

Proposed Item for Biobased Designation

The following biobased product information has been collected to support item designation by USDA for the BioPreferred Program. This summary reflects data available as of September 15, 2008.

Title: Erosion Control Materials

Description: Woven or non-woven fiber materials manufactured for use on construction, demolition, or other sites to prevent wind or water erosion of loose earth surfaces, and may be combined with seed and/or fertilizer to promote growth.

Companies Supplying Item: 30 companies supplying Erosion Control Materials 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 Erosion Control Materials products:

- United Soybean Board
- National Corn Growers Association
- International Erosion Control Association
- Erosion Control Technology Council

Commercially Available Products Identified: Of the companies identified, 169 Erosion Control Materials 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 14 Erosion Control Materials products.

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

- American Association of State Highway Transportation Officials M288-96 Geotextile Specifications
- ASTM International D1388 Standard Test Method for Stiffness of Fabrics
- ASTM International D1777 Standard Test Method for Thickness of Textile Materials
- ASTM International D2974 Standard Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils
- ASTM International D3776 Standard Test Methods for Mass Per Unit Area (Weight) of Fabric
- ASTM International D4354 Standard Test Practice for Sampling of Geosynthetics for Testing
- ASTM International D4595 Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
- ASTM International D5035 Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)

- ASTM International D5261 Standard Test Method for Measuring Mass per Unit Area of Geotextiles
- ASTM International D586 Standard Test Method for Ash in Pulp, Paper, and Paper Products
- ASTM International D6400 Standard Specification for Compostable Plastics
- ASTM International D6459 Standard Test Method for Determination of Erosion Control Blanket (ECB) Performance in Protecting Hillslopes from Rainfall-Induced Erosion
- ASTM International D6460 Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Earthen Channels from Stormwater-Induced Erosion
- ASTM International D6475 Standard Test Method for Measuring Mass Per Unit Area of Erosion Control Blankets
- ASTM International D6524 Standard Test Method for Measuring the Resiliency of Turf Reinforcement Mats (TRMs)
- ASTM International D6525 Standard Test Method for Measuring Nominal Thickness of Permanent Rolled Erosion Control Products
- ASTM International D6566 Standard Test Method for Measuring Mass per Unit Area of Turf Reinforcement Mats
- ASTM International D6567 Standard Test Method for Measuring the Light Penetration of a Turf Reinforcement Mat (TRM)
- ASTM International D6575 Standard Test Method for Determining Stiffness of Geosynthetics Used as Turf Reinforcement Mats (TRMs)
- ASTM International D6818 Standard Test Method for Ultimate Tensile Properties of Turf Reinforcement Mats
- Erosion Control Technology Council Technical Guidance Manual: TASC 00197

Samples Tested for Biobased Content: 8 samples of Erosion Control Materials products have been submitted to independent laboratories for biobased content testing as specified by ASTM standard D6866-04.

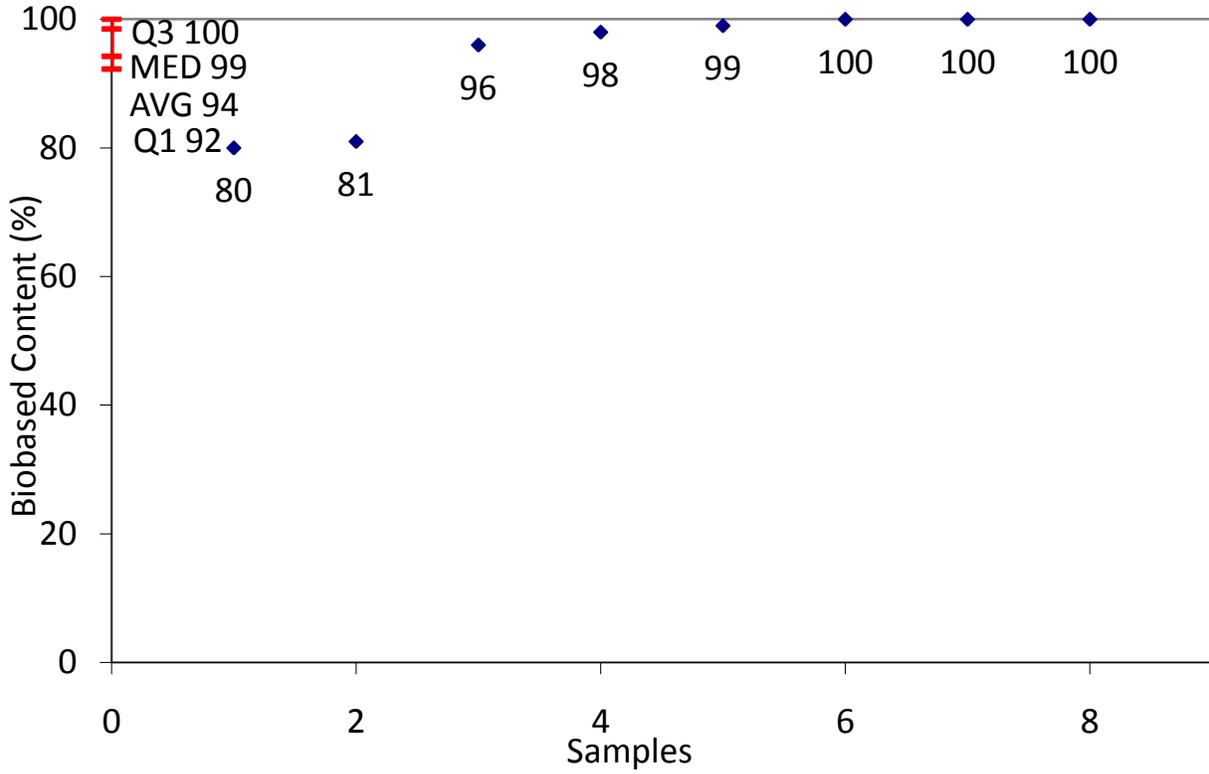
Biobased Content Data: Results from biobased content testing of Erosion Control Materials products indicate a range of content percentages from 80% minimum to 100% maximum biobased content as defined by ASTM D 6866-04. A detailed distribution of biobased content levels is included as Appendix A.

Products Submitted for BEES Analysis: Life-cycle cost and environmental effect data for 2 Erosion Control Materials products have been submitted to NIST for BEES analysis.

BEES Analysis: The Erosion Control Materials products that provided information for the BEES analysis had different applications so different functional units were used and the scores for each should not be compared. A detailed summary of the BEES results is included as Appendix B and C.

Appendix A - Biobased Content Data

Erosion Control



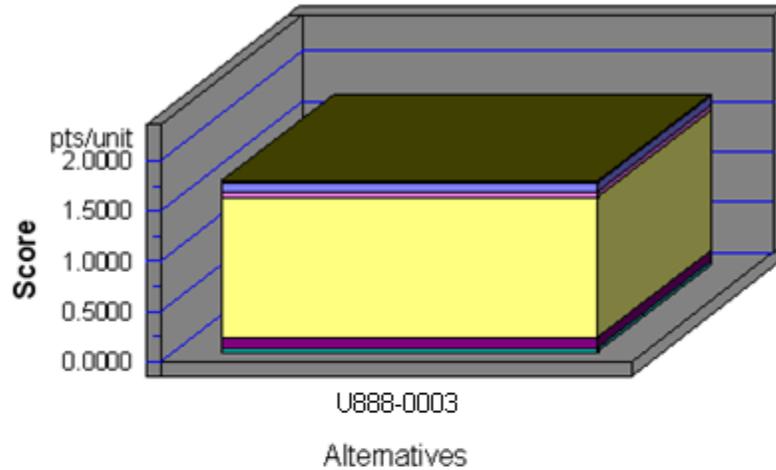
	Company	Product	C14	BEES
1	MDL5	MDL5-0009	80	
2	MDL5	MDL5-0008	81	
3	X939	X939-0005	96	
4	OPNH	OPNH-0002	98	Yes
5	X939	X939-0008	99	
6	MDL5	MDL5-0003	100	
7	U888	U888-0003	100	Yes
8	U888	U888-0002	100	

Appendix B - BEES Analysis Results Part 1

Functional Unit: 100 linear feet of control

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



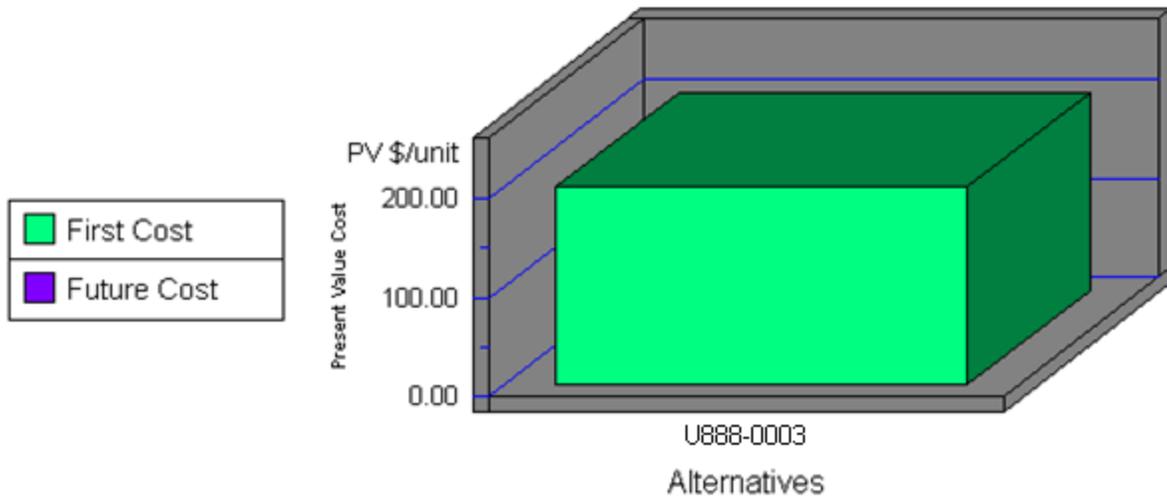
Note: Lower values are better

Category	U888-0003
Acidification--3%	0.0001
Crit. Air Pollutants--9%	0.0058
Ecolog. Toxicity--7%	0.0203
Eutrophication--6%	0.0789
Fossil Fuel Depl.--10%	0.0700
Global Warming--29%	1.3843
Habitat Alteration--6%	0.0000
Human Health--13%	0.1071
Indoor Air--3%	0.0000
Ozone Depletion--2%	0.0000
Smog--4%	0.0441
Water Intake--8%	0.0006
Sum	1.7112

Erosion Control Materials		
Impacts	Units	U888-0003
Acidification	millimoles H ⁺ equivalents	2.72E+05
Criteria Air Pollutants	microDALYs	1.24E+01
Ecotoxicity	g 2,4-D equivalents	2.37E+02
Eutrophication	g N equivalents	2.53E+02
Fossil Fuel Depletion	MJ surplus energy	2.47E+02
Global Warming	g CO ₂ equivalents	1.22E+06
Habitat Alteration	T&E count	0.00E+00
Human Health-- Cancer	g C ₆ H ₆ equivalents	6.89E+01
Human Health-- NonCancer	g C ₇ H ₈ equivalents	5.17E+04
Indoor Air Quality	g TVOCs	0.00E+00
Ozone Depletion	g CFC-11 equivalents	5.89E-06
Smog	g NO _x equivalents	1.67E+03
Water Intake	liters of water	4.20E+01
Functional Unit	-----	100 linear ft. of control

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.

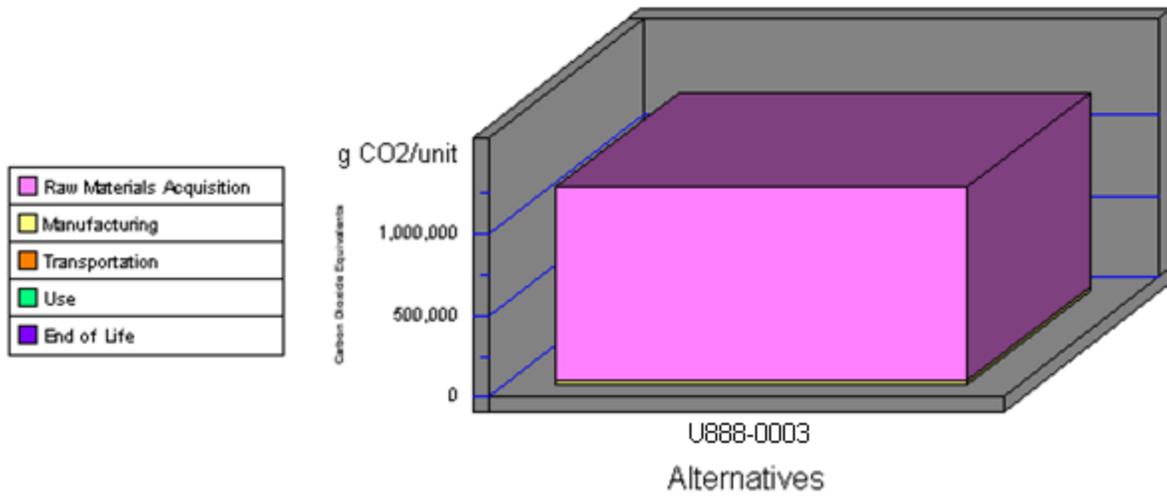
Economic Performance



Category	U888-0003
First Cost	200.00
Future Cost-- 3.0%	0.00
Sum	200.00

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

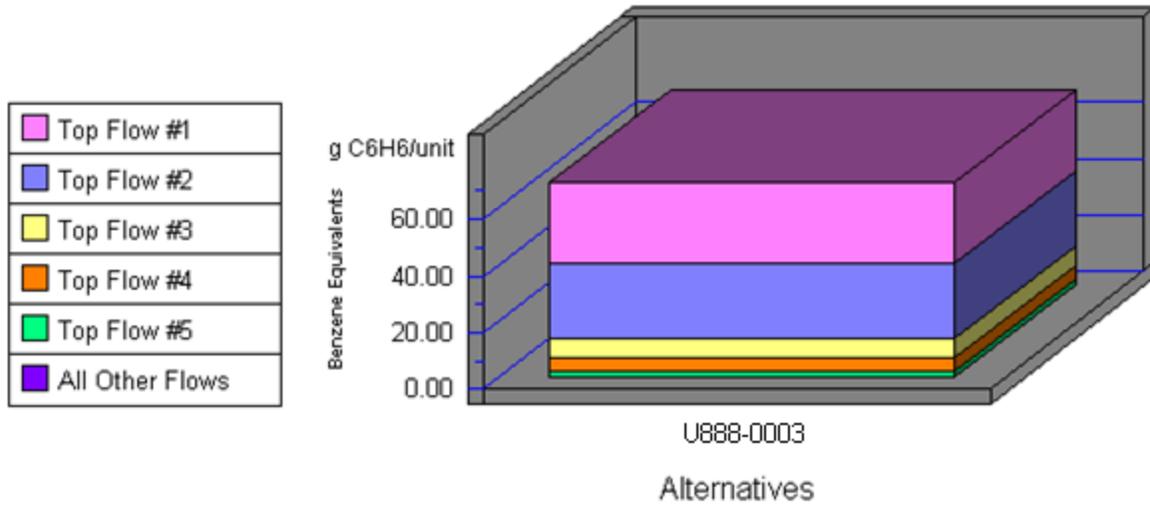
Global Warming by Life-Cycle Stage



Note: Lower values are better

Category	U888-0003
1. Raw Materials	1186521
2. Manufacturing	24777
3. Transportation	9856
4. Use	0
5. End of Life	0
Sum	1221153

Human Health Cancer by Sorted Flows*

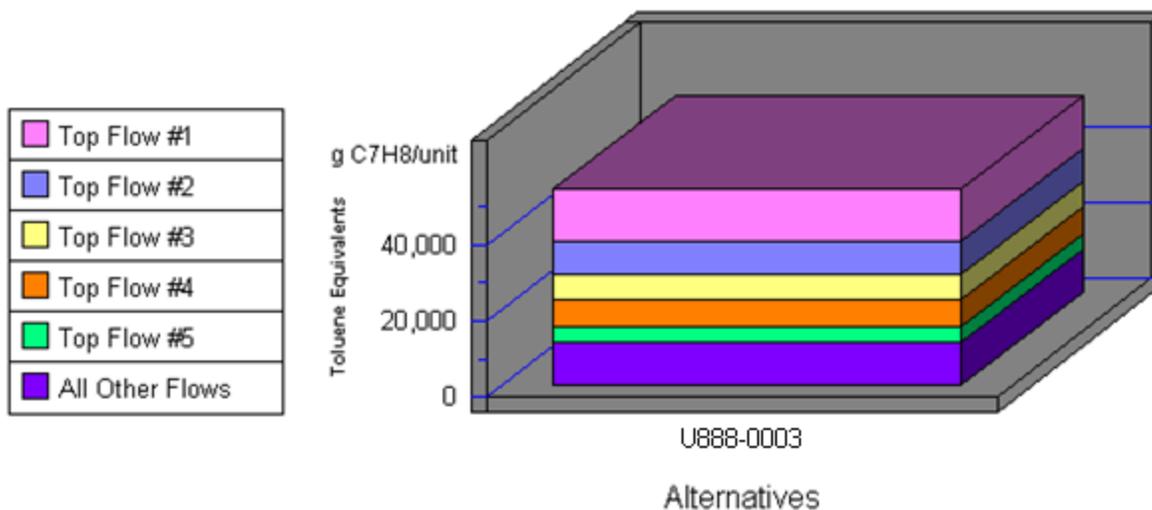


Note: Lower values are better

Category	U888-0003
Cancer--(w) Arsenic (As3+, As5+	28.72
Cancer--(w) Phenol (C6H5OH)	26.11
Cancer--(a) Dioxins (unspecifie	6.91
Cancer--(a) Arsenic (As)	5.01
Cancer--(a) Benzene (C6H6)	1.46
All Others	0.67
Sum	68.88

*Sorted by five topmost flows for worst-scoring product

Human Health Noncancer by Sorted Flows*



Note: Lower values are better

Category	U888-0003
Noncancer--(w) Barium (Ba++)	13,649.90
Noncancer--(a) Dioxins (unspeci	8,701.88
Noncancer--(w) Lead (Pb++, Pb4+	7,000.86
Noncancer--(a) Mercury (Hg)	6,726.02
Noncancer--(a) Ammonia (NH3)	4,222.85
All Others	11,419.61
Sum	51,721.13

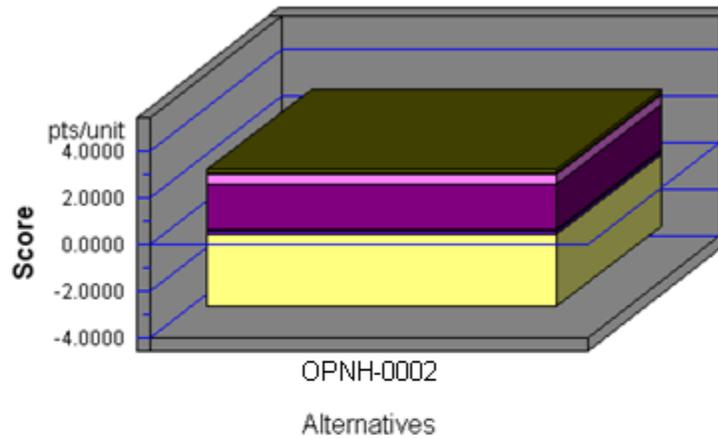
*Sorted by five topmost flows for worst-scoring product

Appendix C - BEES Analysis Results Part 2

Functional Unit: 1 acre of control

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



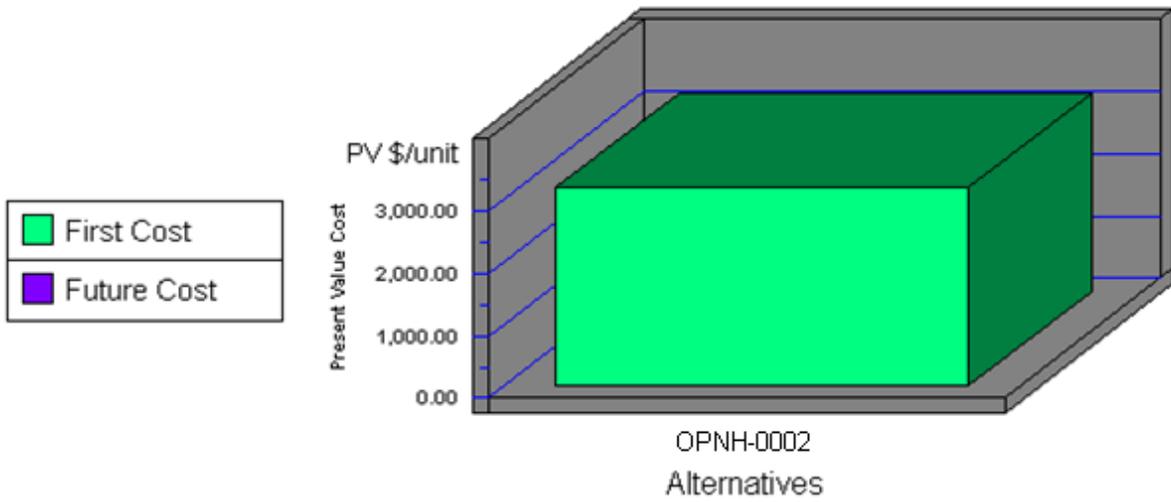
Note: Lower values are better

Category	OPNH-0002
Acidification--3%	0.0001
Crit. Air Pollutants--9%	0.0265
Ecolog. Toxicity--7%	0.1190
Eutrophication--6%	0.0742
Fossil Fuel Depl.--10%	0.4370
Global Warming--29%	-3.0421
Habitat Alteration--6%	0.0000
Human Health--13%	1.9399
Indoor Air--3%	0.0000
Ozone Depletion--2%	0.0000
Smog--4%	0.0971
Water Intake--8%	0.1616
Sum	-0.1867

Erosion Control Materials		
Impacts	Units	OPNH-0002
Acidification	millimoles H ⁺ equivalents	2.32E+05
Criteria Air Polutants	microDALYs	5.64E+01
Ecotoxicity	g 2,4-D equivalents	1.39E+03
Eutrophication	g N equivalents	2.38E+02
Fossil Fuel Depletion	MJ surplus energy	1.54E+03
Global Warming	g CO ₂ equivalents	-2.68E+06
Habitat Alteration	T&E count	0.00E+00
Human Health--Cancer	g C ₆ H ₆ equivalents	1.16E+03
Human Health--NonCancer	g C ₇ H ₈ equivalents	5.31E+06
Indoor Air Quality	g TVOCs	0.00E+00
Ozone Depletion	g CFC-11 equivalents	4.13E-03
Smog	g NO _x equivalents	3.68E+03
Water Intake	liters of water	1.07E+04
Functional Unit	-----	1 acre of control

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 chloroflourocarbon-11 equivalents; Smog: grams of nitrogen oxide equivalents; and Water Intake: liters of water.

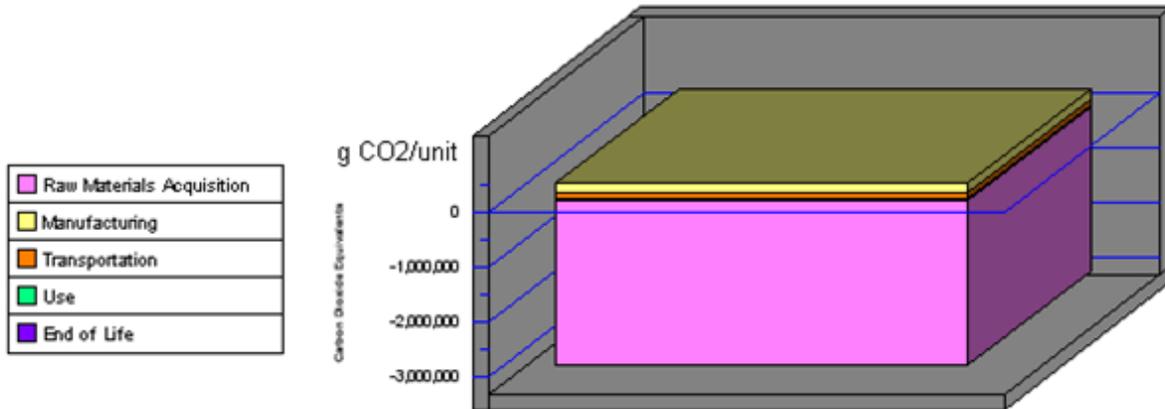
Economic Performance



Category	OPNH-0002
First Cost	3200.00
Future Cost-- 3.0%	0.00
Sum	3200.00

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

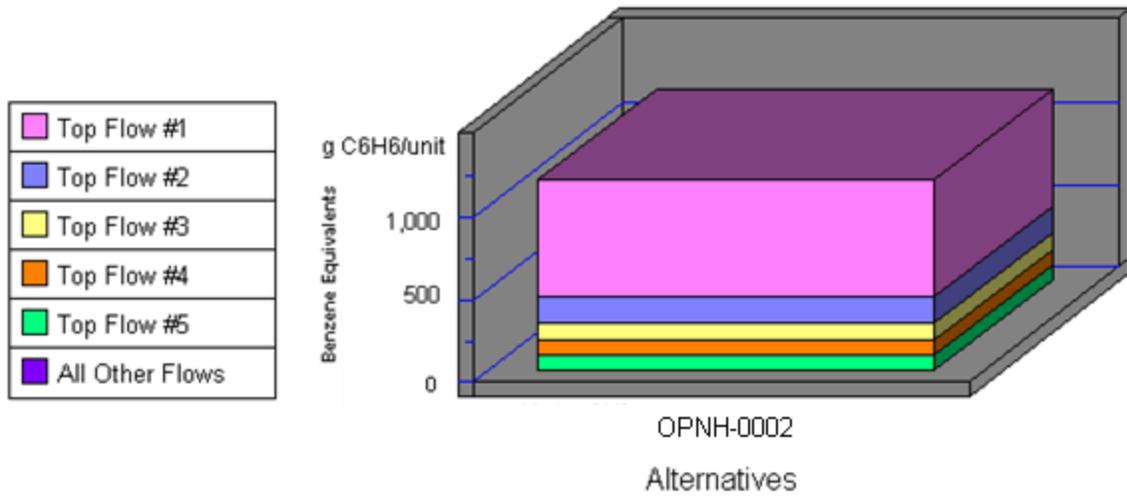
Global Warming by Life-Cycle Stage



Note: Lower values are better

Category	OPNH-0002
1. Raw Materials	-3000713
2. Manufacturing	177816
3. Transportation	121179
4. Use	18067
5. End of Life	0
Sum	-2683651

Human Health Cancer by Sorted Flows*

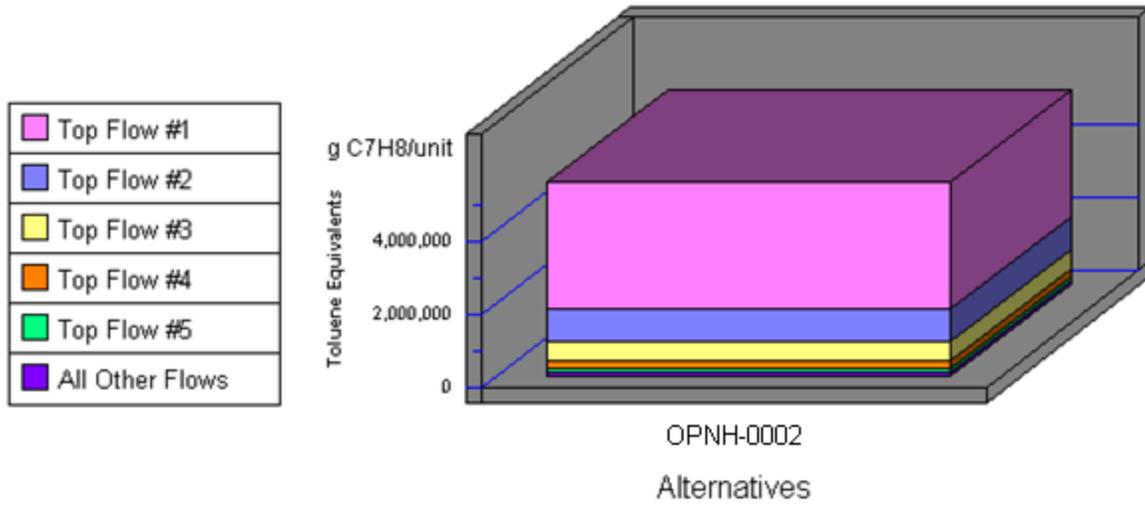


Note: Lower values are better

Category	OPNH-0002
Cancer--(a) Dioxins (unspecifie	706.67
Cancer--(w) Phenol (C6H5OH)	159.92
Cancer--(w) Arsenic (As3+, As5+	109.17
Cancer--(a) Arsenic (As)	92.53
Cancer--(a) Lead (Pb)	81.86
All Others	10.48
Sum	1,160.64

*Sorted by five topmost flows for worst-scoring product

Human Health Noncancer by Sorted Flows*



Note: Lower values are better

Category	OPNH-0002
Noncancer--(a) Lead (Pb)	3,465,409.45
Noncancer--(a) Dioxins (unspeci	890,296.82
Noncancer--(a) Aluminum (Al)	503,658.46
Noncancer--(a) Cadmium (Cd)	197,451.59
Noncancer--(a) Mercury (Hg)	112,050.04
All Others	143,602.89
Sum	5,312,469.25

*Sorted by five topmost flows for worst-scoring product