



VertecBio ELSOL™ - XTR

Patent Pending Blend of Biobased Solvents

- 100% Biobased Replacement for Xylene & Toluene
- Better Cleaning Power and Reduced Solvent Usage vs. Xylene & Toluene
- High Performance, Versatile Solvent Blend for Formulations
- Excellent Solvency for Paint, Coating and Ink Formulations
- 20% - 30% More Efficient in Viscosity Reduction than Toluene
- Provides Excellent Flow Characteristics When Used in Formulation
- High Loading Capacity
- Easy and Inexpensive to Distill/Recycle
- 100% Biodegradable to Carbon Dioxide and Water
- Sustainable Chemistry – No Impact on Global Warming (“Carbon Neutral”)
- EPA Approved SNAP Solvent – No Ozone Depleting Chemicals
- No Environmentally Hazardous Ingredients
- Safe, Non-Toxic, Non-Carcinogenic
- No HAP’s – No Hazardous Air Pollutants
- Manufactured in the United States

GENERAL PHYSICAL PROPERTIES

VERTECBIO ELSOL-XTR

Flash Point ≈55 F ASTM D3278 (Setaflash)
Vapor Pressure.....36 mmHg @ 68 F
PH of Water Dispersion.....4
Specific Gravity.....0.886
Evaporation Rate.....0.89
Boiling Point Range.....176-320 F

8/6/08



Vertec BioSolvents ELSOL™-XTR Performance Sheet

Suggested Replacement for Toluene and Xylene

Introduction

Toluene's and xylene's largest uses are in industrial coatings applications, primarily in coil, extrusion, wood furniture and fixtures, containers and closures, automotive finishes and machinery. Formulators have been seeking an alternative to these hazardous solvents due to employee exposure concerns and increased legislative pressure geared toward reducing the use of these solvents.

Vertec BioSolvents suggests a replacement blend with renewable, carbon neutral biobased solvents. These biobased solvents are derived from corn, soybeans, citrus fruits and other renewable feedstocks, and have reduced toxicity profiles.

Reformulation Solvents

Hazardous Solvents	Toluene, Xylene
BioBased Replacement	ELSOL-XTR

The solvent blend shown is only a suggested starting point for developing alternative systems. All blends should be thoroughly evaluated to determine suitability for specific applications

	Relative Evaporation Rate	Flash Point(°F)	Hansen Solubility Parameters			Total
			Dispersion	Polar	H Bonding	
ELSOL™ - XTR	.89	68	7.7	2.9	5.4	9.8
Toluene	2	40	8.8	0.7	1	8.9
Xylene	0.77	85	9.8	0.9	1.2	9.9

Reformulation Solvents Typical Properties

Blend	Environmental	Uses	Comments
ELSOL XTR	Non Hap	Paint, coatings	Renewable, carbon neutral
	Non SARA reportable	cleaners, adhesives	Reduced toxicity profile

Conclusion

Formulators and applicators are looking for alternatives to hazardous solvents as more regulations are enforced. This can be seen in many industries including paint and coatings, adhesives and inks. Formulators are not only feeling the pressures at the federal and state level, but abroad as well. The suggested replacements using the sustainable, carbon neutral, biobased solvents above should assist in meeting your performance requirements and the regulatory challenges.

04/14/08, jeo



Vertec BioSolvents ELSOL™-XTR

Xylene & Toluene Replacement

Specifications

Item	Unit	Specification
Appearance		Free From Insoluble and Haze
Specific Gravity	20/20° C	0.886
Acidity	Wt % as Acetic Acid, Max.	0.05
Purity	Wt % Min.	99.5
Water Content	Wt % Max.	0.20
Viscosity	cps @ 20° C	1.1
Color	APHA, Max	10

Physical Properties

Item	XTR
Molecular Weight	99.66
Specific Gravity 20/20° C	0.886
Boiling Point	176° - 320°F
Flash Point	55°F
Viscosity @ 20°C (cps)	1.1
Evaporation Rate	0.89
Vapor Pressure, mm Hg, @20°C	36