottles in curbside recycling collection).

PIR - Post Industrial Resin. this plastic is recycled from industrial materials or processes (such trimmings and waste from making other bottles.)



100% recycled plastic

almost all of **method**'s A PET plastic bottles, including our hand wash and spray cleaners, are made from 100% PCR recycled plastic (Post Consumer Resin, for those in the know).



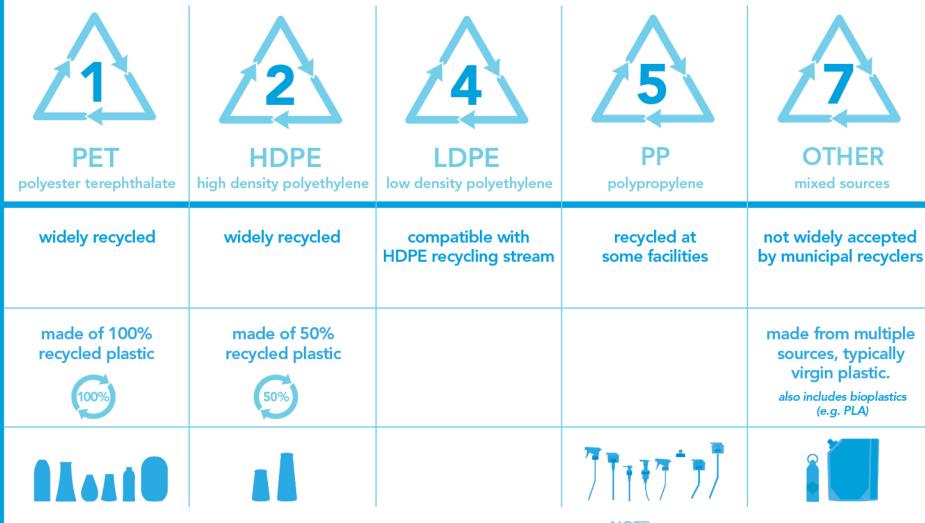


50% recycled plastic

our A HDPE bottles range from 25% PCR recycled plastic (in our toilet cleaners) to 50% PCR in **method**® laundry detergent.



TWE DO, PACKAGING, DESIGN FOR RECYCLABILITY, PLASTIC CODING



method uses primarily plastics 1 and 2 and designs all packaging for maximum recycled content, material efficiency and recyclability.



NOTE

plastic 3 (PVC) is a dirty packaging material that method does not use. plastic 6 (polystyrene) is best avoided in rigid packaging due to its lack of recyclability.







health + eco screening

we use the precautionary principle, meaning that if there's a chance that an ingredient isn't safe, we don't use it.

the dirty ingredient list

method chooses never to use dirty, conventional cleaning ingredients, like phosphates or bleach, in our formulas.

3rd party assessment

MBDC

all method ingredients are rigorously evaluated by an independent material research agency for health and environmental safety.

the highest standard

Cradle to Cradle® is our mantra for the design of safe, green products.

smart science

our formulators use advanced green chemistry technologies to create powerful and safe formulations.

external validation

the world's first line of cleaning products to be Cradle to Cradle® certified for their responsible manufacturing, green package design and safe + effective formulation.









sourcing manufacturing

distribution

incentivizing

measuring

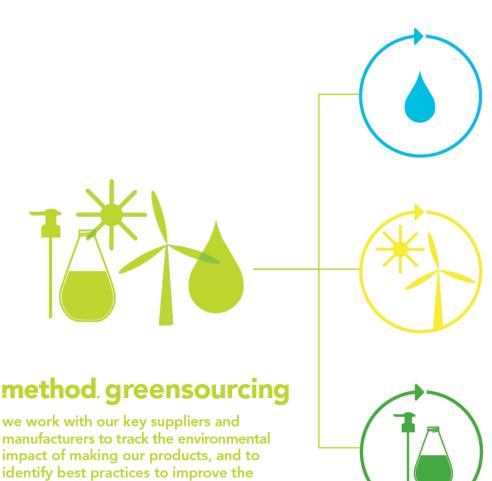




Cradle to Cradle® concept

a material use cycle that seeks to eliminate waste and/or virgin resource extraction through the creation of closed/continuous loops. Cradle to Cradle® traces a material from the time it is extracted to the point at which it is recycled/reclaimed.





water, energy and material efficiency of

our manufacturing processes.

water

we're working on reducing the amount of water needed to make our products to only the water that ends up in the bottles. we've achieved zero water waste in one factory so far and are working on the others.

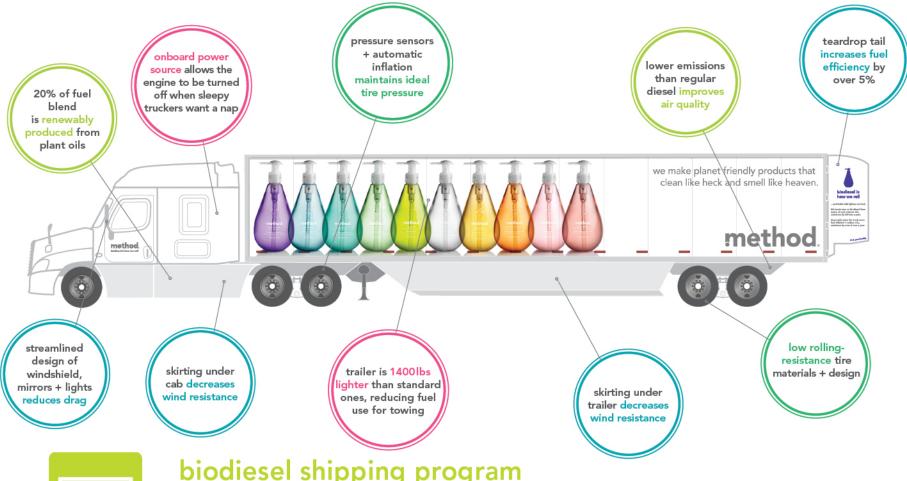
energy

the energy needed to make our products come from a range of sources, from solar and hydro to coal and gas. for now, we're offsetting the carbon emissions for all this energy, but we're primarily focused on finding ways to avoid much of the energy use in the first place.

materials

our goal is to design products and processes that avoid material waste entirely. so far, we've made big strides in recycling shrink wrap, pallets and cardboard, and are now working on reducing the waste created by obsoletes.

STRIBUTION BIODIESEL FLEET





biodiesel shipping program

we are reducing the impact of our business on global warming, one third of method's US shipments are made using next generation, fuel-efficient delivery trucks. due to the renewable biodiesel fuel blend and the efficiencyimproving technologies shown above, these trucks emit up to 20% less carbon and air pollutants than typical trucks.

- enhanced aerodynamics
- high-efficiency tires
- low-emission biodiesel fuel blend
- cabin power unit + lightweight trailer





reduction incentives

we believe that going to the source is the best way to reduce our company's carbon emissions. that's why we offer incentives to our suppliers + manufacturers to reduce the carbon emitted by their operations. if they can find solutions to demonstrably reduce energy use and resulting emissions, **method** will contribute to their purchase. such efficiency improvements include heating/cooling fans, low-energy factory lighting and solar panel installations.

renewable energy credits

method also buys renewable energy to offset the energy used to make our products. method's manufacturers report the electricity and gas associated with making our soaps and detergents. we then buy wind power in the form of green-e verified renewable energy credits from our partner, Native Energy.

Method. **GREENSKEEPING PROJECT TINY FEET**



total carbon footprint



packaging 30%



8884 metric tons CO2 emissions

PRODUCTS



formula **26**% 7721 metric tons CO2 emissions



scrap 1% 310 metric tons

CO2 emissions



distribution 32%

9610 metric tons CO2 emissions



manufacturing

9% 2525 metric tons

CO2 emissions



travel

1.6%

449 metric tons 133 metric tons CO2 emissions CO2 emissions

office

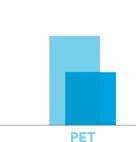
0.4%

PROCESS COMPANY



total reductions achieved

metric tons CO2 emissions reduction



14% of our footprint

PCR PP

cardboard

5% of our footprint

HDPE 2% of our footprint



biggest opportunity for further reduction

packaging right-size cardboard





distribution



manufacturing

lower carbon intensity ingredients











climate conscious

change

transparency

animals

healthy home

community



climate conscious

something can be done about climate change and we're working on finding solutions. climate change is a very real environmental problem and one of the most significant challenges for humanity. we are taking steps to lower carbon emissions from our products, their manufacturing and our business operations.



reduce

our strategic starting point is to prevent unnecessary carbon emissions from sourcing, product manufacture, distribution and company operations, and to provide incentives to help in this reduction process.



alternative energy

we use low-carbon, renewable energy sources in most of our offices, manufacturing sites and freight lines. from the biodiesel used for the distribution of over one third of our US truck shipments to the renewable energy credits we purchase for our 3 offices and all of our manufacturing, we are finding energy sources with drastically lower carbon emissions.



offsetting

for the carbon emissions we can't avoid, we have participated in a variety of offset programs. we have contributed to carbon reducing activities like methane capture, reforestation and renewable energy generation. currently, we reinvest our carbon offset equivalent in our supply chain to actually reduce our footprint.





no animal testing

because guinea pigs shouldn't be used as guinea pigs, **method** performs absolutely no animal testing on any of our products and does not endorse, request or commission any animal testing on our behalf. we're even CCIC Leaping Bunny Program approved.



we don't put any animal by-products in our products. that's dirty. we use innovations like renewable plant-based fabric softners which are 100% gross-stuff-free.



method's entire product line is safe for use around pets, specially formulated to put the hurt on dirt without harming a hair on you or your pets' heads.



cruelty-free recognized company

in 2006, PETA made our co-founders Adam Lowry and Eric Ryan their 'people of the year.' and gave method a Proggy (progressive business) award in the same year.





method cares

method cares is our program to give back to our local communities. a core belief at method is that people against dirty° should fight dirty on the front lines where we live. every employee at method gets 3 days every year to give back to the local community and they can choose to do whatever they want. but people against dirty have a tendency to flock together, so most of our activities are group events.

business for good.

we envision a world in which business is restorative to society, the environment and our economy; sustainably producing products or services that improve the livelihoods of people and enhance our environment worldwide.



by being a public benefit corporation and posting our b report

bcorporation.net/method

Certified



the concept

the B Corp vision is simple, yet ambitious: to create a new sector of the economy that uses the power of business to solve social and environmental problems. B Corps are unlike traditional responsible businesses because they meet comprehensive, transparent standards and legally integrate stakeholder interests into their corporate governance.

2013 rating:

121

B report

method believes in using the power of our business to create positive social and environmental change. we are a B Corporation, which means that we have formally incorporated our mandate for sustainability into the DNA of our company. the publicly available B Corp survey shows our performance as an ethical company.

PBC

founding public benefit corporation

in august 2013, **method** reincorporated as a benefit corporation and officially became method pbc. this unique corporate structure enables method to practice more enlightened business that balances profits with environmental and social responsibility.



THANK YOU

method

steelcase inc

MARKETING GREEN CHEMISTRY
DESIGN CONSIDERATIONS



MARKETING GREEN CHEMISTRY STEELCASE HISTORY

Steelcase Commitment to Sustainability

Sustainability is one of today's fundamental business challenges – and our inspiration. Everyday our team works to create maximum value from our available assets and be catalysts for good.

We know we are on a journey. Along the way, it is our responsibility to care for our planet and its people.



historical perspective



"Steelcase's formula for success – since our first use of thin sheet steel nearly 100 years ago – has always been user insights combined with design and material innovation.

Then, it was about bending metal.

Now, it's about bending the future – anticipating how work, workers and workspaces will change as material science accelerates."

Jim Hackett
CEO Emeritus, Steelcase

influencers

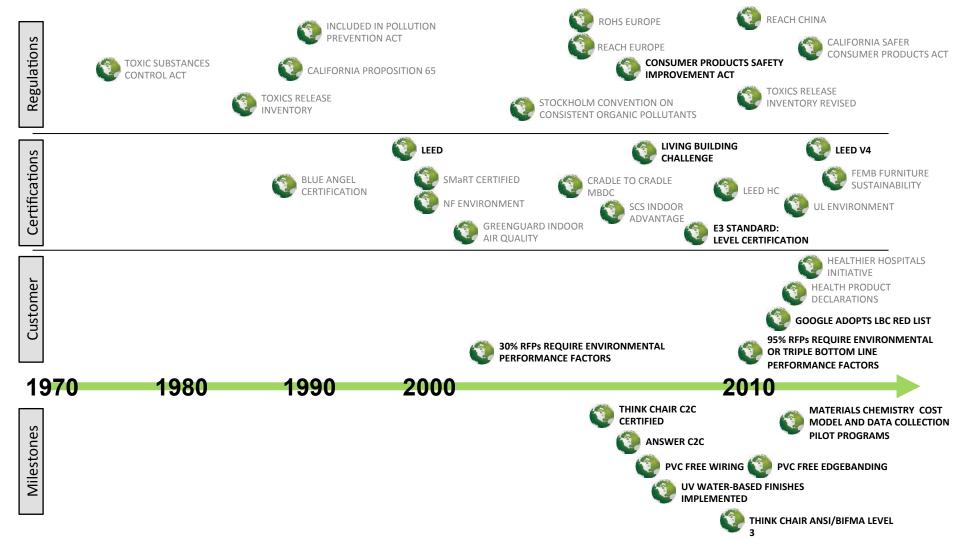












MARKETING GREEN CHEMISTRY PRODUCT EXAMPLES

THE RIGHT THING TO DO

and/or —

MARKETED







THINK





NEW THINK

Smart.

Simple.

Sustainable.

facts about THINK

- 1st ever Cradle to Cradle Certification
- 1st ever BIFMA Level 3 Certification
- SCS Indoor Advantage Certified
- Disassembles in 5 minutes
- Materials Chemistry
- Life Cycle Assessment



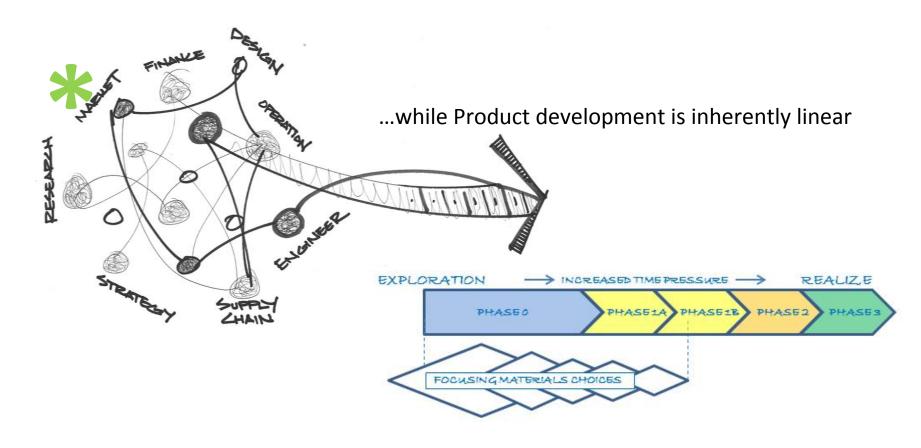
Victor2





MARKETING GREEN CHEMISTRY
THE 'HOW' of DESIGN

innovation is nonlinear...

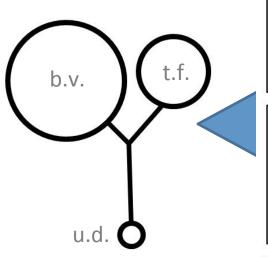


establish common themes, common language

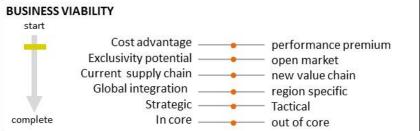


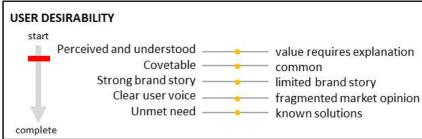
...Environmentally responsible...

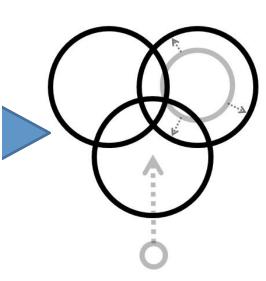
valuation tools









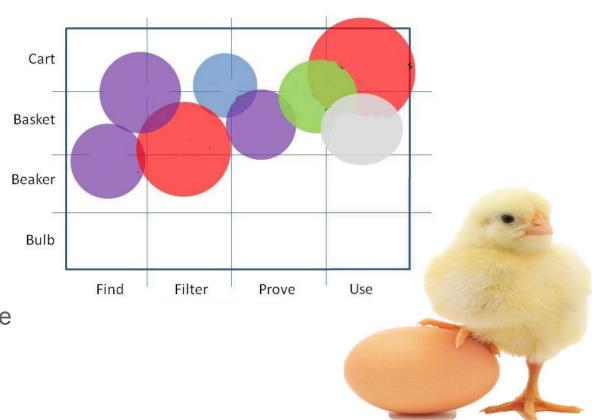


Chicken or Egg?

Which comes first? The design? Or the material?

Do you create the great design and invent the material?

Or do you discover the great material and adapt the design?



Design perspective

"materials are a key component to the design of things. as designers with focus on the needs of users, we manipulate form, mechanics, material, process, to create specific experience.

objects of greatest value always leverage material choice with perfection. nothing is left to chance, no compromise, not the easy way.

the material question is a design question, it does not stand alone. a bowl can be made of glass, ceramic, paper, or steel but each one will hold your cheerios in the morning... why choose one material over another? its a design of experience question. we choose the material to create a specific experience... to address a need."

Bruce Smith- Steelcase Design Studio

Love how you work. steelcase inc

Upcoming Events

WEBINAR

CEO Perspectives on Sustainability

January 6, 2015

2:00-3:00 p.m. EST



GC3 Innovators Roundtable

April 28-30, 2015

Beaverton, OR



Thanks for joining us!

For more information about the GC3: www.greenchemistryandcommerce.org

