

## 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 May 6, 2008.

**Title:** Air Fresheners and Deodorizers

**Description:** Products used to alleviate the experience of unpleasant odors by chemical neutralization, absorption, anesthetization, or masking.

**Companies Supplying Product Category:** 44 companies supplying Air Fresheners and Deodorizers 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 Air Fresheners and Deodorizers:

- United Soybean Board
- International Fragrance Association
- Fragrance Materials Association of the United States
- Green Hotels Association

**Commercially Available Products Identified:** Of the companies identified, 77 Air Fresheners and Deodorizers 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 Air Fresheners and Deodorizers.

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

- Environmental Protection Agency EPA CFR 40 Part 797.1300 Daphnid Acute Toxicity Test. Method used to determine the concentration of a substance that produces a toxic effect.
- EPA CFR 40 Part 797.1400 Fish Acute Toxicity Test. Method used to determine the concentration of a substance that produces a toxic effect.

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

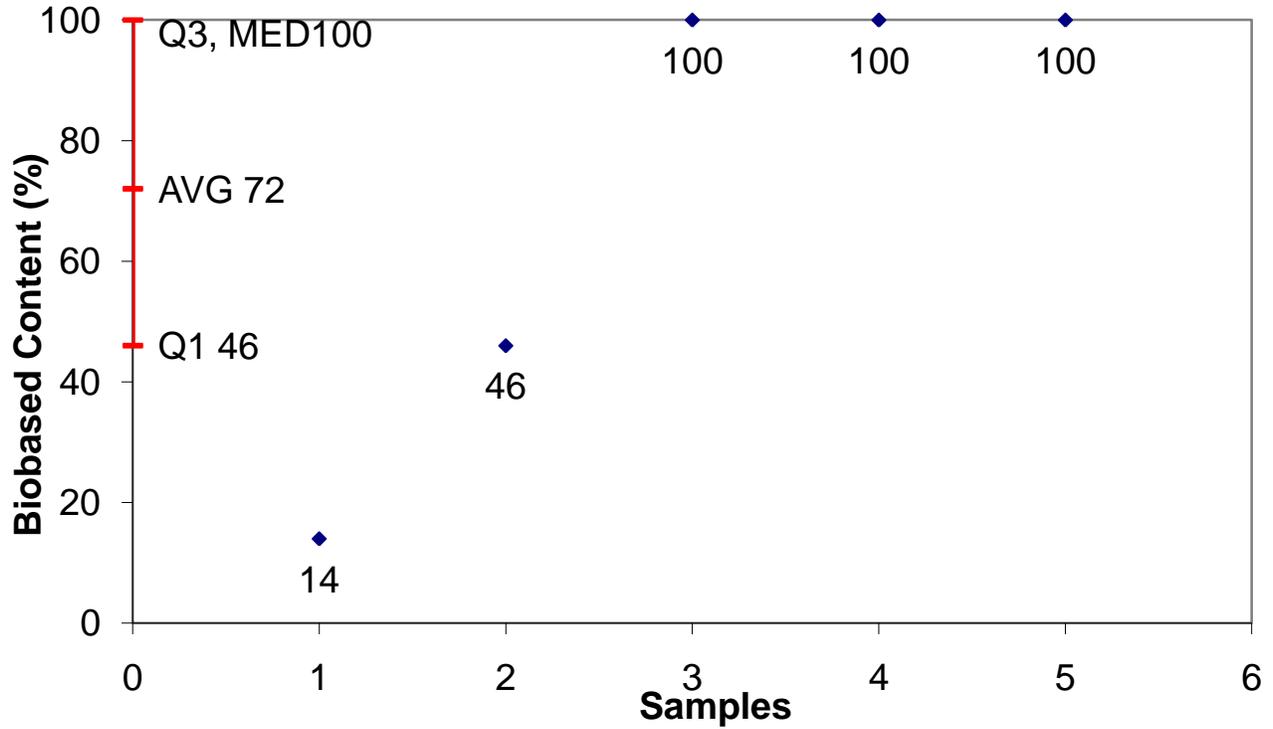
**Biobased Content Data:** Results from biobased content testing of Air Fresheners and Deodorizers indicate a range of content percentages from 14% minimum to 100% maximum biobased content as defined by ASTM D 6866-04. A detailed distribution of biobased content levels is included as Appendix A.

**Products Submitted for BEES Analysis:** Life-cycle cost and environmental effect data for 2 Air Fresheners and Deodorizers have been submitted to NIST for BEES analysis.

**BEES Analysis:** The life-cycle costs of the submitted Air Fresheners and Deodorizers range from \$29.07 minimum to \$38.00 maximum per usage unit. The environmental scores range from 0.0120 minimum to 0.0401 maximum. A detailed summary of the BEES results is included as Appendix B.

Appendix A - Biobased Content Data

Air Fresheners and Deodorizers

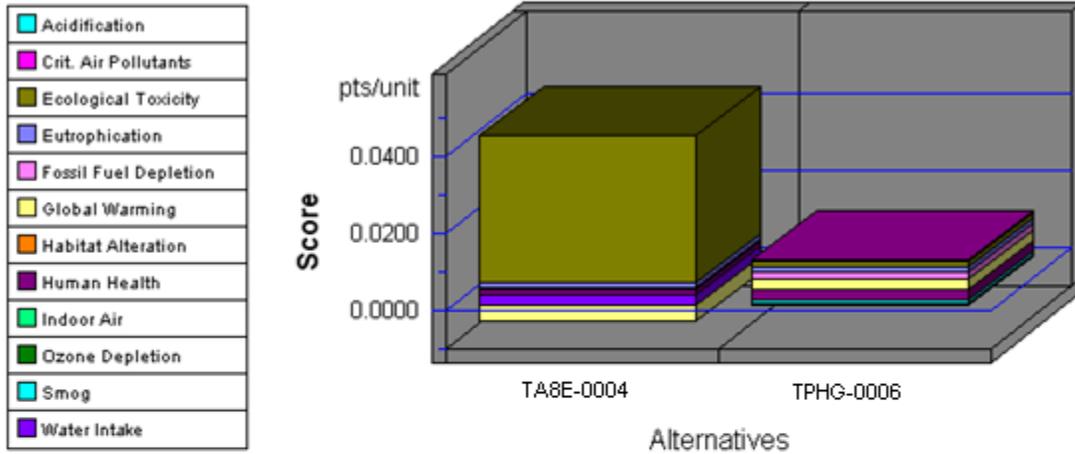


	Company	Product	C14	BEES
1	BNK2	BNK2-0002	14	
2	TPHG	TPHG-0006	46	Yes
3	XB9O	XB9O-0001	100	
4	TA8E	TA8E-0004	100	Yes
5	FCM9	FCM9-0010	100	

## Appendix B - BEES Analysis Results

Functional Unit: 1 gallon

### Environmental Performance



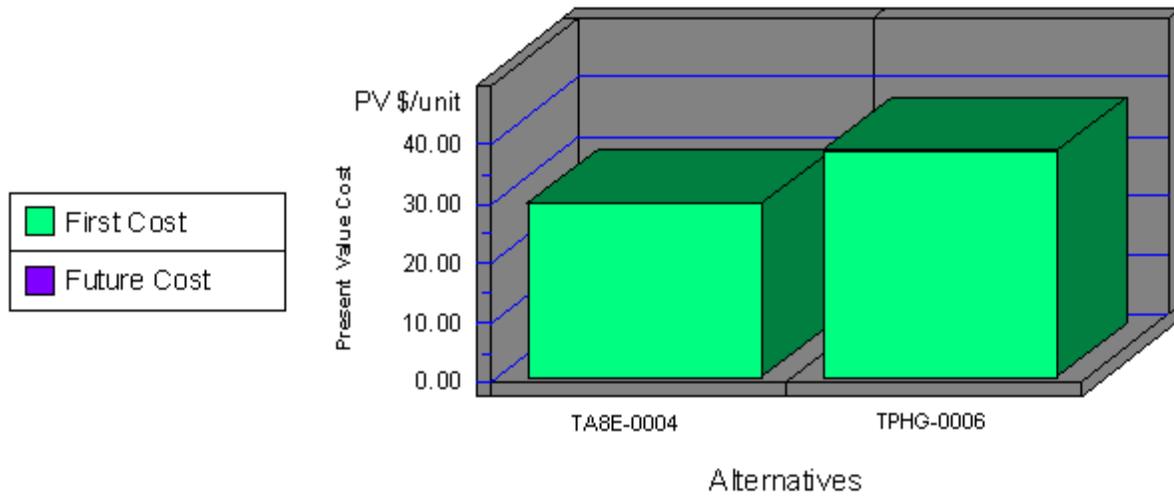
**Note: Lower values are better**

Category	TA8E-0004	TPHG-0006
Acidification--3%	0.0000	0.0000
Crit. Air Pollutants--9%	0.0000	0.0005
Ecolog. Toxicity--7%	0.0379	0.0014
Eutrophication--6%	0.0014	0.0015
Fossil Fuel Depl.--10%	0.0005	0.0016
Global Warming--29%	-0.0038	0.0030
Habitat Alteration--6%	0.0000	0.0000
Human Health--13%	0.0012	0.0027
Indoor Air--3%	0.0000	0.0000
Ozone Depletion--2%	0.0000	0.0000
Smog--4%	0.0002	0.0007
Water Intake--8%	0.0027	0.0006
<b>Sum</b>	<b>0.0401</b>	<b>0.0120</b>

Air Fresheners/Deodorizers			
Impacts	Units	TA8E-0004	TPHG-0006
Acidification	millimoles H <sup>+</sup> equivalents	3.62E+02	1.27E+03
Criteria Air Polutants	microDALYs	8.32E-02	1.02E+00
Ecotoxicity	g 2,4-D equivalents	4.42E+02	1.62E+01
Eutrophication	g N equivalents	4.35E+00	4.88E+00
Fossil Fuel Depletion	MJ surplus energy	1.59E+00	5.48E+00
Global Warming	g CO <sub>2</sub> equivalents	-3.32E+03	2.67E+03
Habitat Alteration	T&E count	0.00E+00	0.00E+00
Human Health--Cancer	g C <sub>6</sub> H <sub>6</sub> equivalents	7.37E-01	1.69E+00
Human Health--NonCancer	g C <sub>7</sub> H <sub>8</sub> equivalents	7.46E+02	2.33E+03
Indoor Air Quality	g TVOCs	0.00E+00	0.00E+00
Ozone Depletion	g CFC-11 equivalents	8.19E-07	3.30E-06
Smog	g NO <sub>x</sub> equivalents	8.07E+00	2.61E+01
Water Intake	liters of water	1.79E+02	3.83E+01
Functional Unit	-----	1 Gallon	

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.

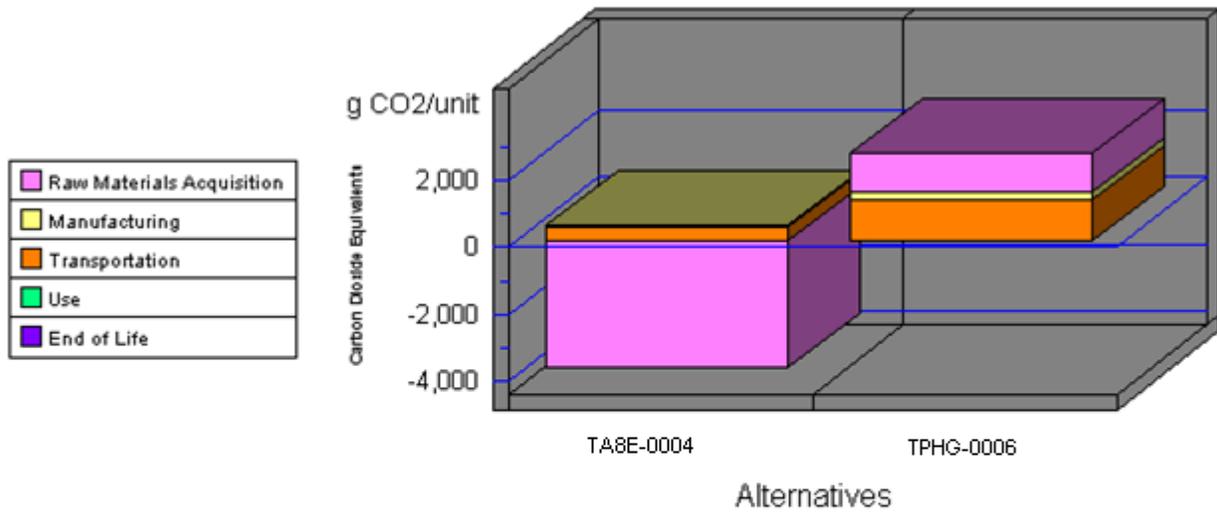
# Economic Performance



Category	TA8E-0004	TPHG-0006
First Cost	29.07	38.00
Future Cost- 3.0%	0.00	0.00
<b>Sum</b>	29.07	38.00

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

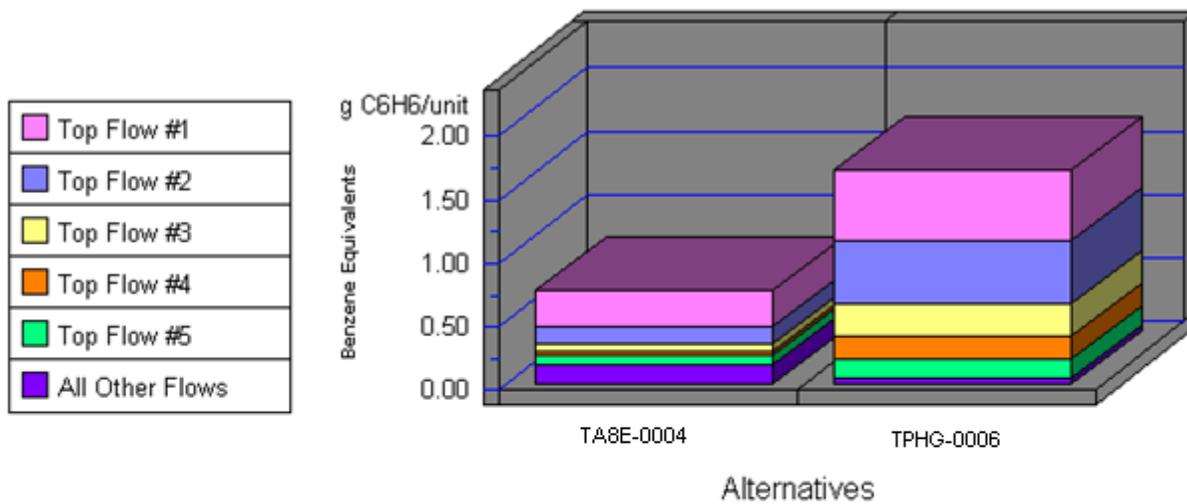
# Global Warming by Life-Cycle Stage



**Note: Lower values are better**

Category	TA8E-0004	TPHG-0006
1. Raw Materials	-3783	1181
2. Manufacturing	8	263
3. Transportation	458	1229
4. Use	0	0
5. End of Life	0	0
<b>Sum</b>	<b>-3318</b>	<b>2674</b>

## Human Health Cancer by Sorted Flows\*

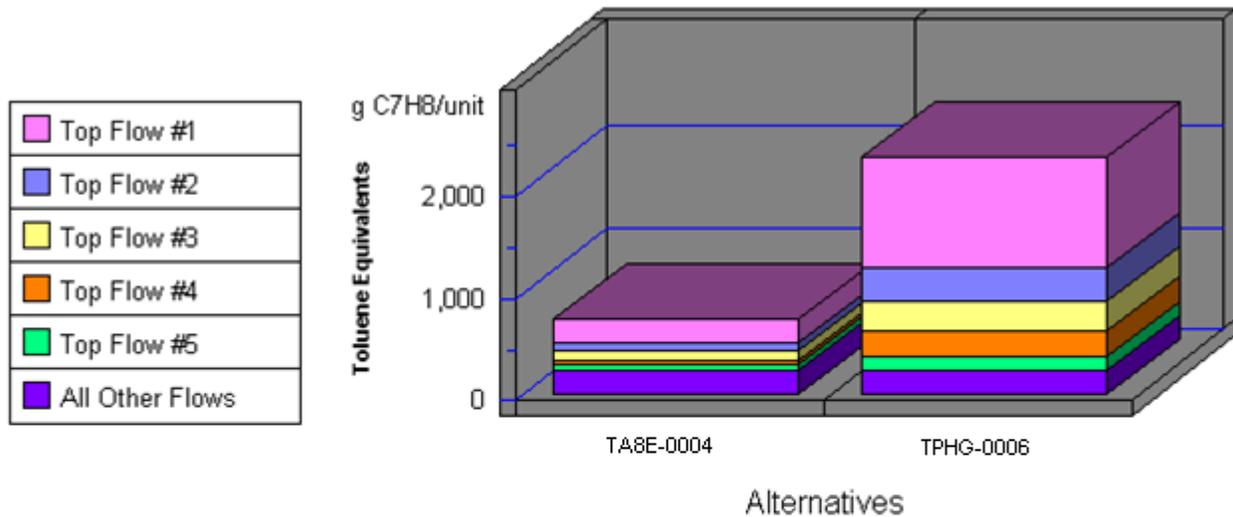


**Note: Lower values are better**

Category	TA8E-0004	TPHG-0006
Cancer--(w) Arsenic (As3+, As5+	0.28	0.55
Cancer--(w) Phenol (C6H5OH)	0.14	0.50
Cancer--(a) Dioxins (unspecifie	0.06	0.26
Cancer--(a) Arsenic (As)	0.03	0.18
Cancer--(a) Atrazine (C8H14ClN5	0.07	0.15
All Others	0.16	0.05
<b>Sum</b>	<b>0.74</b>	<b>1.69</b>

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

## Human Health Noncancer by Sorted Flows\*



**Note: Lower values are better**

Category	TA8E-0004	TPHG-0006
Noncancer--(a) Mercury (Hg)	236.81	1,081.52
Noncancer--(a) Dioxins (unspeci)	69.86	328.79
Noncancer--(w) Barium (Ba++)	94.00	286.67
Noncancer--(a) Lead (Pb)	55.97	247.23
Noncancer--(w) Lead (Pb++, Pb4+	50.43	135.11
All Others	239.08	248.84
<b>Sum</b>	<b>746.14</b>	<b>2,328.15</b>

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