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 December 28, 2007.

Title: Inks – Specialty

Description: Specialty inks used by printers to add extra characteristics to their prints for special effects or functions. Specialty inks include, but are not limited to: CD printing, erasable, FDA compliant, invisible, magnetic, scratch and sniff, thermochromic, and tree marking inks.

Companies Supplying Product Category: 11 companies supplying Inks – Inks (Specialty) 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 Inks – Inks (Specialty):

- United Soybean Board Association
- National Corn Growers Association
- Ohio Corn Growers Association
- Michigan Corn Growers Association
- Specialty Graphic Imaging Association
- Ink World Magazine
- The National Association of Printing Ink Manufacturers
- Association of Graphics Communication
- Craft and Hobby Association

Commercially Available Products Identified: Of the companies identified, 1 Inks – Inks (Specialty) 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 16 Inks – Inks (Specialty).

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

- No Results

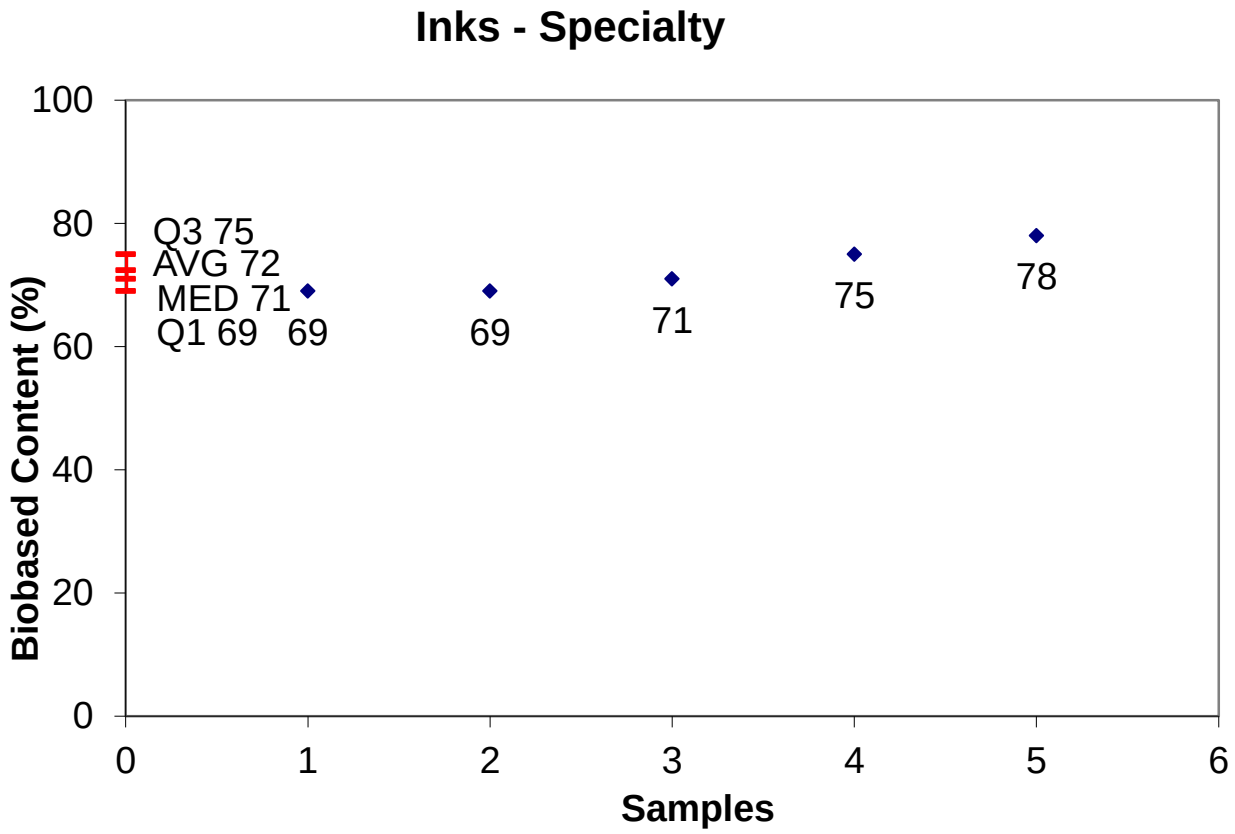
Samples Tested for Biobased Content: 6 samples of Inks – Inks (Specialty) have been submitted to independent laboratories for biobased content testing as specified by ASTM standard D6866-04.

Biobased Content Data: Results from biobased content testing of Inks – Inks (Specialty) indicate a range of content percentages from 69% minimum to 78% 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 Inks – Inks (Specialty) have been submitted to NIST for BEES analysis.

BEES Analysis: The life-cycle costs of the submitted Inks – Inks (Specialty) range from $9.11 minimum to $9.11 maximum per usage unit. The environmental scores range from 0.0244 minimum to 0.0244 maximum. A detailed summary of the BEES results is included as Appendix B.

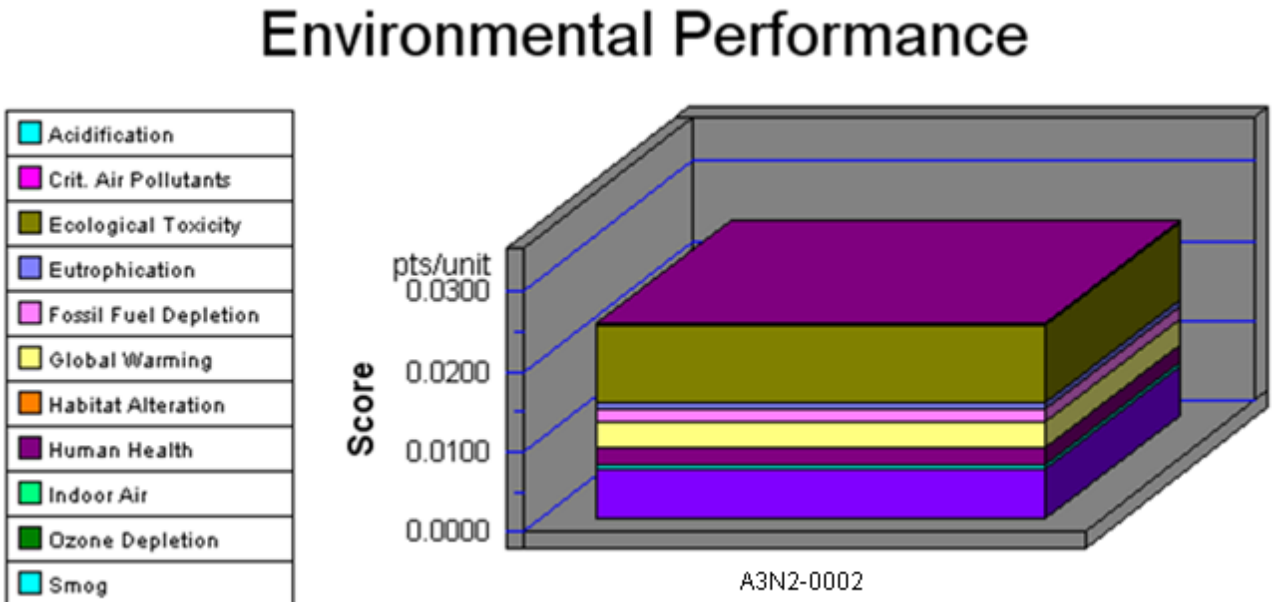
Appendix A - Biobased Content Data



	Company	Product	C14	BEES
1	A3N2	A3N2-0011	69	
2	F99K	F99K-0004	69	
3	A3N2	A3N2-0004	71	
4	A3N2	A3N2-0002	75	Yes
5	F99K	F99K-0003	78	

Appendix B - BEES Analysis Results

Functional Unit: 300 square inches

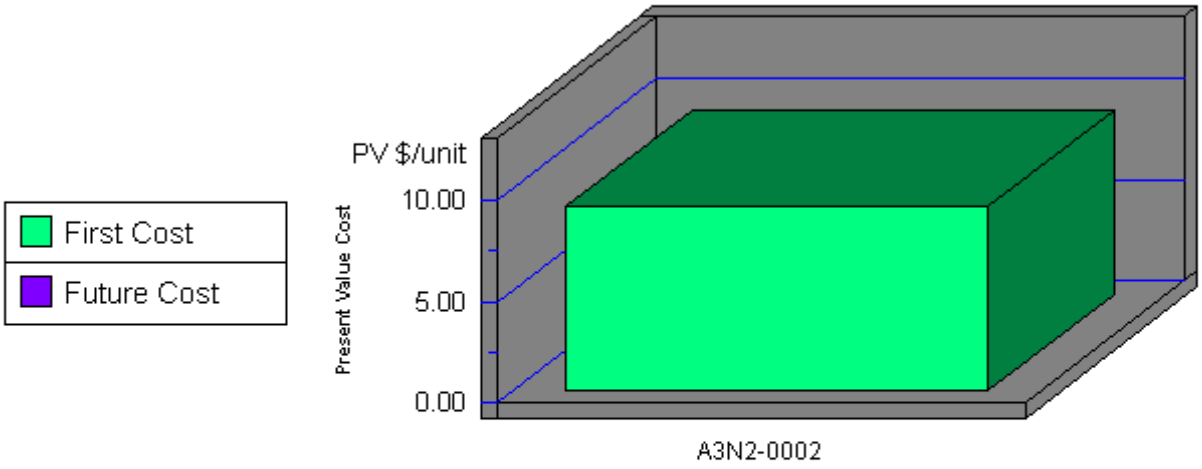


Category	A3N2-0002
Acidification--3%	0.0000
Crit. Air Pollutants--9%	0.0001
Ecolog. Toxicity--7%	0.0097
Eutrophication--6%	0.0009
Fossil Fuel Depl.--10%	0.0016
Global Warming--29%	0.0030
Habitat Alteration--6%	0.0000
Human Health--13%	0.0022
Indoor Air--3%	0.0000
Ozone Depletion--2%	0.0000
Smog--4%	0.0005
Water Intake--8%	0.0064
Sum	0.0244

Inks - Specialty		
Impacts	Units	A3N2-0002
Acidification	millimoles H^+ equivalents	9.64E+02
Criteria Air Polutants	microDALYs	2.63E-01
Ecotoxicity	g 2,4-D equivalents	1.14E+02
Eutrophication	g N equivalents	2.77E+00
Fossil Fuel Depletion	MJ surplus energy	5.59E+00
Global Warming	g CO_2 equivalents	2.61E+03
Habitat Alteration	T&E count	0.00E+00
Human Health--Cancer	g C_6H_6 equivalents	1.39E+00
Human Health--NonCancer	g C_7H_8 equivalents	1.40E+03
Indoor Air Quality	g TVOCs	0.00E+00
Ozone Depletion	g CFC-11 equivalents	4.11E-07
Smog	g NO_x equivalents	1.78E+01
Water Intake	liters of water	4.21E+02
Functional Unit	----------	300 sq. in.

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.

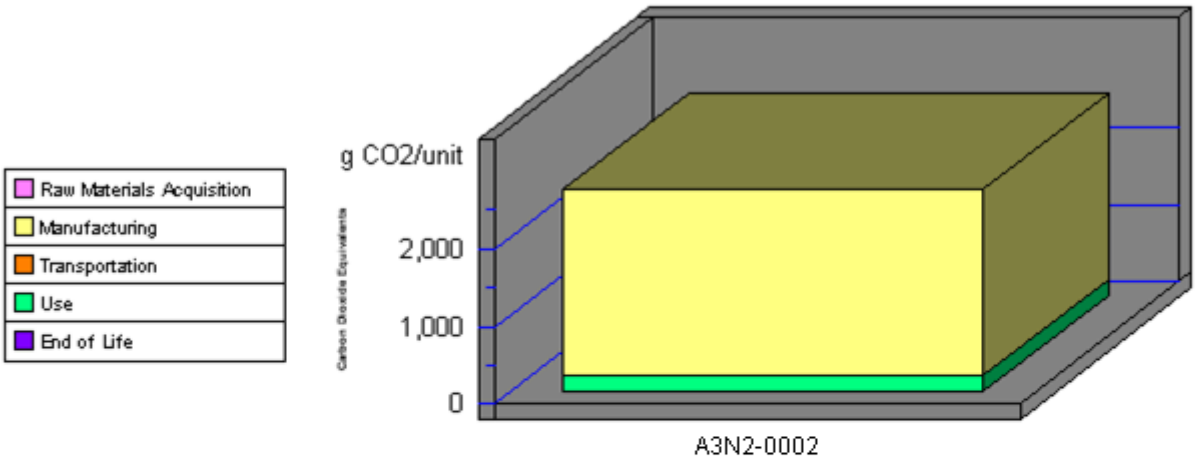
Economic Performance



Category	A3N2-0002
First Cost	9.11
Future Cost-- 3.0%	0.00
Sum	9.11

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

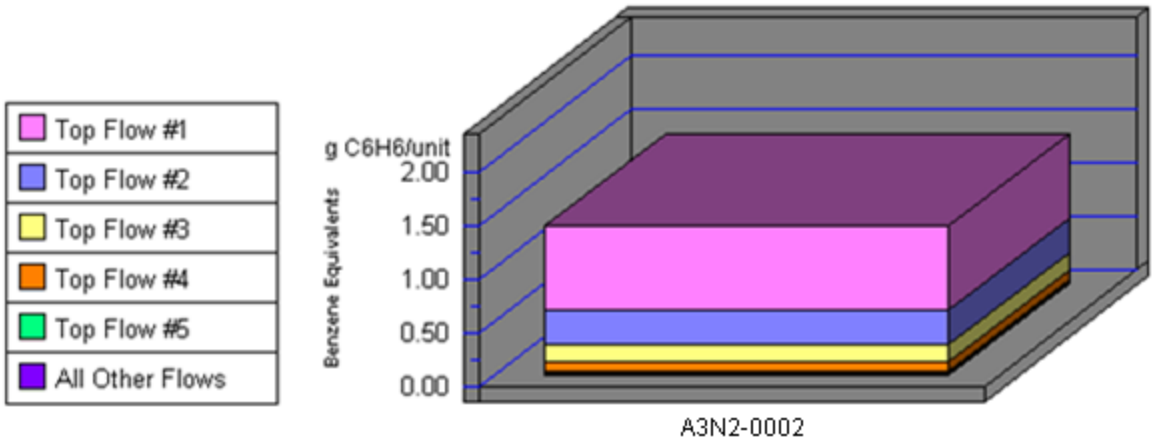
Global Warming by Life-Cycle Stage



Note: Lower values are better

Category	A3N2-0002
1. Raw Materials	0
2. Manufacturing	2389
3. Transportation	2
4. Use	220
5. End of Life	0
Sum	2611

Human Health Cancer by Sorted Flows*

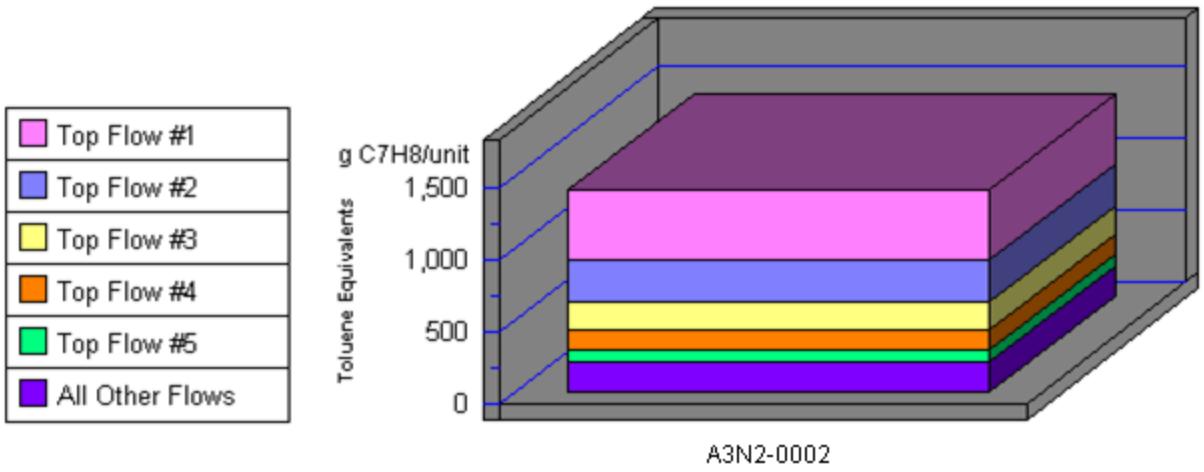


Note: Lower values are better

Category	A3N2-0002
Cancer--(w) Phenol (C6H5OH)	0.78
Cancer--(w) Arsenic (As3+, As5+	0.33
Cancer--(a) Dioxins (unspecifie	0.15
Cancer--(a) Arsenic (As)	0.09
Cancer--(a) Benzene (C6H6)	0.01
All Others	0.02
Sum	1.39

*Sorted by five topmost flows for worst-scoring product

Human Health Noncancer by Sorted Flows*



Note: Lower values are better

Category	A3N2-0002
Noncancer--(a) Mercury (Hg)	480.97
Noncancer--(w) Mercury (Hg+, Hg	289.06
Noncancer--(a) Dioxins (unspeci	194.26
Noncancer--(w) Barium (Ba++)	141.74
Noncancer--(a) Lead (Pb)	85.02
All Others	211.62
Sum	1,402.67

*Sorted by five topmost flows for worst-scoring product