

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 May 19, 2009.

Title: Water Clarifying Agents

Description: Products designed to clarify and improve the quality of water by aiding in biodegradation of excess nutrients, organic matter, and hydrocarbons.

Companies Supplying Item: 15 companies supplying Water Clarifying Agents 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 Water Clarifying Agents:

- Aquaculture Association of Canada
- Colorado Aquaculture Association
- The Delaware Aquaculture Resource Center
- Illinois Aquaculture Association
- Kansas Aquaculture Association
- Massachusetts Aquaculture Association
- The National Aquaculture Association
- National Corn Growers Association
- Newfoundland Aquaculture Industry Association
- Oregon Aquaculture Association
- PennAg Aquaculture Council
- Texas Aquaculture Association
- United Soybean Board Association
- West Virginia Aquaculture Association
- Wisconsin Aquaculture Association, Inc.
- The World Aquaculture Society

Commercially Available Products Identified: Of the companies identified, 30 Water Clarifying Agents 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 0 Water Clarifying Agents.

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

- ATCC Biosafety Level 1
- NSF Cat. 61: Drinking Water System Components-Health Effects

- EPA/600/4-90/027 : Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms

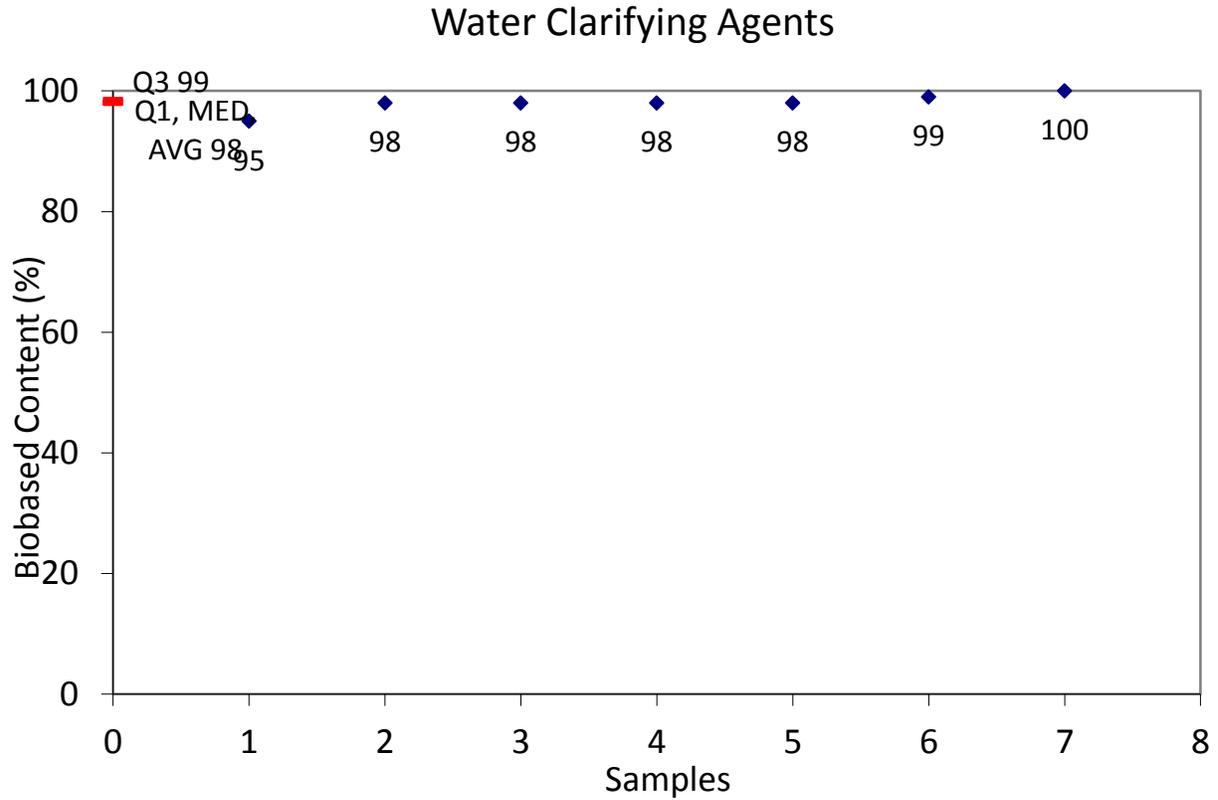
Samples Tested for Biobased Content: 7 samples of Water Clarifying Agents have been submitted to independent laboratories for biobased content testing as specified by ASTM standard D6866.

Biobased Content Data: Results from biobased content testing of Water Clarifying Agents indicate a range of content percentages from 95 minimum to 100 maximum biobased content as defined by ASTM D6866. 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 Water Clarifying Agent has been submitted to NIST for BEES analysis.

BEES Analysis: The life-cycle cost of the submitted Water Clarifying Agents range 0.0012 per usage unit. The environmental score is \$2.81. A detailed summary of the BEES results is included as Appendix B.

Appendix A - Biobased Content Data

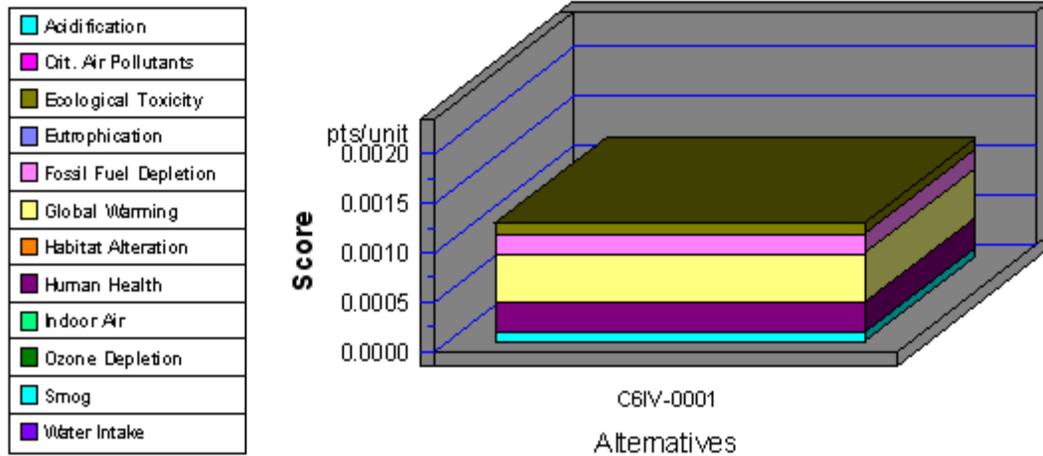


	Company	Product	C14	BEES
1	C6IV	C6IV-0001	95	Yes
2	J922	J922-0001	98	
3	RS9R	RS9R-0005	98	
4	RS9R	RS9R-0008	98	
5	RS9R	RS9R-0003	98	
6	RS9R	RS9R-0004	99	
7	J922	J922-0006	100	

Appendix B - BEES Analysis Results

Functional Unit: 1,000 Gallons of Cleaned Pond Water

Environmental Performance



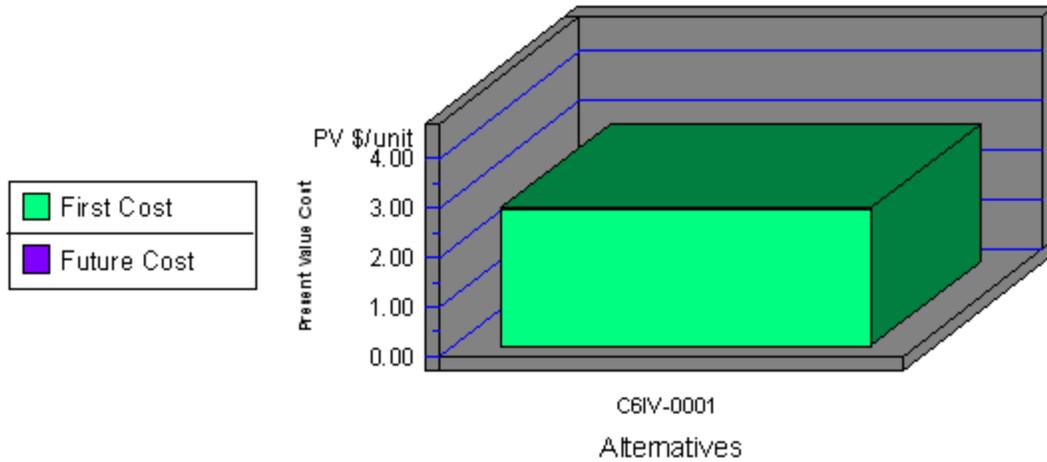
Note: Lower values are better

Category	C6IV-0001
Acidification-3%	0.0000
Crit. Air Pollutants-9%	0.0000
Ecolog. Toxicity-7%	0.0001
Eutrophication-6%	0.0000
Fossil Fuel Depl.-10%	0.0002
Global Warming-29%	0.0005
Habitat Alteration-6%	0.0000
Human Health-13%	0.0003
Indoor Air-3%	0.0000
Ozone Depletion-2%	0.0000
Smog-4%	0.0001
Water Intake-8%	0.0000
Sum	0.0012

Water Clarifying Agents		
Impacts	Units	C6IV-0001
Acidification	millimoles H ⁺ equivalents	1.58E+02
Criteria Air Polutants	microDALYs	3.41E-02
Ecotoxicity	g 2,4-D equivalents	7.01E-01
Eutrophication	g N equivalents	1.21E-01
Fossil Fuel Depletion	MJ surplus energy	6.30E-01
Global Warming	g CO ₂ equivalents	4.08E+02
Habitat Alteration	T&E count	0.00E+00
Human Health--Cancer	g C ₆ H ₆ equivalents	2.14E-01
Human Health--NonCancer	g C ₇ H ₈ equivalents	3.15E+02
Indoor Air Quality	g TVOCs	0.00E+00
Ozone Depletion	g CFC-11 equivalents	3.32E-08
Smog	g NO _x equivalents	3.09E+00
Water Intake	liters of water	2.24E+00
Functional Unit	-----	1,000 gallons of cleaned pond water

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.

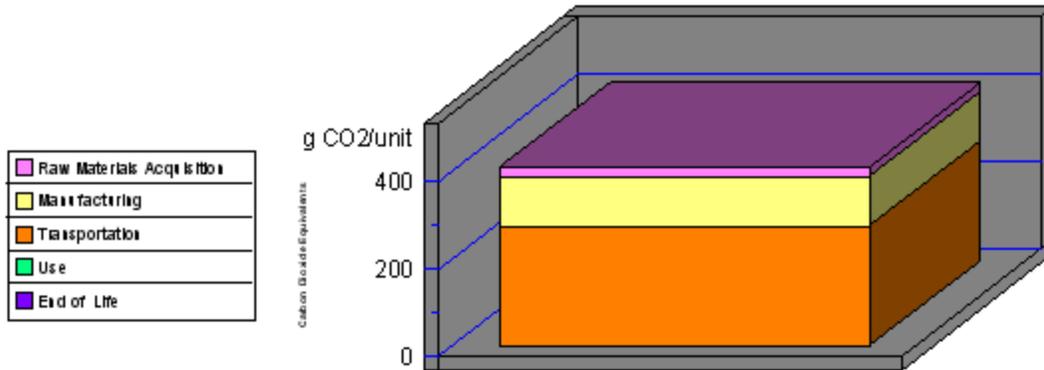
Economic Performance



Category	C6IV-0001
First Cost	2.81
Future Cost- 3.0%	0.00
Sum	2.81

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

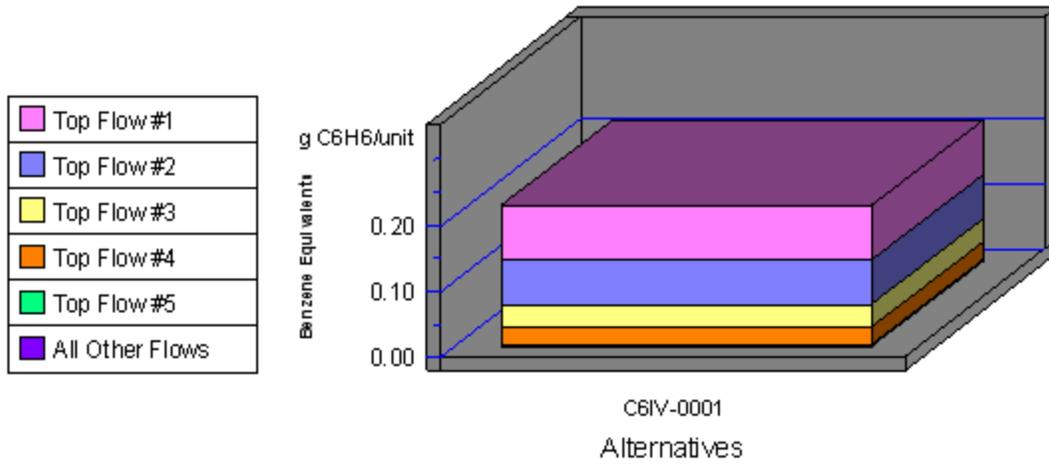
Global Warming by Life-Cycle Stage



Note: Lower values are better

Category	C6IV-0001
1. Raw Materials	22
2. Manufacturing	113
3. Transportation	273
4. Use	0
5. End of Life	0
Sum	408

Human Health Cancer by Sorted Flows*

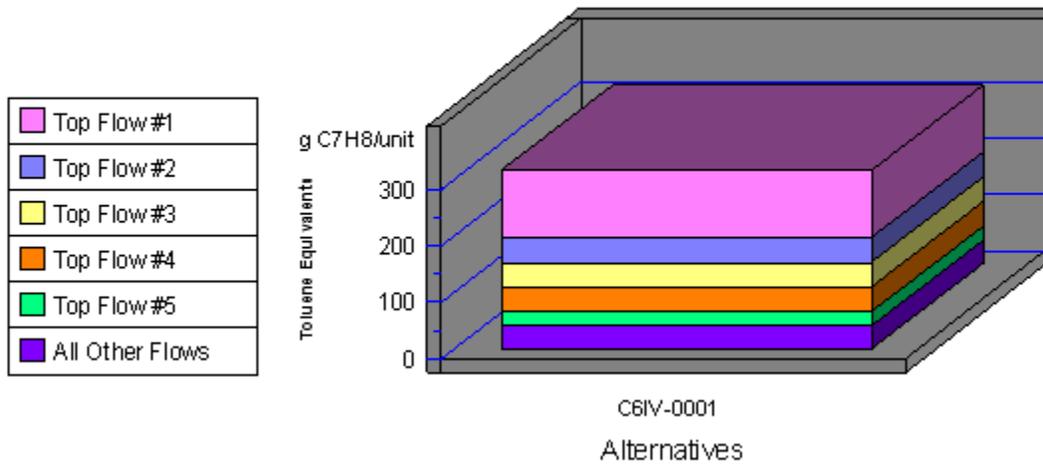


Note: Lower values are better

Category	C6IV-0001
Cancer--(w) Arsenic (As3+,	0.08
Cancer--(w) Phenol (C6H5OH)	0.07
Cancer--(a) Dioxins (unspecife	0.03
Cancer--(a) Arsenic (As)	0.03
Cancer--(a) Benzene (C6H6)	0.00
All Others	0.00
Sum	0.21

*Sorted by five topmost flows for worst-scoring product

Human Health Noncancer by Sorted Flows*



Note: Lower values are better

Category	C6IV-0001
Noncancer-(w) Mercury (Hg+)	117.99
Noncancer-(w) Barium (Ba++)	44.47
Noncancer-(a) Mercury (Hg)	43.62
Noncancer-(a) Dioxins (unspec)	42.52
Noncancer-(w) Lead (Pb++)	23.20
All Others	43.21
Sum	315.02

*Sorted by five topmost flows for worst-scoring product