

## Proposed Product Category for Biobased Designation

The following biobased product information has been collected to support product category designation by USDA for the BioPreferred program. This summary reflects data available as of August 1, 2008.

**Title:** Foot Care Products

**Description:** Products used in the soothing or cleaning of feet.

**Companies Supplying Product Category:** 36 companies supplying Foot Care Products have been identified through internet searches, manufacturer's directories, trade associations, and company submissions.

**Industry Associations Investigated:** The following industry associations have been investigated for member companies supplying Foot Care Products:

- United Soybean Board Association
- National Corn Growers Association
- American Orthotic & Prosthetic Association

**Commercially Available Products Identified:** Of the companies identified, 62 Foot Care Products are commercially available on the market.

**Product Information Collected:** Specific product information including company contact, intended use, biobased content, and performance characteristics have been collected on 13 Foot Care Products.

**Industry Performance Standards:** Product information submitted by biobased manufacturers and suppliers indicate that have typically been tested to the following industry standards:

- None found

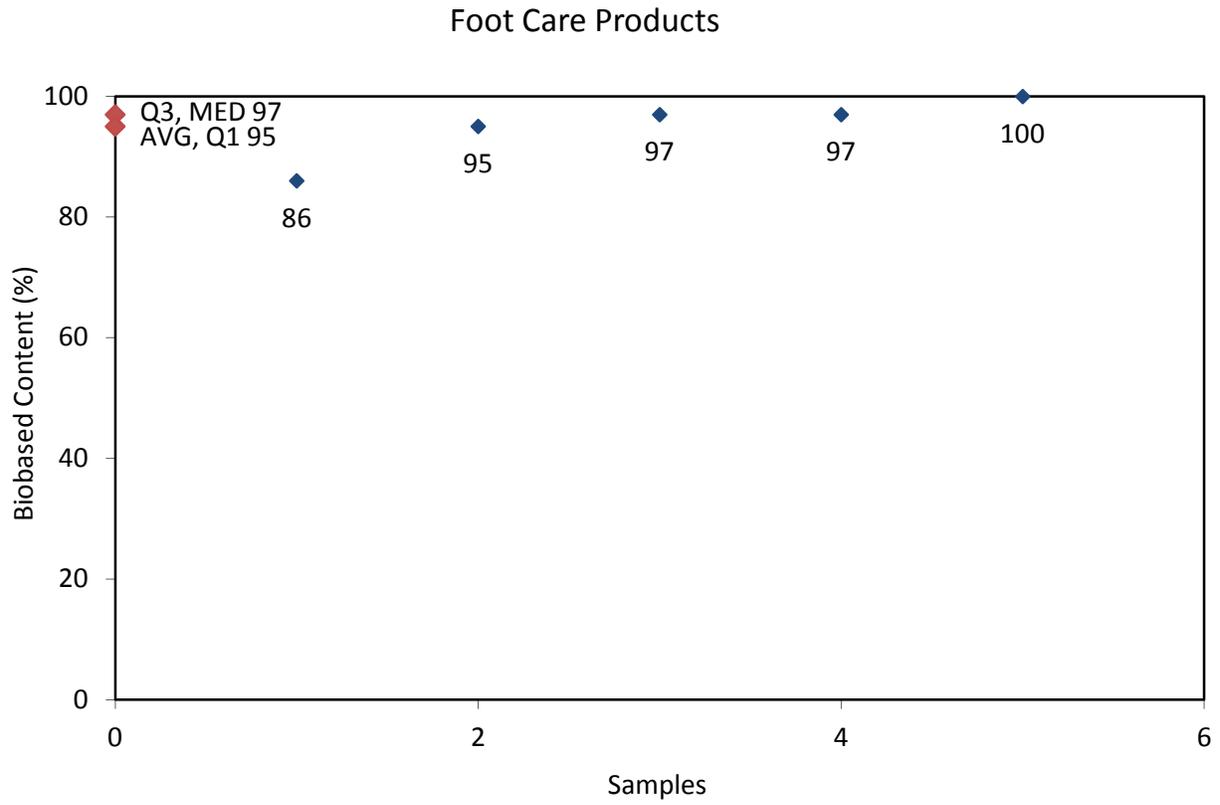
**Samples Tested for Biobased Content:** 5 samples of Foot Care Products have been submitted to independent laboratories for biobased content testing as specified by ASTM standard D6866-04.

**Biobased Content Data:** Results from biobased content testing of Foot Care Products indicate a range of content percentages from 86% minimum to 100% maximum biobased content as defined by ASTM D 6866-04. A detailed distribution of biobased content levels is included as Appendix A.

**Products Submitted for BEES Analysis:** Life-cycle cost and environmental effect data for 1 Foot Care Products have been submitted to NIST for BEES analysis.

**BEES Analysis:** The life-cycle costs of the submitted Foot Care Products range from \$11.92 minimum to \$11.92 maximum. The environmental scores range from 0.0016 minimum to 0.0016 maximum. A detailed summary of the BEES results is included as Appendix B.

## Appendix A - Biobased Content Data



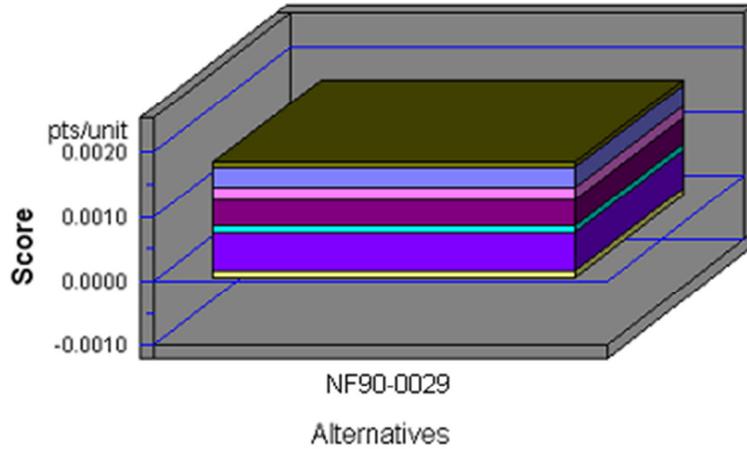
	Companies Identified	Products Identified	C14	BEES
1	NF90	NF90-0029	86	Yes
2	Y191	Y191-0044	95	
3	Y191	Y191-0093	97	
4	WG58	WG58-0008	97	
5	Y191	Y191-0045	100	

## Appendix B - BEES Analysis Results

Functional Unit: 1 kilogram of product

### Environmental Performance

Acidification
Crit. Air Pollutants
Ecological Toxicity
Eutrophication
Fossil Fuel Depletion
Global Warming
Habitat Alteration
Human Health
Indoor Air
Ozone Depletion
Smog
Water Intake

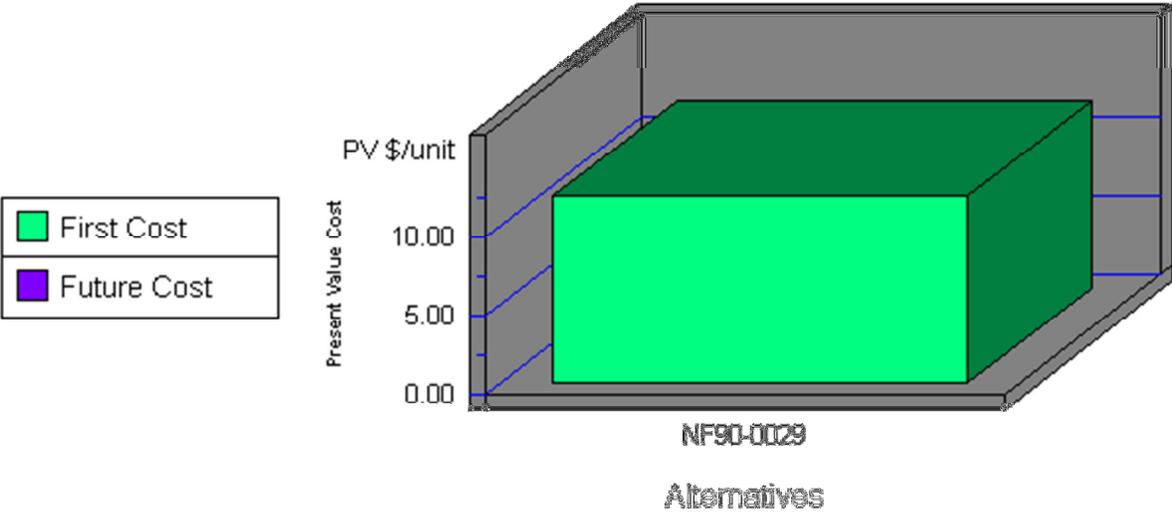


Note: Lower values are better

Category	NF90-0029
Acidification-3%	0.0000
Crit. Air Pollutants-5%	0.0000
Ecolog. Toxicity-7%	0.0001
Eutrophication-6%	0.0003
Fossil Fuel Depl.-10%	0.0002
Global Warming-29%	-0.0001
Habitat Alteration-6%	0.0000
Human Health-13%	0.0004
Indoor Air-3%	0.0000
Ozone Depletion-2%	0.0000
Smog-4%	0.0001
Water Intake-5%	0.0006
Sum	0.0016

Footcare Products		
Impacts	Units	NF90-0029
Acidification	millimoles H <sup>+</sup> equivalents	2.11E+02
Criteria Air Polutants	microDALYs	8.71E-02
Ecotoxicity	g 2,4-D equivalents	1.03E+00
Eutrophication	g N equivalents	8.34E-01
Fossil Fuel Depletion	MJ surplus energy	7.62E-01
Global Warming	g CO <sub>2</sub> equivalents	-1.25E+02
Habitat Alteration	T&E count	0.00E+00
Human Health--Cancer	g C <sub>6</sub> H <sub>6</sub> equivalents	2.24E-01
Human Health--NonCancer	g C <sub>7</sub> H <sub>8</sub> equivalents	3.31E+02
Indoor Air Quality	g TVOCs	0.00E+00
Ozone Depletion	g CFC-11 equivalents	1.58E-06
Smog	g NO <sub>x</sub> equivalents	5.46E+00
Water Intake	liters of water	4.12E+01
Functional Unit	-----	1 kg of product
<p>1 Following are more complete descriptions of units: Acidification: millimoles of hydrogen ion equivalents; Criteria Air Pollutants: micro Disability-Adjusted Life Years; Ecological Toxicity: grams of 2,4-dichlorophenoxy-acetic acid equivalents; Eutrophication: grams of nitrogen equivalents; Fossil Fuel Depletion: megajoules of surplus energy; Global Warming: grams of carbon dioxide equivalents; Habitat Alteration: threatened and endangered species count; Human Health-Cancer: grams of benzene equivalents; Human Health-NonCancer: grams of toluene equivalents; Indoor Air Quality: grams of Total Volatile Organic Compounds; Ozone Depletion: grams of chloroflouorocarbon-11 equivalents; Smog: grams of nitrogen oxide equivalents; and Water Intake: liters of water.</p>		

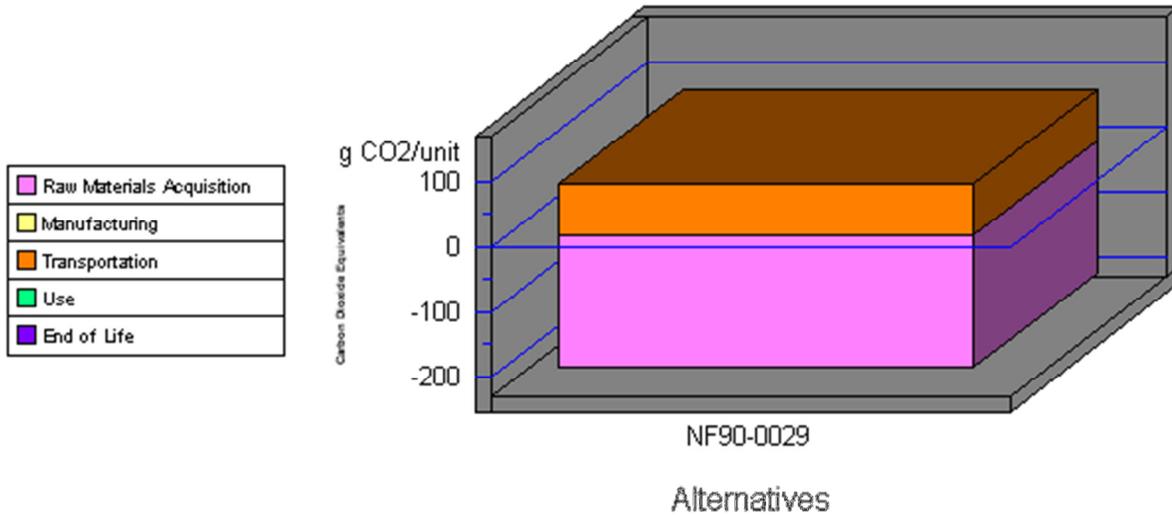
# Economic Performance



Category	NF90-0029
First Cost	11.92
Future Cost-- 3.0%	0.00
<b>Sum</b>	<b>11.92</b>

\*This is a consumable product. Therefore, future costs are not calculated.

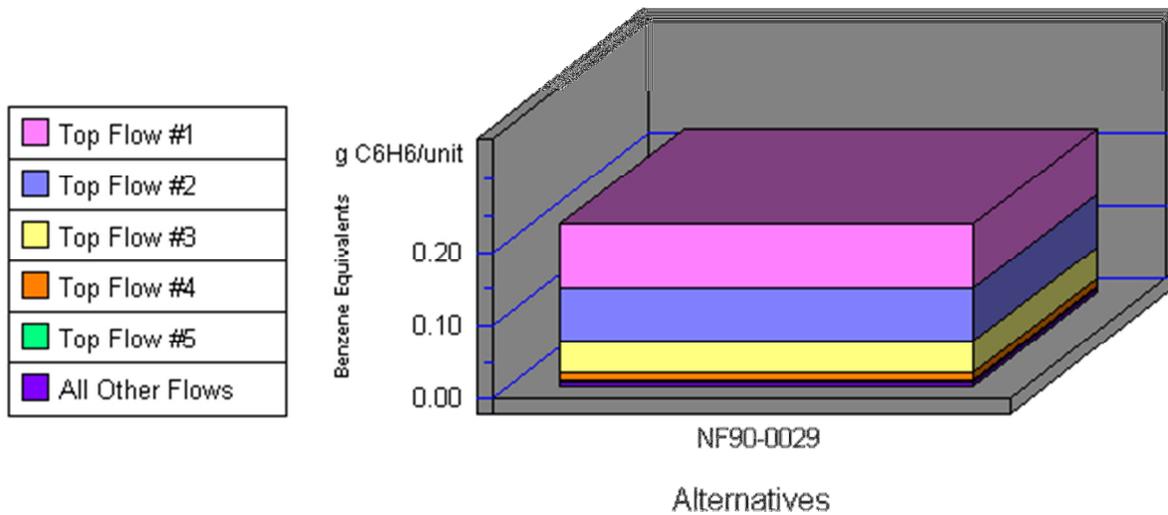
# Global Warming by Life-Cycle Stage



**Note: Lower values are better**

Category	NF90-0029
1. Raw Materials	-203
2. Manufacturing	1
3. Transportation	77
4. Use	0
5. End of Life	0
<b>Sum</b>	<b>-125</b>

## Human Health Cancer by Sorted Flows\*

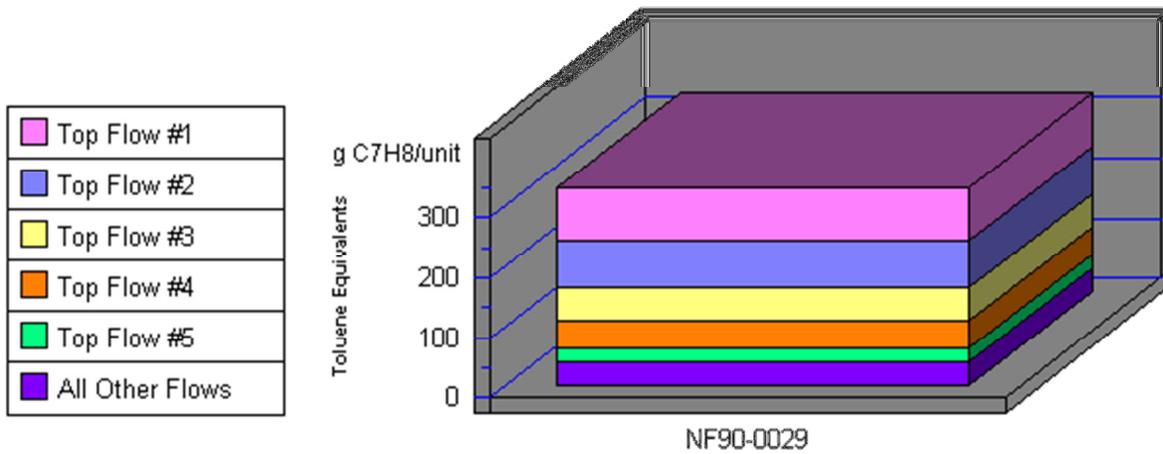


**Note: Lower values are better**

Category	NF90-0029
Cancer--(w) Arsenic (As <sup>3+</sup> , As <sup>5+</sup> )	0.09
Cancer--(w) Phenol (C <sub>6</sub> H <sub>5</sub> OH)	0.07
Cancer--(a) Dioxins (unspecifie	0.04
Cancer--(a) Arsenic (As)	0.01
Cancer--(a) Ethylene Oxide (C <sub>2</sub> H	0.00
All Others	0.01
<b>Sum</b>	<b>0.22</b>

\*Sorted by five topmost flows for worst-scoring product

## Human Health Noncancer by Sorted Flows\*



Alternatives

**Note: Lower values are better**

Category	NF90-0029
Noncancer-(w) Mercury (Hg+, Hg)	69.57
Noncancer-(a) Mercury (Hg)	75.73
Noncancer-(a) Dioxins (unspeci)	55.16
Noncancer-(w) Barium (Ba++)	47.82
Noncancer-(w) Lead (Pb++, Pb4+)	23.46
All Others	39.52
<b>Sum</b>	<b>331.26</b>

\*Sorted by five topmost flows for worst-scoring product