NCTO
NATIONAL COUNCIL OF TEXTILE ORGANIZATIONS

AMERICAN TEXTILES
WE MAKE AMAZING

July 30, 2020

German Federal Institute for Occupational Safety and Health (BAuA)
Dutch National Institute for Public Health and the Environment (RIVM)
Danish Environmental Protection Agency
Swedish Chemicals Agency (Kemi)
Norwegian Environment Agency

SENT VIA E-MAIL

RE: Regulation of PFAS and PFHxA

To Whom It May Concern:

On behalf of the US National Council of Textile Organizations (NCTO), I thank you for accepting our organization's input as you consider the regulation of PFAS and PFHxA.

NCTO Background

NCTO represents the entire spectrum of the United States textile sector, from fibers to yarns to fabrics to finished products, as well as suppliers of textile machinery, chemicals, and other such sectors that have a stake in the prosperity and survival of the US textile sector. NCTO members produce textiles and components for a wide variety of technical end-uses, including, but not limited to, military and workwear apparel, outdoor fabrics, upholstery, awnings, personal protection equipment (PPE), industrial uses, and automotive fabrics. We serve as the voice of the US textile industry and represent approximately 130 member companies.

US textile and apparel manufacturers produced nearly $76 billion in output in 2019, and our sector's supply chain employs over 585,000 workers from fiber to finished sewn products. NCTO's headquarters are in Washington, DC. For more information, please visit our website at www.ncto.org.

NCTO's FluoroTechnology Workgroup

Fluorinated repellents are an important, value-add feature for some of our members' fabrics, so in 2016 our organization formed a FluoroTechnology Workgroup.

As the downstream users of fluorinated side-chain polymers, the Workgroup engaged with the FluoroCouncil (www.fluorocouncil.com), fluorochemical manufacturers, Non-Governmental Organizations (NGOs), and governing authorities to improve our understanding of this complex topic.

The group's intent is to stay engaged in the discussion around concerns raised by FluoroTechnology as they pertain to textiles. Educating members on the topic is also an objective. To that end, the

FluoroCouncil's Best Environmental Practices (BEP) for the Global Apparel Industry[1], a best-practices document for fabric producers using fluorinated repellents, was disseminated to all NCTO members; and the Workgroup developed brief documents, such as NCTO FluoroTechnology FAQs[2] (Frequently Asked Questions), for member companies to share with customers.

Benefits of Fluorinated Repellents

Workgroup members agree unanimously that fluorinated repellents impart lower surface tension and, thus, better repellency of water-based liquids, oil-based liquids, and their respective stains. In the case of military fabrics, upholstery, awnings and other longer-life textiles, customers have established high performance, quantifiable specifications to maximize the useful life, reduce maintenance costs, and increase consumer satisfaction.

Quantification of Environmental Impacts from Manufacturing Textiles

To understand the environmental implications of shortening product life, an effort was made in 2017 to collect quantifiable data on the inputs and emissions that go into producing upholstery fabric. There is a negative environmental impact when fabrics are replaced prematurely because a fabric fails to meet customers' expectations. A letter was sent to the NCTO membership, requesting company-specific data for manufacturing inputs (water, materials, energy consumption) and emissions (effluent, landfill waste, air emissions) in the production of repellent-treated upholstery, a product that is difficult or impossible to machine-launder. Aggregated results are shown in NSF-ANSI 336 Upholstery Inputs and Outputs for NCTO rev13-Jun-17[3]. By applying this data to the estimated size of the repellent-treated fabric market in the US, potential impacts for shortening the useful life of upholstery are reported in a presentation titled "Stain-Resistant Upholstery: Environmental and Health Considerations" (see AHFA - NCTO Fluoro Considerations 10-22-18[4]). Data shows that shortening the lifespan of upholstery fabrics by even 10% has negative environmental impacts that, in the opinion of the Workgroup, pose a bigger threat to the environment than the avoidance of fluorinated repellents.

Potential for Circularity

Fabric take-back programs, such as the one Unifi has with Steelcase, maker of office furniture, are in their infancy, but this example illustrates what is achievable. Based on input from Unifi, maker of Repreve® recycled yarn, the application of fluorinated repellents does not prevent the thermo-mechanical recycling of polyester.

Continuous Improvement and Assessment of Alternatives

Though the toxicology of PFAS chemistries is complicated, the FluoroTechnology Workgroup concluded that, on balance, the industry's transition to short-chain fluorinated polymer, managed in conjunction with the US Environmental Protection Agency (EPA), was a positive step forward for the industry in terms of material safety. Members understand, however, that all fluorocarbons are environmentally persistent. For this reason, and because the chemistries are relatively expensive, our members have worked (individually, not collectively) with chemical manufacturers, fluorochemical and otherwise, to continually assess non-fluorinated alternatives. To date, no non-fluorinated repellent has been made commercially available for repelling low surface-tension liquids and stains,

including oils and alcohol (> 20% concentration) that are present in a variety of foods and beverages.

Market Forces are Working

Aware of the opportunity to promote repellent finishes that are not environmentally persistent, our members have identified less-repellent, non-fluorinated materials that are incorporated into textiles readily available to the marketplace. In some cases, member companies are promoting both non-fluorinated and fluorinated articles. In other cases, members are treating fabrics only with non-fluorinated repellents and are relying on their eco-friendly marketing to gain business. Though there are performance differences - fluorinated repellents repel oily stains and non-fluorinated repellents do not -- consumers have freedom of choice and are able to make informed decisions on which fabrics are best-suited for their end-use.

NCTO Position on PFAS

NCTO submits these points for your consideration:

- NCTO is in favor of restricting long-chain fluorinated polymer for use as a repellent for textiles. Short-chain fluorinated polymers are an advancement in material safety based on the toxicity data comparing PFOA and PFOS (final degradants of long-chain fluorinated polymer) to PFHxA (final degradant of short-chain fluorinated polymer).

- So long as fabrics finished with short-chain fluorinated repellents are not shown to cause harm to human health, NCTO would like for the marketplace, not regulatory agencies, to decide which textile end-uses should continue to utilize fluorinated repellents.

- Environmental persistence, in the opinion of NCTO, is insufficient reason for restricting the use of short-chain fluorinated polymer, particularly since it does not inhibit thermo-mechanical recycling of treated fabric.

- If short-chain fluorinated polymers are to be restricted to select end-uses, NCTO asks that consideration be given to
    - end-uses that protect human health (e.g. medical PPE)
    - end-uses where the fabric relies entirely or predominantly on spot-cleaning or self-cleaning, as opposed to machine washing
    - end-uses where the lifespan expectation is relatively long (e.g. 2+ years)
    - and the potential for recycling treated fabric.

In Closing

NCTO thanks you for considering our data as you endeavor to improve our shared environment. The regulations you develop will impact international trade and might influence lawmakers around the world. Thank you, in advance, for considering the perspectives of all stakeholders, including US textile producers.

Sincerely,

Kimberly Glas
President & CEO

References and Attachments

[1]FluoroCouncil's Best Environmental Practices (BEP) for the Global Apparel Industry; see https://fluorocouncil.com/wp-content/uploads/2017/06/FluoroCouncil-Textile-BEP-Guidance-English.pdf

[2]NCTO FluoroTechnology FAQs

[3] NSF-ANSI 336 Upholstery Inputs and Outputs for NCTO rev13-Jun-17

[4]AHFA - NCTO Fluoro Considerations 10-22-18

NCTO
NATIONAL COUNCIL OF TEXTILE ORGANIZATIONS

AMERICAN TEXTILES
WE MAKE AMAZING

Frequently Asked Questions Concerning Stain-Repellent Fabrics and PFAS

1. **What is the definition of Fluorotechnology treatment and why is it important?**
   Fluorotechnology, often referred to as fluorinated chemicals and per- or polyfluoroalkyl substances (PFAS), is a diverse group of chemistries characterized by the strong bond between fluorine and carbon. Because of this strong bond, Fluorotechnology provides resilience and durability. Fluorotechnology provides the protection against oils and other stains that other technologies cannot provide. These properties are critical to the performance of many important products that industry and consumers rely on every day. Products such as carpets, food packaging, apparel, automobiles, and cellphones all rely on Fluorotechnology to give them the performance the consumer desires. They help make products last longer.

2. **What is PFAS and how does it pertain to textiles?**

   PFAS (PerFluoroAlkyl Substances) is an umbrella term for a class of organic chemicals that include over 3000 different materials. PFAS are important to textiles because they help the products repel both water AND oil based stains. They keep the product dry and clean for a longer period of time. They also reduce the number of times a product needs to be washed or cleaned with harmful cleaning products such as solvents and bleach.

   The group of PFAS used to make upholstery fabrics stain-resistant is part of a polymer that is not linked to the hazards associated with the PFAS of concern.
   Examples of where PFAS are currently being used can be found on the back of this document.

3. **What are PFOS/PFOA and why do they keep getting mentioned?**
   PFOA (Perfluorooctanoic Acid) and PFOS (Perfluorooctane Sulfonate) are two types of products that fall under the PFAS umbrella. They were products produced for other industries to serve purposes other than stain repellency. Neither of these products have ever been used as the main ingredient for textile finishing. They were present as contaminants. PFOS/PFOA are both associated with long-chain PFAS also known as C8. C8 is old technology and is no longer a factor in the application of PFAS to textile products by responsible producers in the United States.

4. **Why have concerns been raised about water/oil repellent technology?**
   The current PFAS chemistry that is being used by U.S. mills/finishers utilizes short-chain technology, such as C6. Because it is still a PFAS, C6 often gets confused with the discontinued C8 technology (which includes PFOA and PFOS) and other unrelated PFAS products such as Gen-X. "The science supports the conclusion that the newer FluoroTechnology is not expected to present a significant risk to humans and the environment.[1]"

   There are currently no regulations that protect against the importing of fabrics treated with C8 technology which includes PFOA/PFOS.

5. **What is the difference between oil-based repellency and water-based repellency?**
   All stains are NOT created equal. Materials that cause fabric stains fall largely under two categories, oil-based or water-based. Some common oil-based materials are salad dressings, corn oil, and suntan lotion. Common water-based materials are Kool-Aid®, coffee, and soy sauce. While most products on the market have the ability to be cleaned after a water-based stain occurs, a far fewer number have the ability to successfully repel oil-based materials. Oil-based materials stain fabrics more easily and are therefore more difficult to repel and remove.

6. **Are there alternative technologies that can produce equivalent fabric performance?**
   There is no alternative technology that can repel oil-based materials to the acceptable industry levels that Fluorotechnology can achieve. It just does not exist. The only technology that is available as an alternative will only repel water-based materials.

   Protecting textiles with water only repellents will result in your products being stained at a faster rate which equates to higher customer dissatisfaction, more field complaints, increased costs as well as a greater negative impact to the environment due to cleaning with harmful solvents and having to replace fabrics at a higher rate.

[1] Fluorocouncil - https://fluorocouncil.com/fluorotechnology/facts/

Aggregated Inputs and Outputs for Upholstery Fabric Production				
Sustainability Attribute*	**Boundaries**	**Data Sources**	**Average Mill**	**Average Mill incl C6 & Backcoat**
Water Consumption (gal/lin yd @ 58")	Yarn through Fabric Finishing	3 NCTO member mills	48.00	47.34
Energy Consumption (MJ/lin yd @ 58")	Polymer through Transportation	3 NCTO member mills; Y. Song et al "Composites, Part A", Elsevier 40 (2009) 1257-1265	76.29	82.99
Air Emissions (lb/lin yd @58")	Yarn through Fabric Finishing	3 NCTO member mills	17.51	15.35
Solid Waste (lb/lin yd @ 58")	Weaving through Fabric Finishing	3 NCTO member mills	0.22	0.14
$C0_2$ Emissions (lb/lin yd @58")	Polymer through Fabric Finishing	3 NCTO member mills; Hammond and Jones, Inventory of Carbon and Energy, 2.0	17.50	15.35

**NSF/ANSI 336 sustainability assessment standard*
Latest Revision: 13-Jun-17

NCTO
NATIONAL COUNCIL OF TEXTILE ORGANIZATIONS

Stain-Resistant Upholstery

Environmental and Health Considerations

AMERICAN TEXTILES
WE MAKE AMAZING

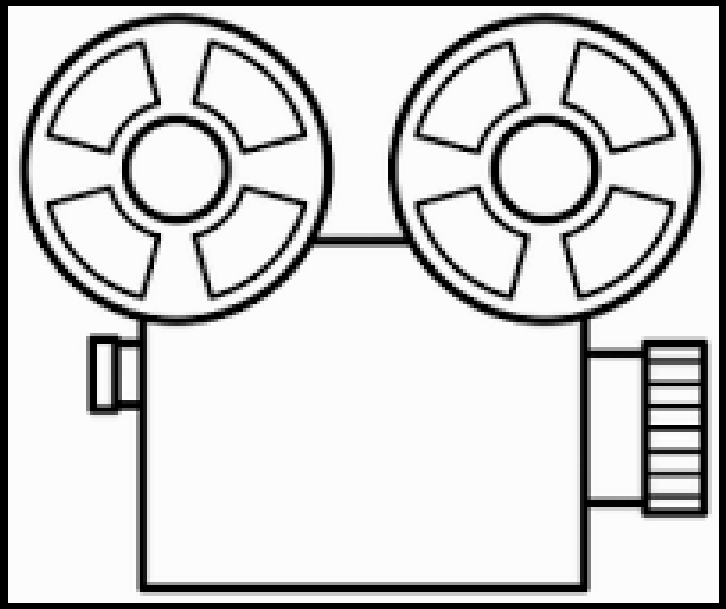
Why specify stain-resistant fabric?

Repellency of Non-Fluorinated Treatment

Repellency and Cleanability Comparison

Repellency and Cleanability Comparison

Before the results – the cleaning process

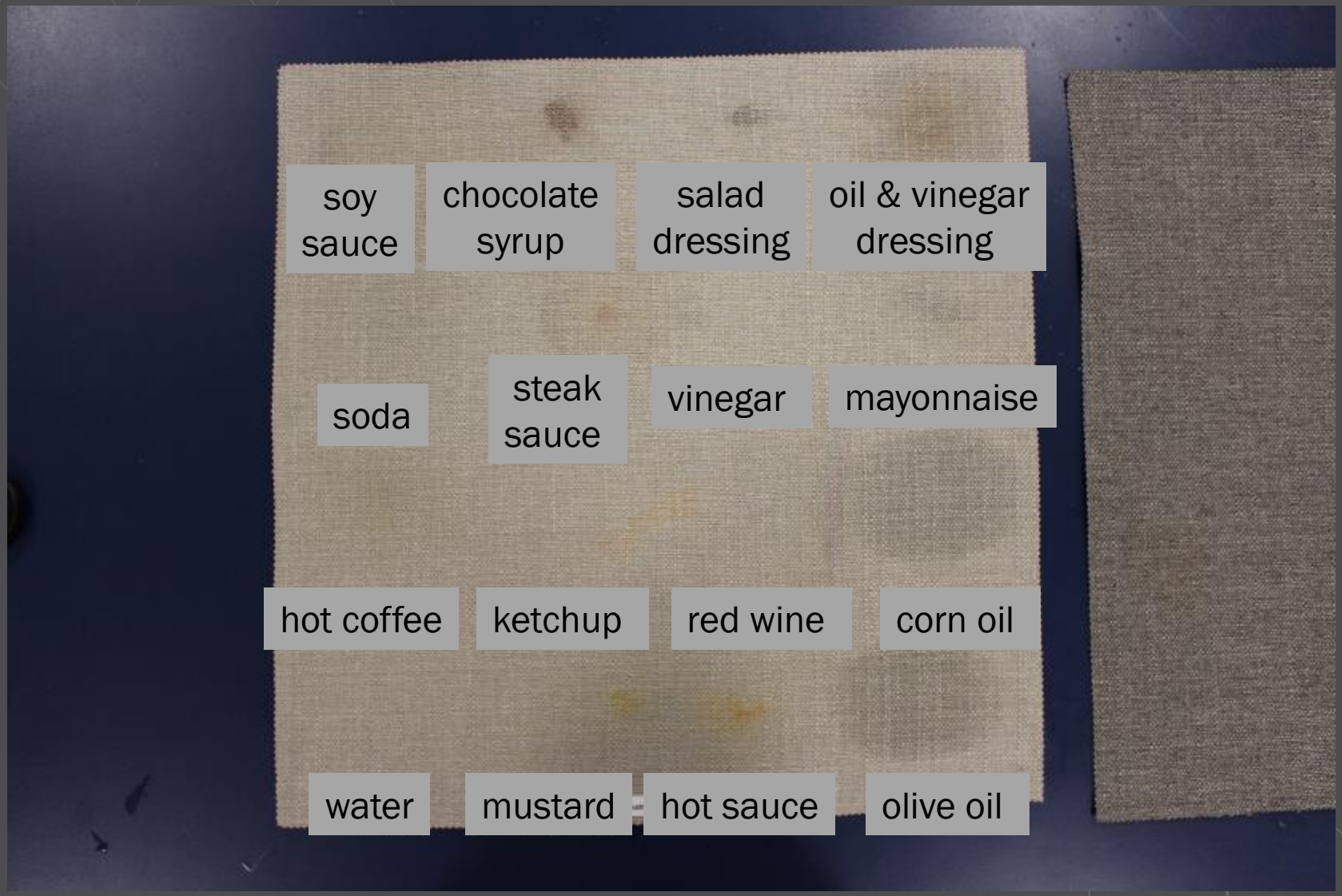


No Treatment

No Treatment

No Treatment

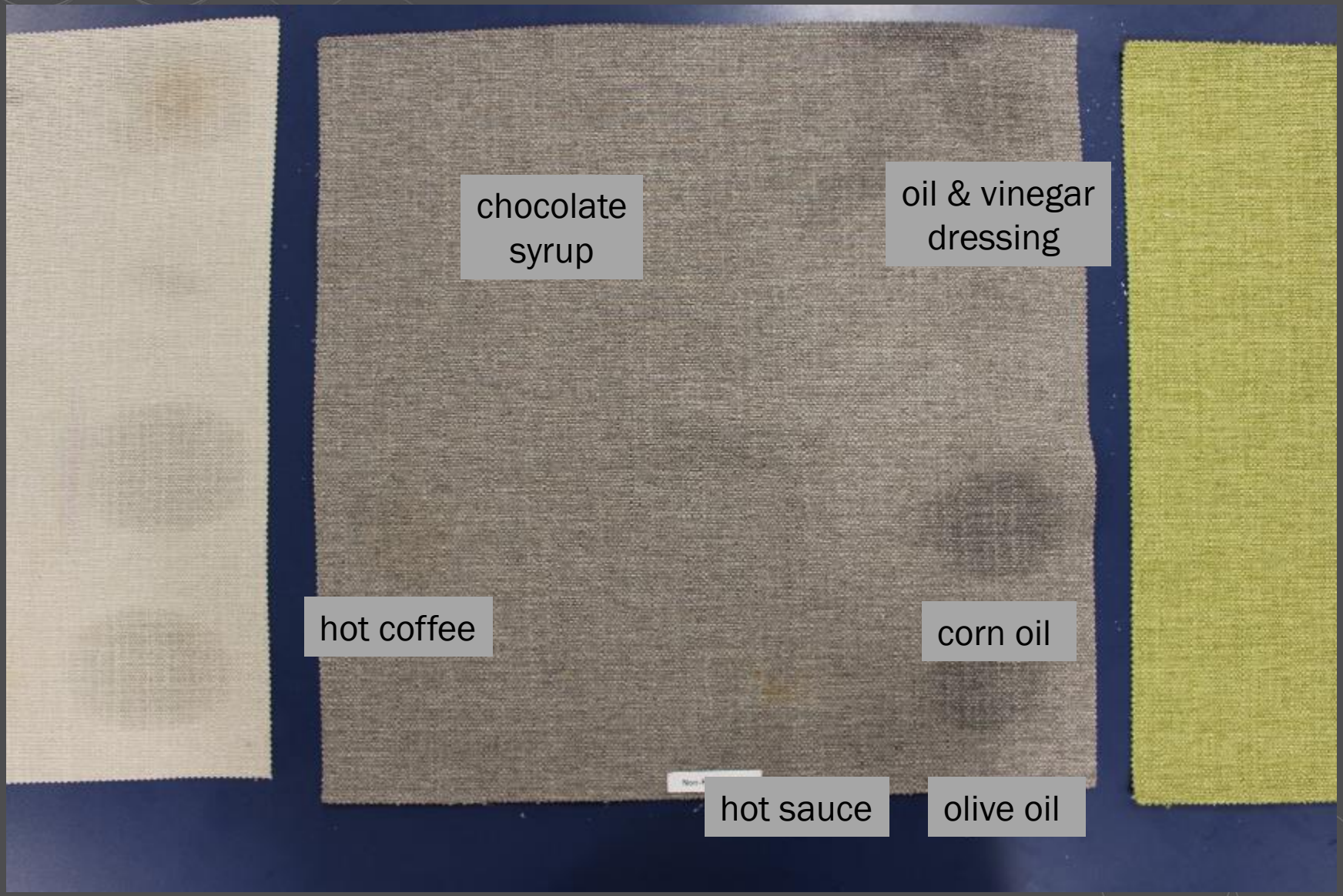
No Treatment



Non-Fluorinated Repellent

Non-Fluorinated Repellent

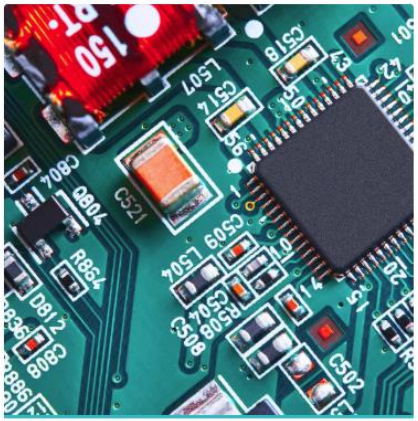
Non-Fluorinated Repellent



C6 Side-Chain Fluorinated Repellent

C6 Side-Chain Fluorinated Repellent

FluoroTechnology



SEMICONDUCTORS

Fluorinated chemistries are essential to the manufacturing environment of micro-technology.

Learn More

AUTOMOTIVE

Today's safe and fuel-efficient trucks, buses and automobiles rely on the unique, high-performance properties of FluoroTechnology.

Learn More

AEROSPACE

Fluorinated chemistries play a role in the creation of a number of critical components of airplanes and helicopters.

Learn More

FLUOROTECHNOLOGY MAKES IMPORTANT PRODUCTS FOR VITAL INDUSTRIES POSSIBLE

FluoroCouncil member companies voluntarily committed to a global phase-out of long-chain fluorochemistries by the end of 2015, resulting in the transition to alternatives, such as short-chain fluorochemistries that offer the same high-performance benefits, but with improved environmental and health profiles.

ELECTRONICS

Improves insulation, weather-ability, transparency and water-resistance. Provides smooth and smudge-resistant **touch screens.**

FIRST RESPONDERS

Offers life-saving protection in **safety gear** and **firefighting foams** used to fight flammable liquid fires.

OIL AND GAS

Provides reliable equipment to help improve the safety and affordability of oil-field and pipeline operations. Improves the reliability and safety of **fuel system seals** and **hoses, O-rings** and **downhole** and **field equipment gaskets.**

MILITARY

Enables **apparel** and **equipment** to provide high-barrier skin protection in extreme environments and against chemical warfare agents.

CHEMICAL/ PHARMACEUTICAL MANUFACTURING

Provides sterile, corrosion-resistant **coatings, linings** and **equipment.**

AUTOMOTIVE

Provides **every automotive system** with durability, heat and chemical resistance and vapor barriers. Increases reliability of **engine compartment wirings** and gauges and improves auto safety by reducing engine compartment fires. Protects **carpets** and **seats** against stains, soil, oil and water.

AEROSPACE/ DEFENSE

Enables **chemical-resistant tubes, hoses** and **fluid seals;** high and low temperature brake and hydraulic fluids used in **aircraft control systems** and **brakes;** and ultra-high frequency **wire and cable insulation** necessary for navigation, fly-by-wire control and aircraft communications.

HEALTHCARE

Serves as high dielectric insulators in medical equipment that relies on high frequency signals, like **defibrillators, pacemakers** and **CRT, PET** and **MRI imaging devices.** Used to treat **medical garments, drapes** and **divider curtains** to protect against the transmission of diseases and infections.

SEMICONDUCTORS

Creates the ultra-pure manufacturing environments necessary for micro-electronics. Used for **plasma machinery, etching materials, cleaning fluids** and **wetting surfactants** for chemical etchants.

ALTERNATIVE ENERGY

Enables **lithium batteries, fuel cells** and **solar panels,** which contribute to reduced emissions and energy costs.

OUTDOOR APPAREL/ EQUIPMENT

Creates breathable membranes and long-lasting finishes that provide water repellency, oil repellency, stain resistance and soil release with abrasion-resistant finishes for **apparel** and **equipment.**

BUILDING/ CONSTRUCTION

Enhances durability, UV resistance and anti-corrosive properties to lengthen the lifetime of **infrastructure, facades** and **surfaces.**

FLUORINE — CARBON

FluoroTechnology is the use of fluorine chemistry to create any fluorinated product. When fluorine and carbon atoms join together, they create a powerful chemical bond. The use and manipulation of this bond gives FluoroTechnology its distinct properties of strength, durability, heat-resistance and stability. These properties are critical to the reliable and safe function of myriad products that industry and consumer rely on every day.

FluoroCouncil
Global Industry Council for FluoroTechnology

www.FluoroCouncil.org

Source: FluoroCouncil

FluoroTechnology Uses

Surface Modifiers

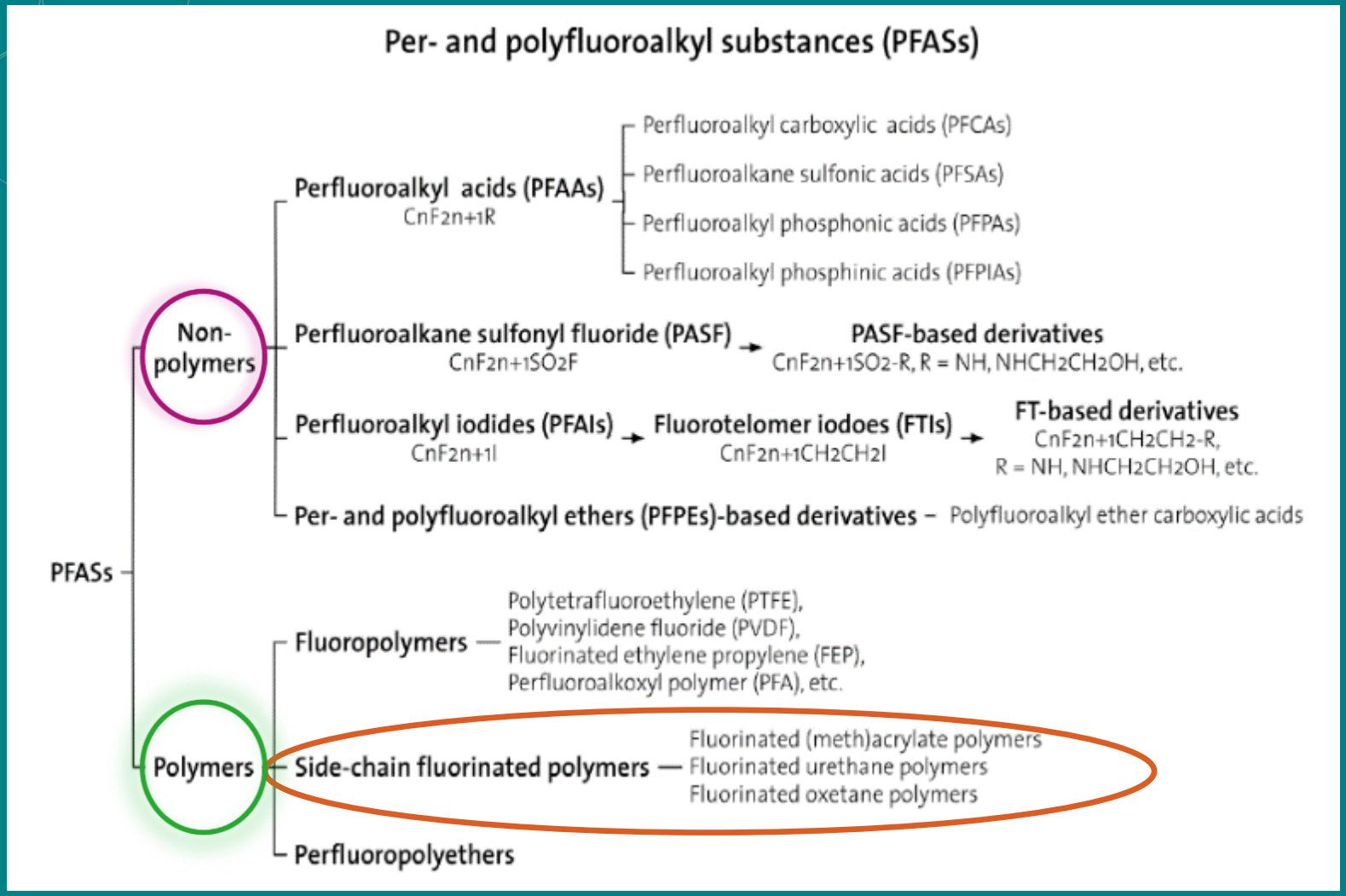
- **Modify material properties**: surface modification & protection, water & oil repellency, soil resistance and release, wetting and spreading
- **Applications**: Textiles, Protective Medical/First Responder Gear, Carpets, Paper, Stone & Tile, AFFF, Surfactants
- **Chemistry:** Fluorinated chains attached to organic polymer backbones.

Plastics/Polymers

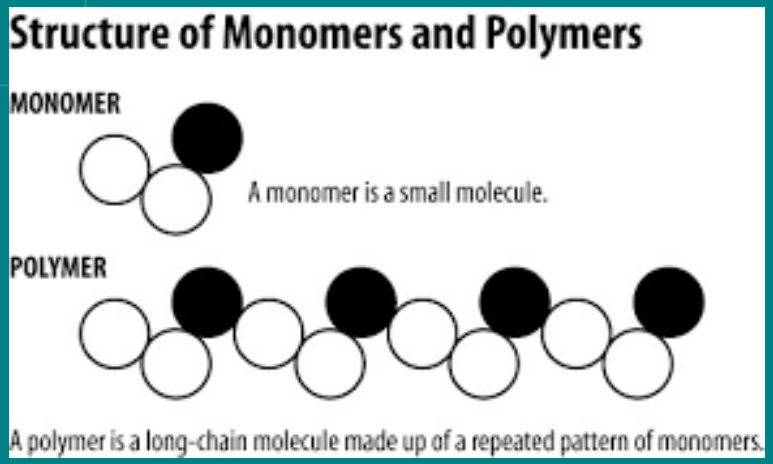
- High molecular weight polymers
- PTFE, Melt Copolymers, Thermoset Elastomers
- Fluorinated "backbone"
- **Material properties**: chemical resistance, thermal stability, resilience (elastomers)
- **Applications**: Breathable membranes, Aerospace materials, Hydraulic tubing, Chemical processing, Semiconductor manufacture, Transportation Touchscreens

Gases and Liquids

- Refrigerants
- Cleaning solvents
- Blowing agents
- Etching agents
- CFC alternatives (e.g., HFCs)


Per- and polyfluoroalkyl substances (PFASs)
PFASs
Non-polymers
Polymers
Perfluoroalkyl acids (PFAAs)
CnF2n+1R
Perfluoroalkyl carboxylic acids (PFCAs)
Perfluoroalkane sulfonic acids (PFSAs)
Perfluoroalkyl phosphonic acids (PFPAs)
Perfluoroalkyl phosphinic acids (PFPIAs)
Perfluoroalkane sulfonyl fluoride (PASF)
CnF2n+1SO2F
PASF-based derivatives
CnF2n+1SO2-R, R = NH, NHCH2CH2OH, etc.
Perfluoroalkyl iodides (PFAIs)
CnF2n+1I
Fluorotelomer iodoes (FTIs)
CnF2n+1CH2CH2I
FT-based derivatives
CnF2n+1CH2CH2-R,
R = NH, NHCH2CH2OH, etc.
Per- and polyfluoroalkyl ethers (PFPEs)-based derivatives
Polyfluoroalkyl ether carboxylic acids
Fluoropolymers
Polytetrafluoroethylene (PTFE),
Polyvinylidene fluoride (PVDF),
Fluorinated ethylene propylene (FEP),
Perfluoroalkoxyl polymer (PFA), etc.
Side-chain fluorinated polymers
Fluorinated (meth)acrylate polymers
Fluorinated urethane polymers
Fluorinated oxetane polymers
Perfluoropolyethers

Non-polymers (vs Polymers)



Small compared to polymers
ex: polyester polymer = 115+ polyester monomers

More reactive than polymers, affecting bio-availability

More mobile than polymers, affecting environmental transport

C6 fluorinated side-chain

Polymer backbone

Side-chain fluorinated polymer

Crosslinked polymeric network for durability

Sheath:

1% of finished fiber

=

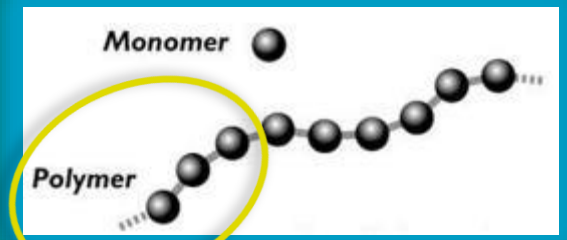
Side-chain fluorinated polymer

Core:

99% of finished fiber

=

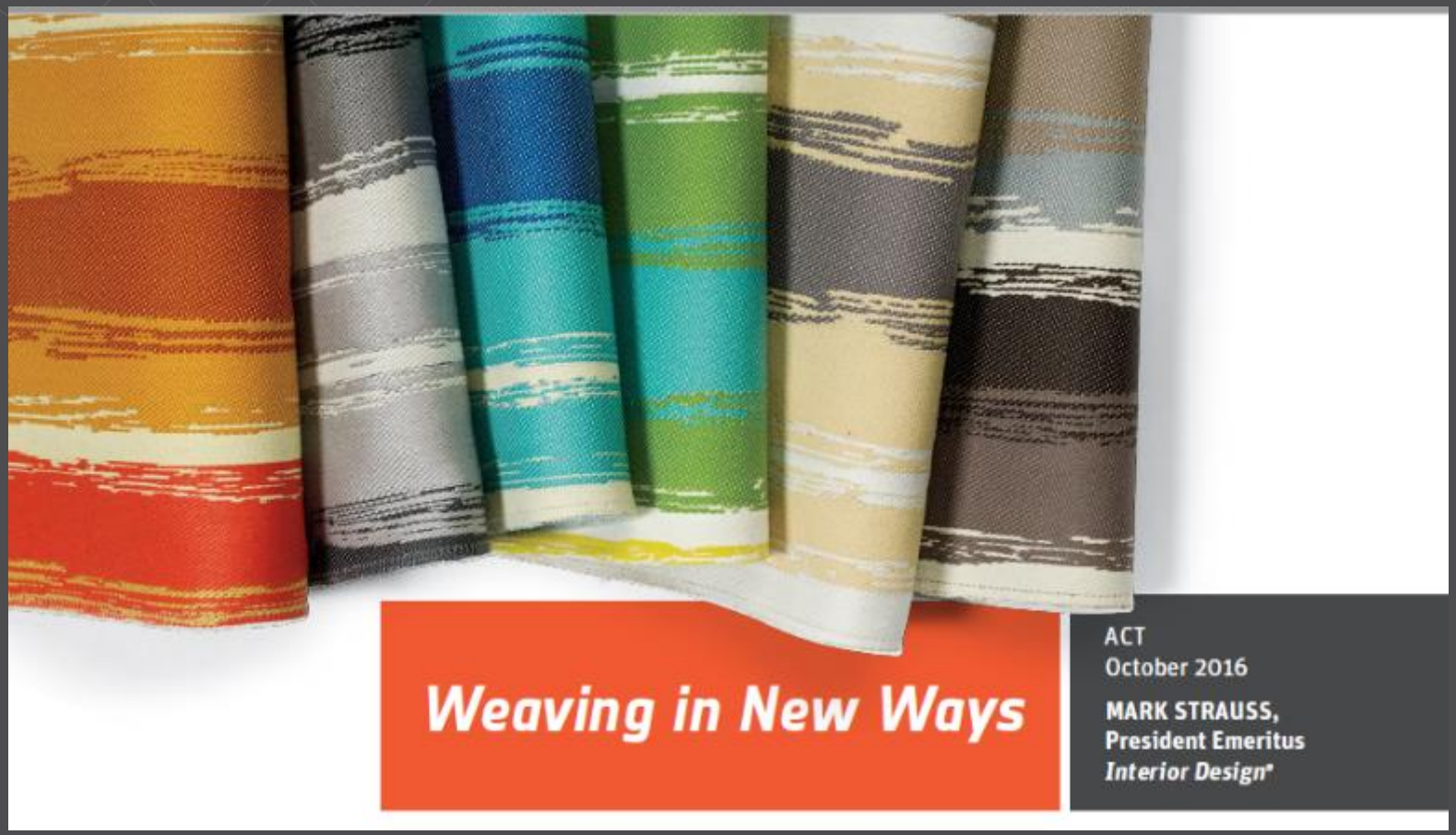
fiber polymer



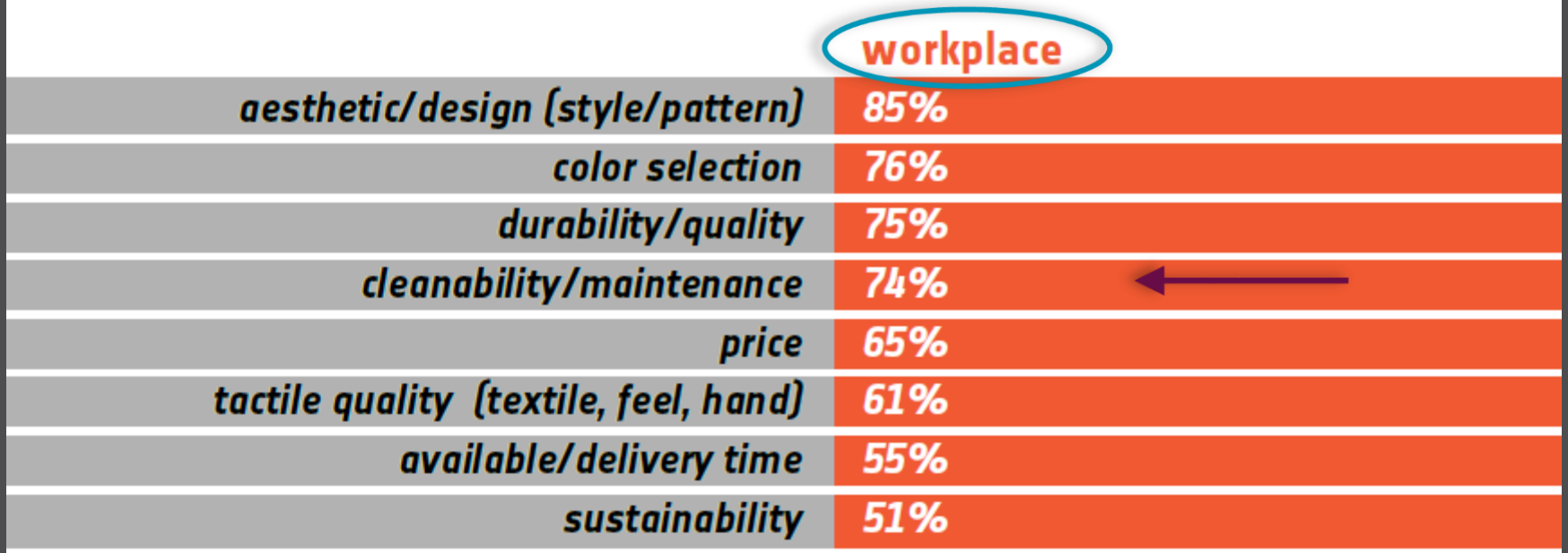
Fiber Cross-Section

Is stain resistance necessary?

Interior Design Surveys

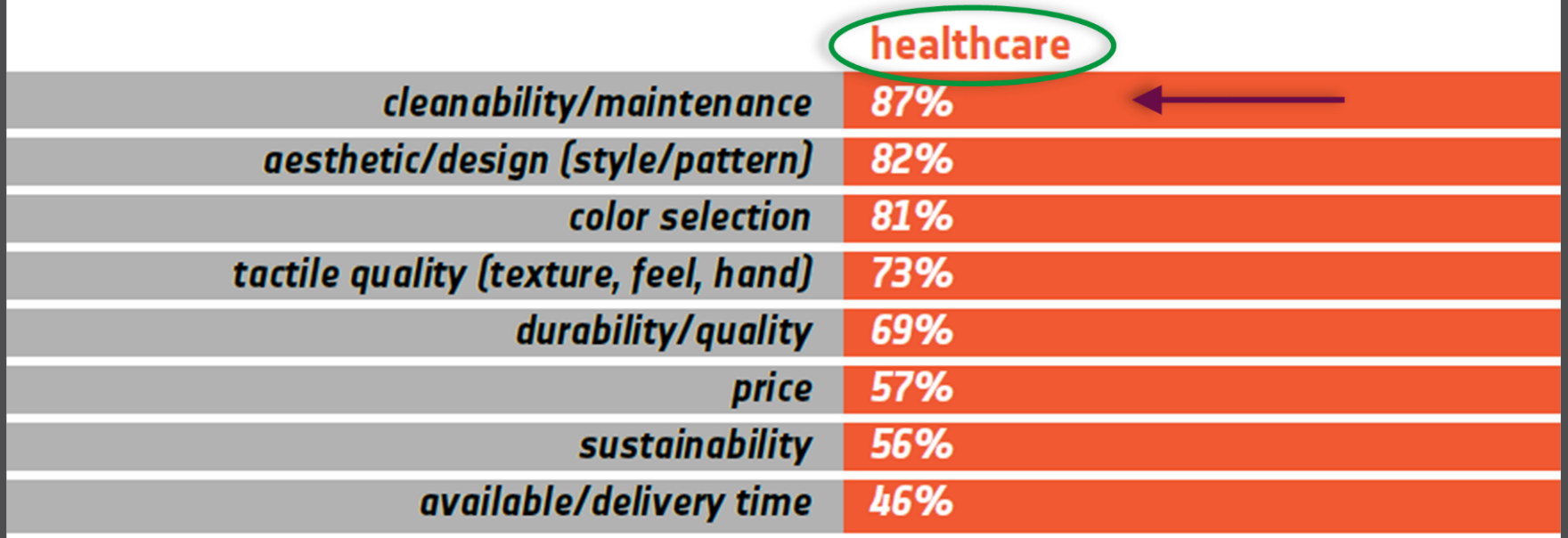


FACTORS MOST IMPORTANT WHEN SPECIFYING TEXTILES



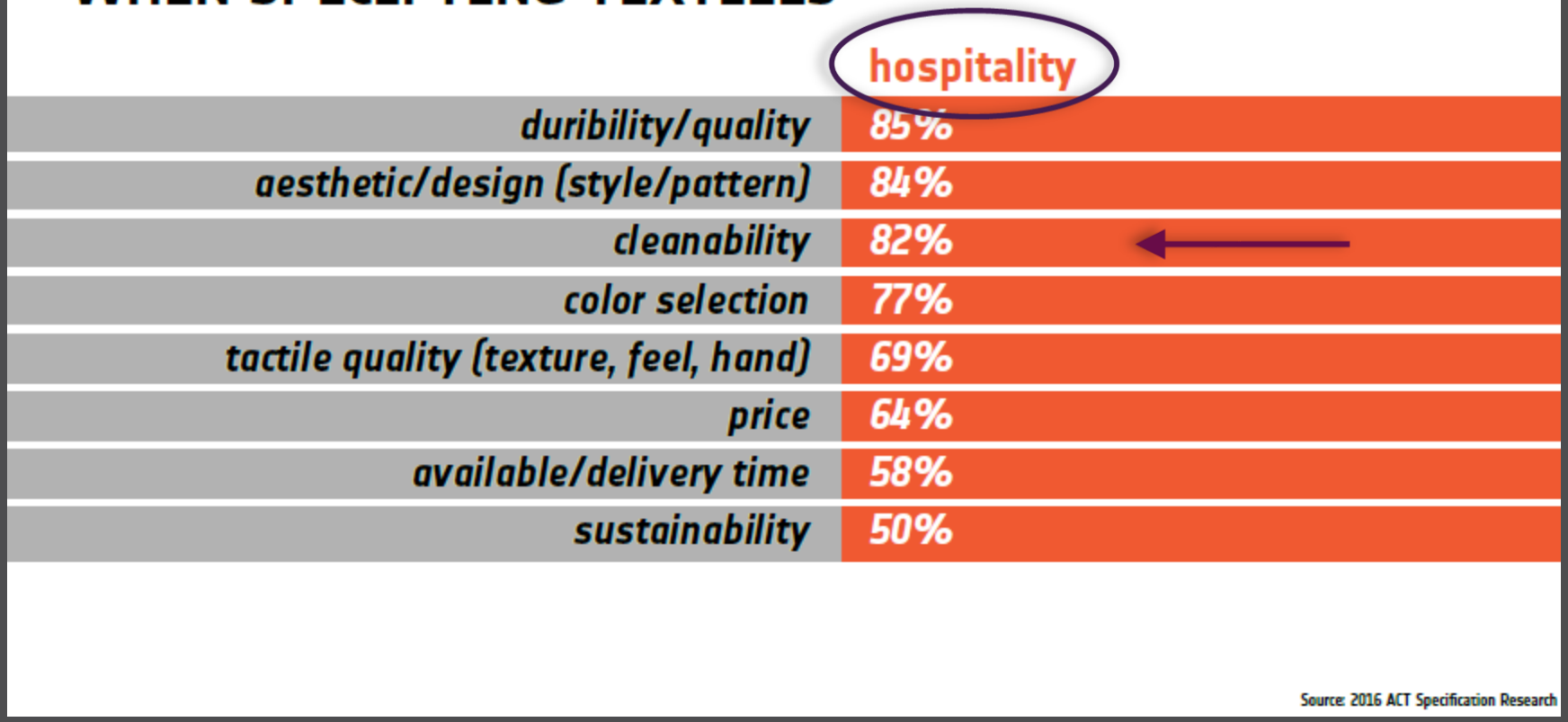
Source: 2016 ACT Specification Research

FACTORS MOST IMPORTANT WHEN SPECIFYING TEXTILES



Source: 2016 ACT Specification Research

FACTORS MOST IMPORTANT WHEN SPECIFYING TEXTILES



Source: 2016 ACT Specification Research

Furniture Today

Important upholstery furniture features

% of consumers who rate feature as very or extremely important

	Gen Z	Millenials	Gen X	Baby Boomers
Durability	90%	95%	94%	97%
Size	89%	89%	91%	93%
Price	87%	91%	92%	94%
Warranty	66%	69%	70%	72%
Brand	31%	32%	32%	37%
Made in USA	25%	32%	50%	60%

Source: PBM Strategic Insights, 2018 Furniture Today study

Hospitality

“These fabrics are phenomenal. The technology allows our booths – which get a daily dose of chili paste, soy sauce and oil – to be easily cleaned on a regular basis and keep looking like new. It absolutely extends the life of our furniture by years.”

Wendy Skarin-Claxton
Project Interior Designer

Hospitality

“To put it simply, we are a fitness center. Beyond our fitness equipment, we offer whirlpool suites, spas, salons, cafes and so much more… all of these spaces have their own unique challenges like pool water, sweat, food and lotions. These heavily trafficked spaces need to stand up to what humans do on a daily basis. Performance Fabrics allow us to specify with confidence.”

Sandi Didier
Director Vendor Relations / Development Services

Life Time

Down-sides of removing stain resistance

- Repulsive stains and odors in fabrics and cushions

Down-sides of removing stain resistance

Repulsive stains and odors in fabrics and cushions

Customer dissatisfaction

Down-sides of removing stain resistance

- Repulsive stains and odors in fabrics and cushions
- Customer dissatisfaction
- Higher maintenance cost

Down-sides of removing stain resistance

- Repulsive stains and odors in fabrics and cushions
- Customer dissatisfaction
- Higher maintenance cost
- Higher replacement cost

Down-sides of removing stain resistance

Repulsive stains and odors in fabrics and cushions

Customer dissatisfaction

Higher maintenance cost

Higher replacement cost

Diminished design choices – switch to coated fabrics

Down-sides of removing stain resistance

- Repulsive stains and odors in fabrics and cushions
- Customer dissatisfaction
- Higher maintenance cost
- Higher replacement cost
- Diminished design choices – switch to coated fabrics
- Negative environmental impact

Down-sides of removing stain resistance

Quantifying the environmental down-side

facts

Sustainability
Certification
Program

How does ACT address sustainability?

facts

Sustainability
Certification
Program

Development Partners

= NSF/ANSI 336

facts

Sustainability
Certification
Program

facts

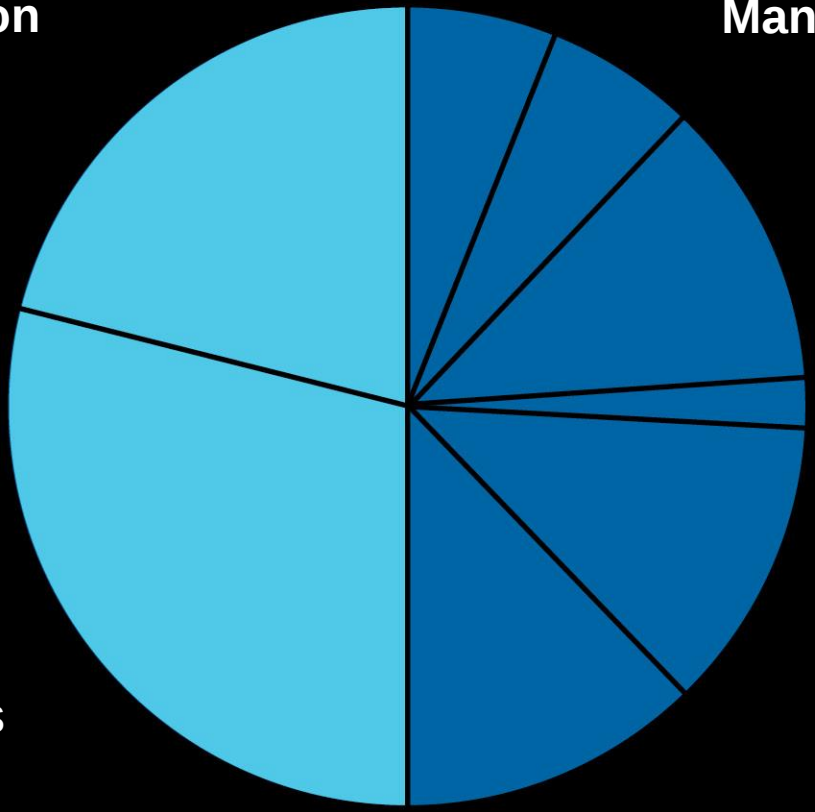
Sustainability Certification Program

Sustainability Attributes

Fiber Composition

20%
fiber sourcing

30%
safety of materials



Manufacturing Process

6% water conservation

6% water quality

12% energy

2% air quality

12% recycling practices

12% social accountability

facts

Sustainability
Certification
Program

Degrees of Achievement

≥ 79 points — facts® Platinum

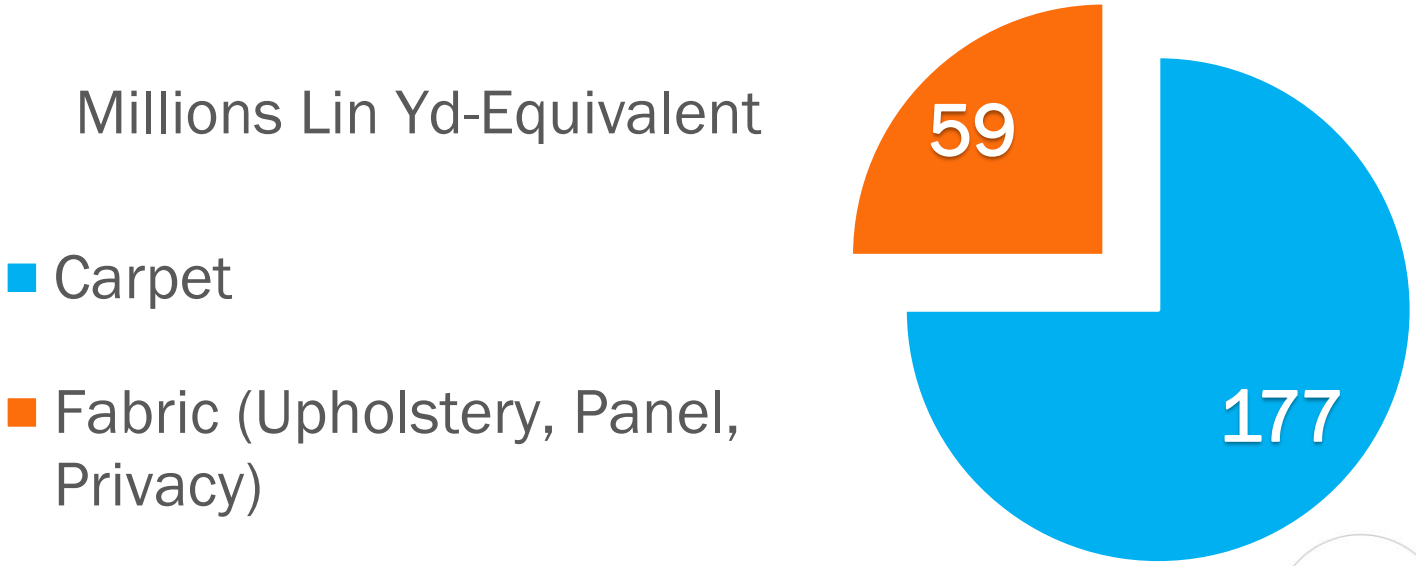
≥ 58 points — facts® Gold

≥ 37 points — facts® Silver

≥ 16 points — facts® Compliant

Requires certification by an authorized independent third-party organization.

US Contract
Stain-Repellent Soft Surfaces
Annual Stain-Repellent Yardage
2014 Estimate



Sources: Freedonia Market Research, Floor Covering News, Crypton Market Research

facts

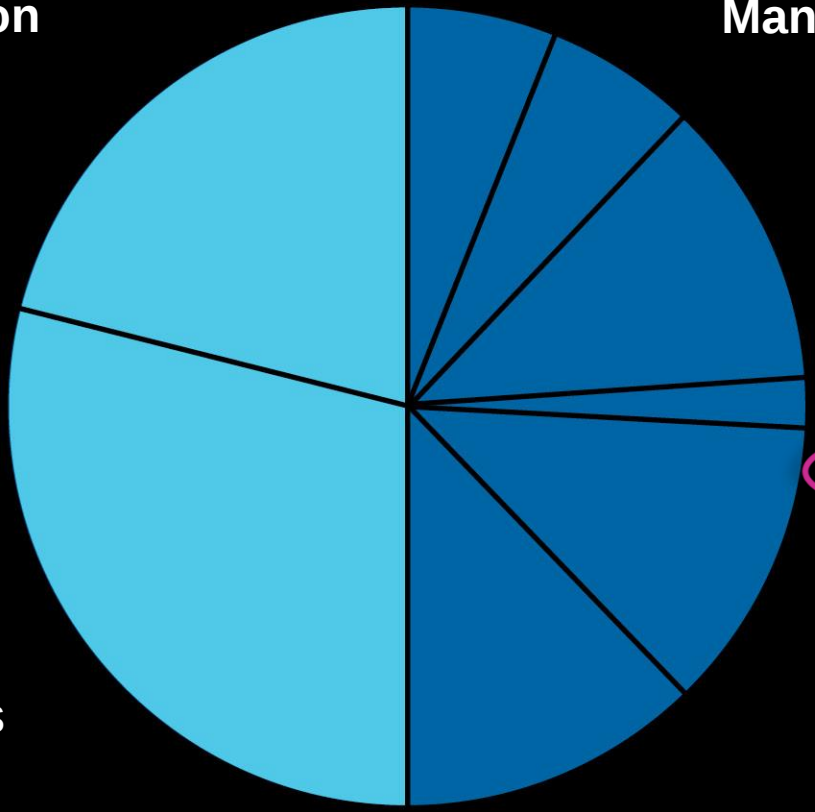
Sustainability
Certification
Program

Sustainability Attributes

Fiber Composition

20%
fiber sourcing

30%
safety of materials



Manufacturing Process

6% water conservation

6% water quality

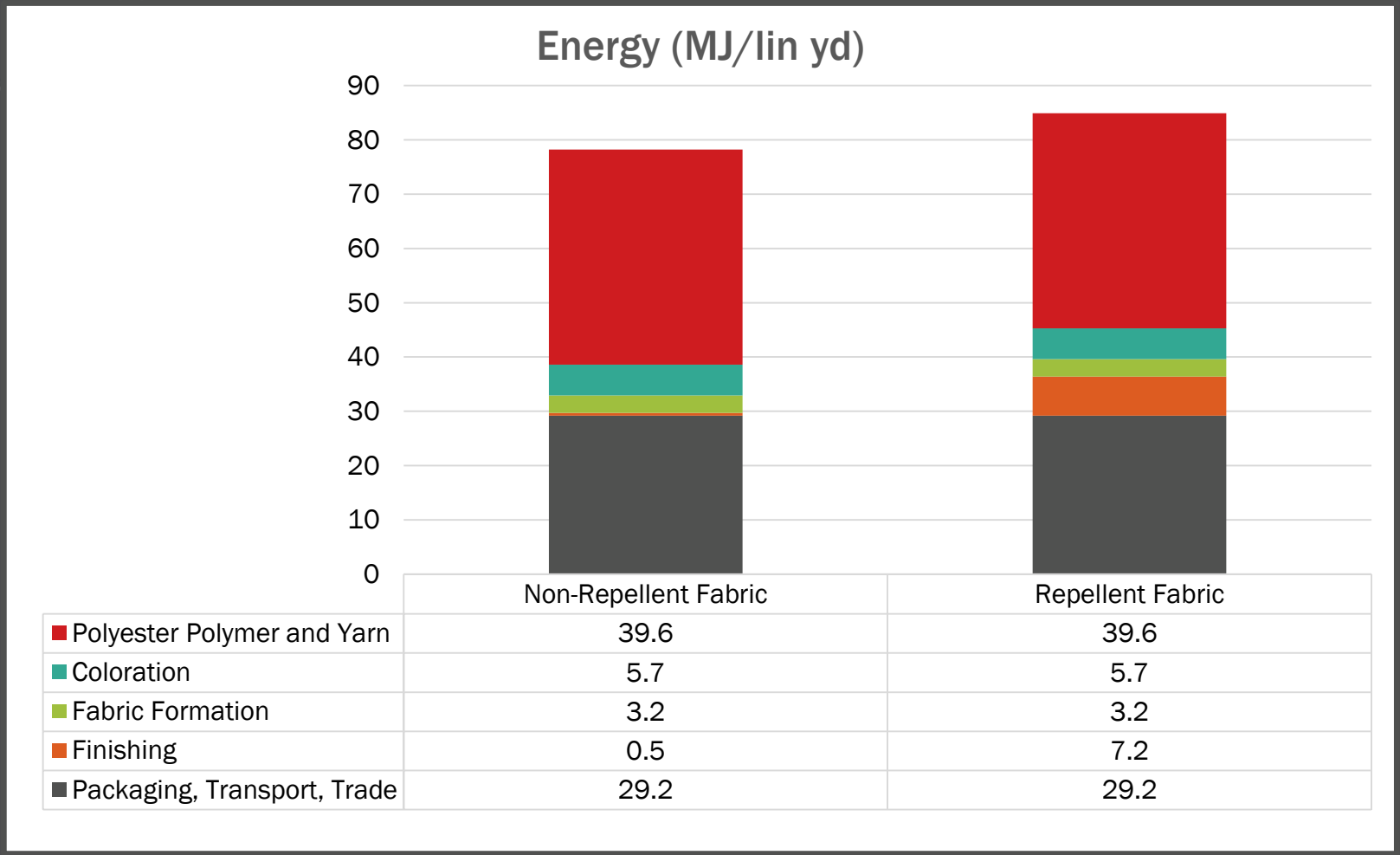
12% energy

2% air quality

12% recycling practices

12% social accountability

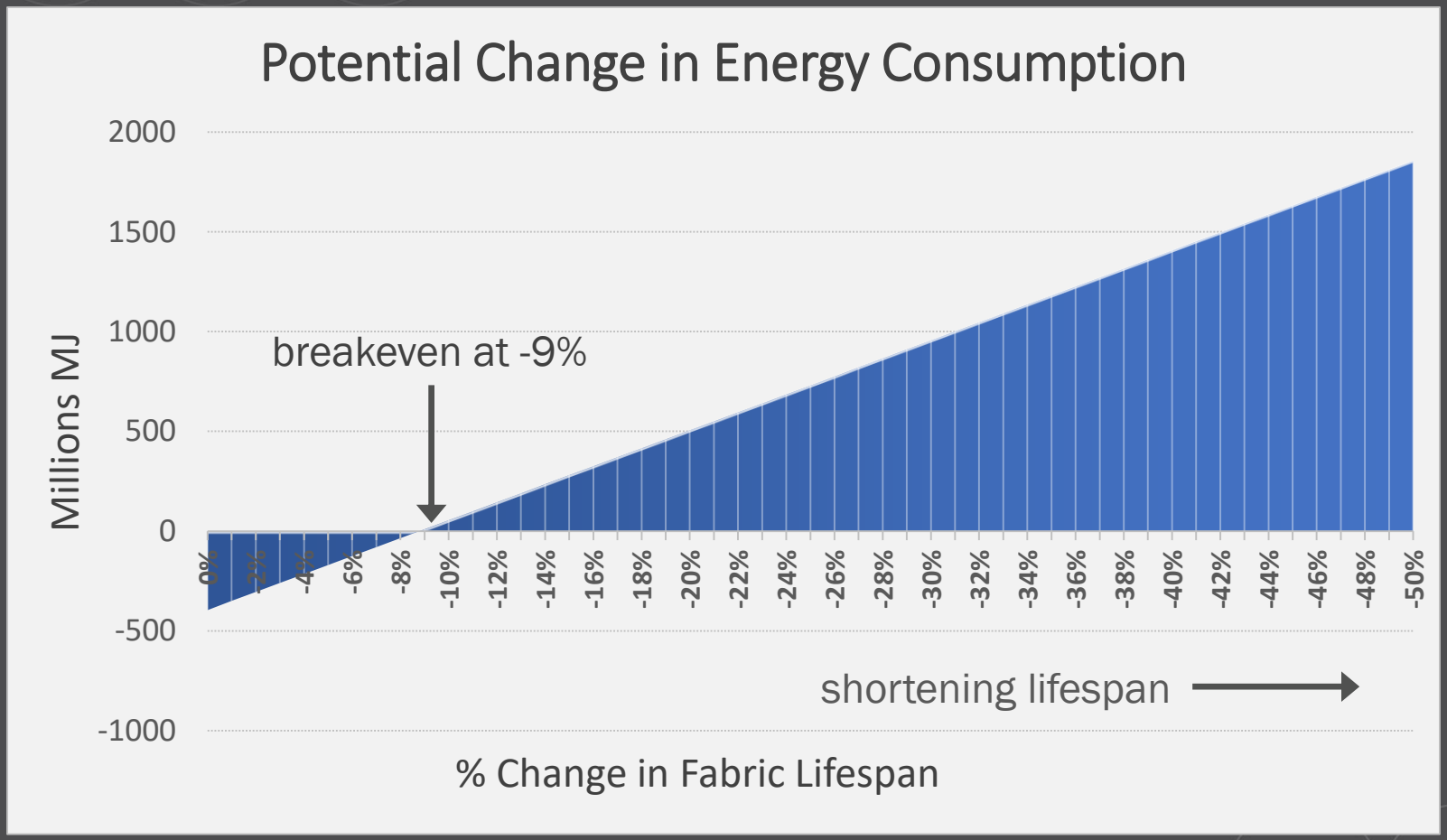
Energy Consumption Estimates



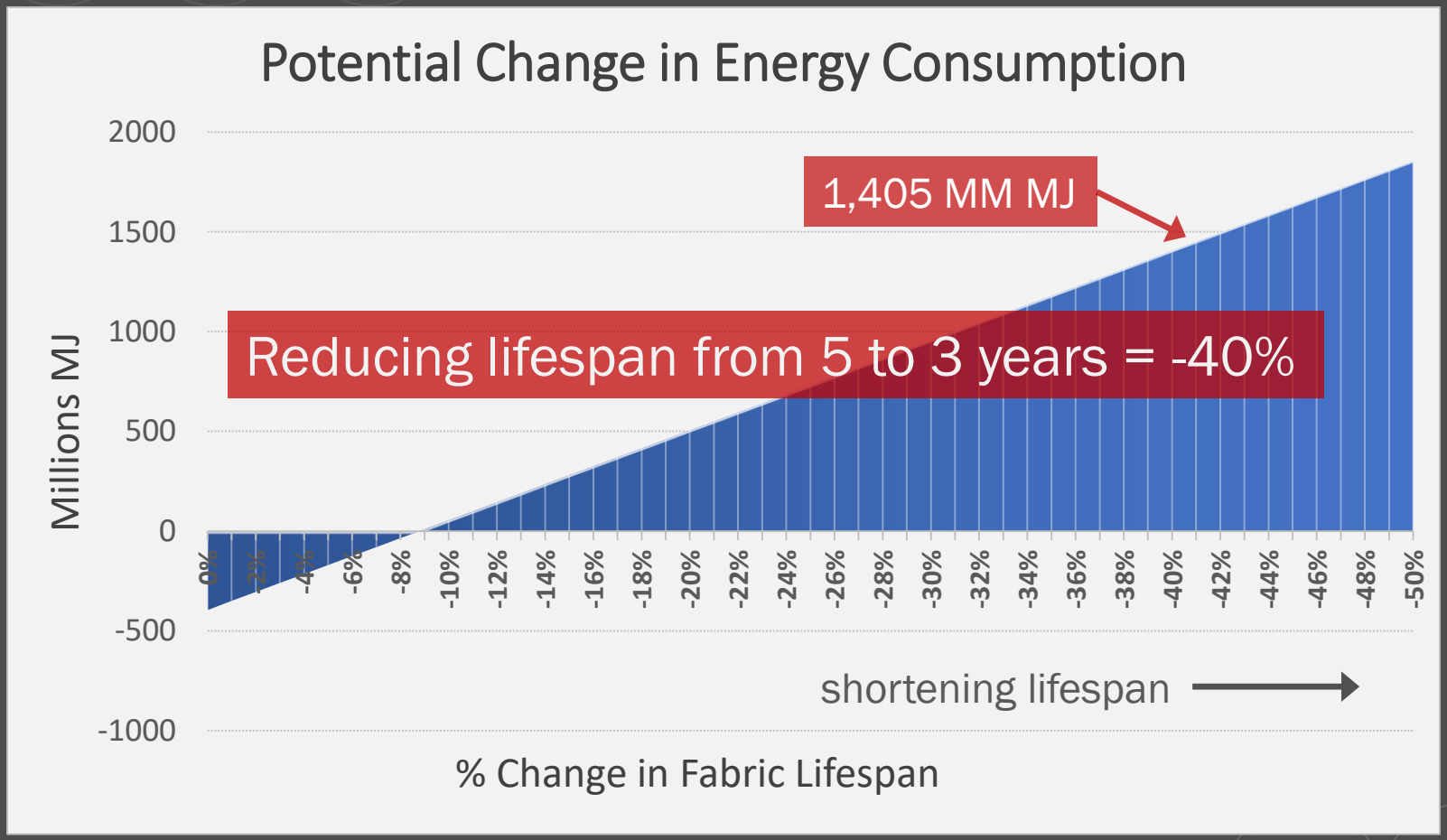
	Non-Repellent Fabric	Repellent Fabric
Polyester Polymer and Yarn	39.6	39.6
Coloration	5.7	5.7
Fabric Formation	3.2	3.2
Finishing	0.5	7.2
Packaging, Transport, Trade	29.2	29.2

Sources: NCTO Member Companies, Young S. Song et al "Life Cycle energy analysis of fiber-reinforced composites"

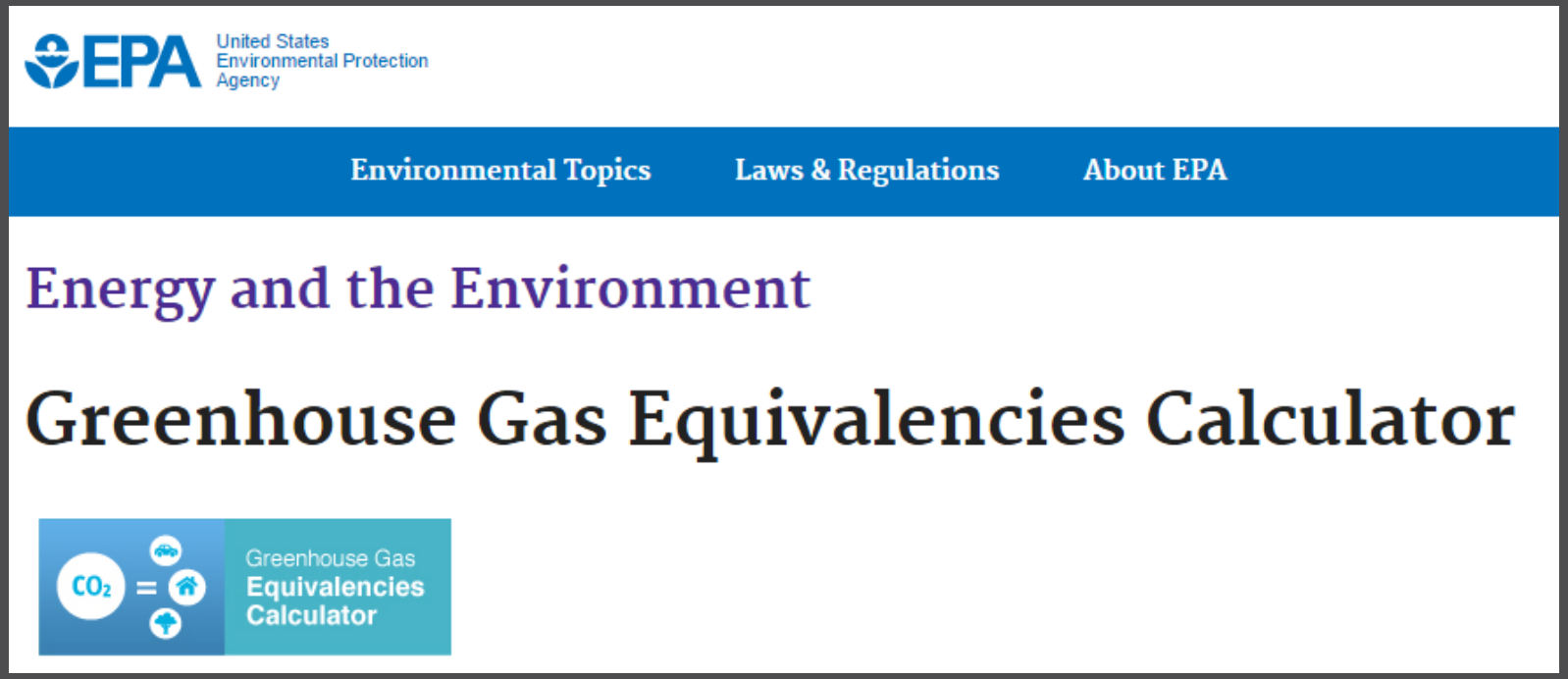
Impact of removing fabric stain resistance - US Commercial Market



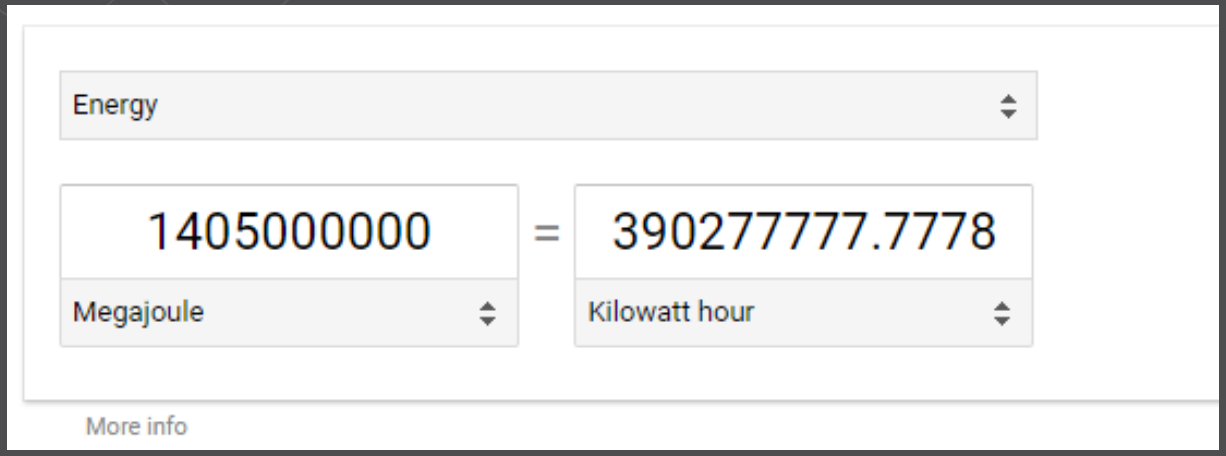
Impact of removing fabric stain resistance - US Commercial Market

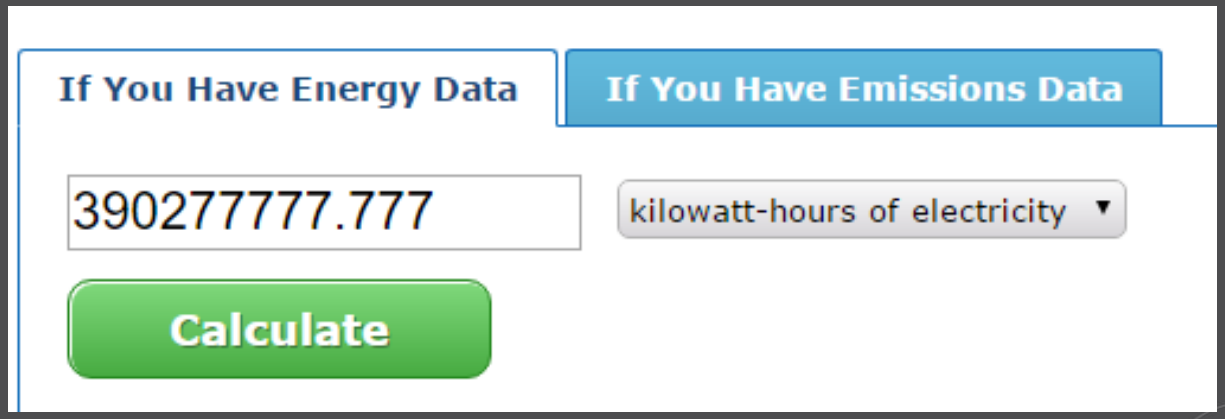


Impact of removing fabric stain resistance - US Commercial Market

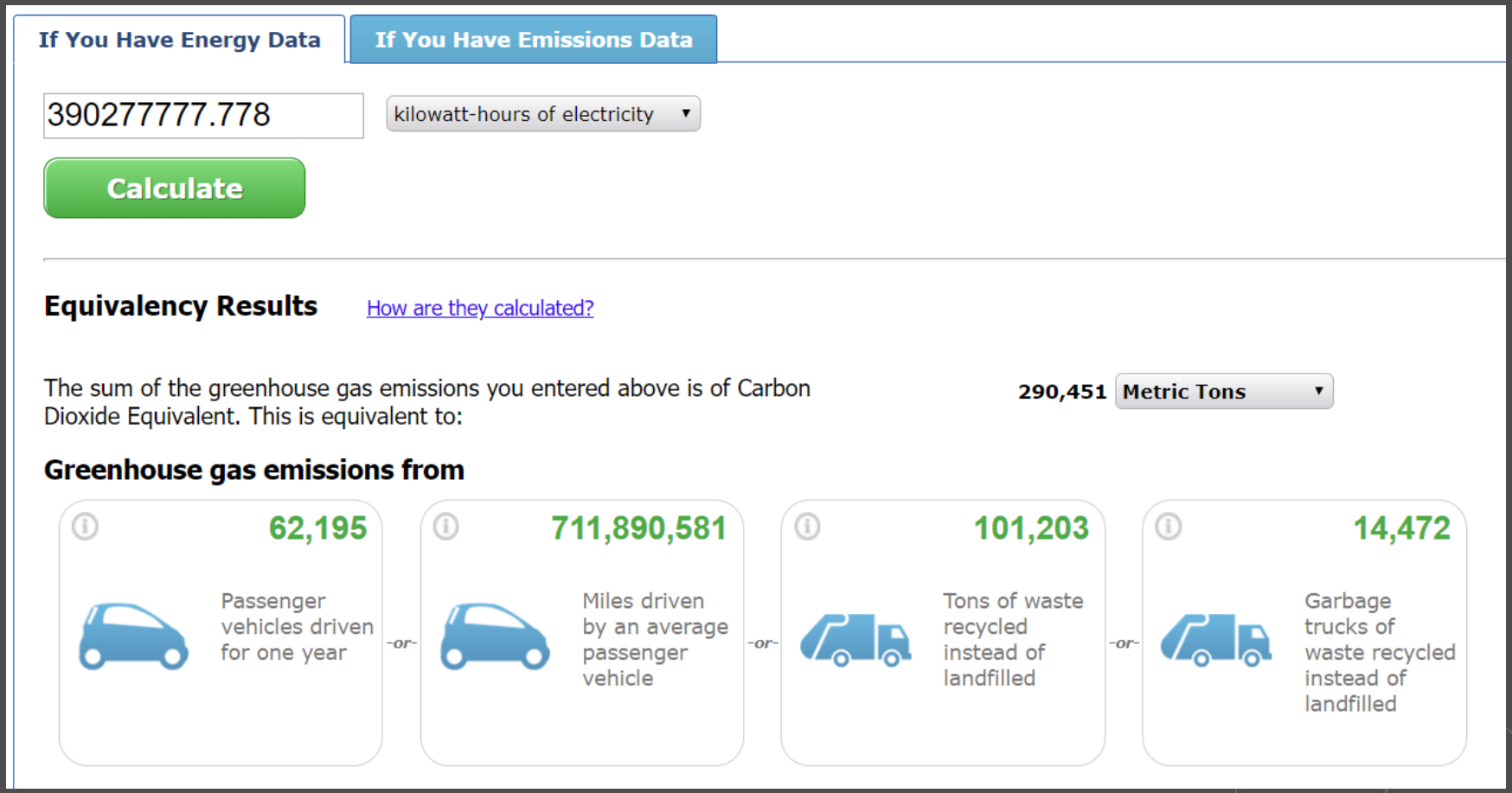


Impact of removing fabric stain resistance - US Commercial Market

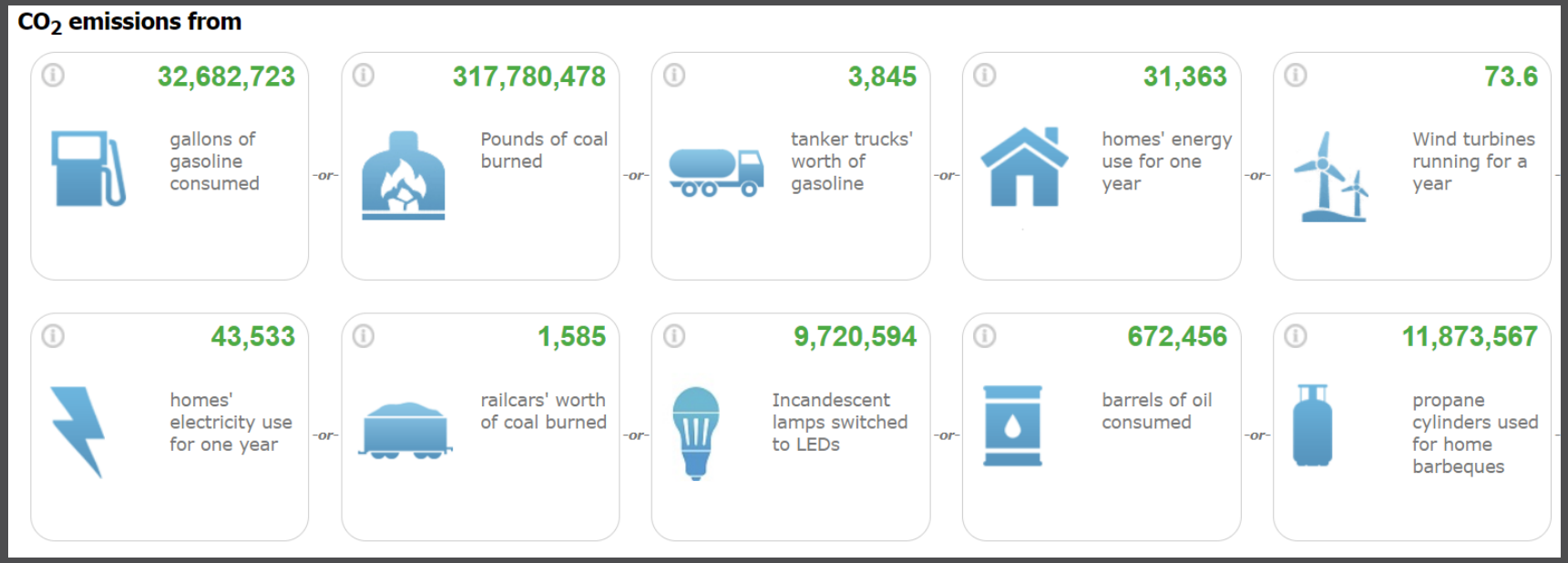




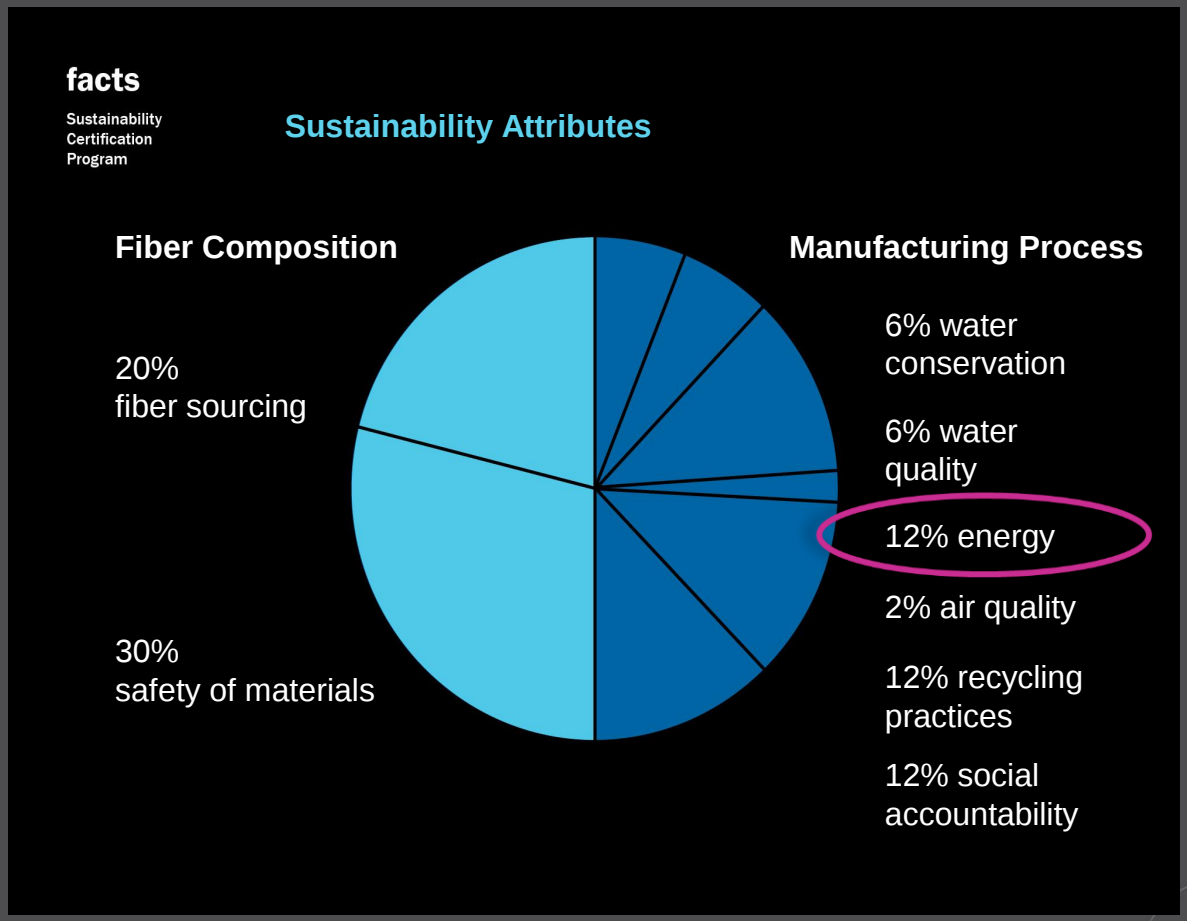
Impact of removing fabric stain resistance due to energy inputs US Commercial Market



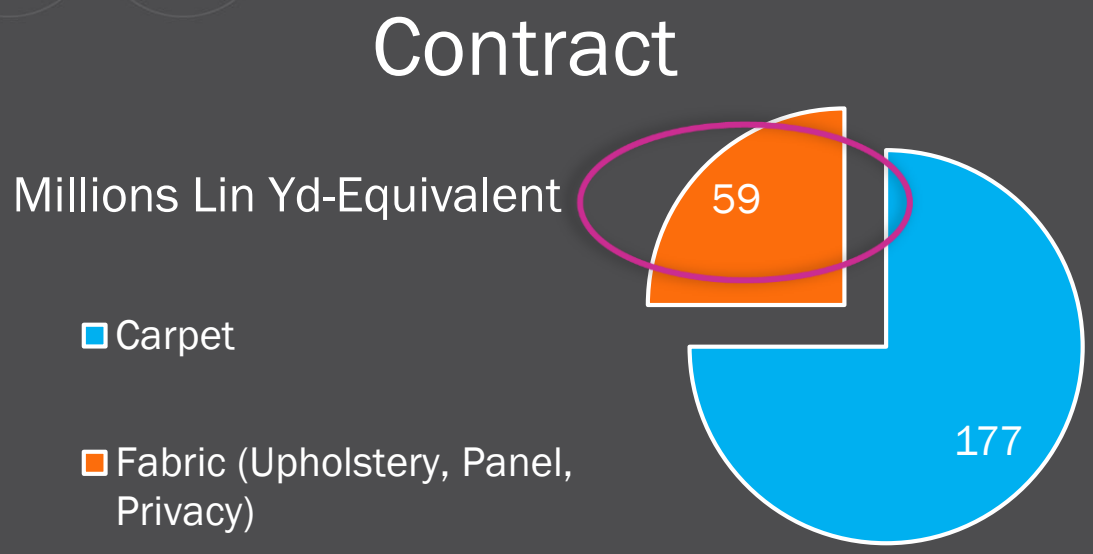
Impact of removing fabric stain resistance due to energy inputs US Commercial Market



That was just energy consumption



And was just *contract fabric*



Residential Upholstery = 15x Contract

https://www.statista.com/statistics/791781/upholstery-market-size-in-the-us/

Trade-Offs

Arguments *against* FluoroTechnology:

The strength of the carbon-fluorine bond makes it slow to degrade.

Non-fluorinated alternatives can provide some protection against water-based stains.

Trade-Offs

Arguments *in favor* of the Latest Generation of FluoroTechnology

- It has been well-studied and meets regulatory standards designed to protect health and the environment
- Customers expect performance and the latest generation is effective
- Removing stain resistance from fabrics has negative consequences
  - Water consumption
  - Drilling and burning of fossil fuels / Pesticides for natural fibers
  - Emissions from manufacturing
  - Landfill
  - Potential for imports using previous technology without disclosure
  - Cost


AMERICAN
TEXTILES
WE MAKE AMAZING
MCTO.ORG