

## Eastman Solvent Reformulation Tool user guide

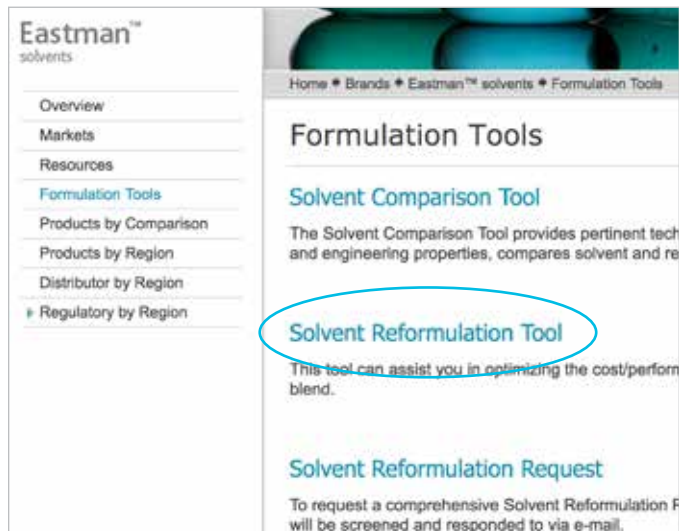
The Eastman Solvent Reformulation Tool can be a useful resource for formulators who have been tasked with solvent reformulation due to regulation, economics, or changes in product availability. Blend properties—such as relative evaporation rate (RER), Hansen solubility parameters (HSP), solvent viscosity, and others—are calculated and displayed to help you during reformulation. The tool also has other useful features that will be highlighted in this guide.

### Getting started

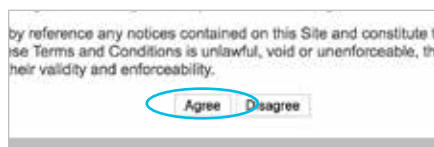
You can access the home page for the tool by visiting [www.eastman.com/solventtools](http://www.eastman.com/solventtools).



Once you have navigated to the home page, click on the "Solvent Reformulation Tool" link.



You will be directed to a disclaimer page. Please review and click "Agree."



## How to use the Solvent Reformulation Tool

Once you are on the solvent selection page, enter your current information by choosing the specific solvents in your blend in the "Solvent Group" drop-down.

A screenshot of a web interface showing a "Solvent Group" dropdown menu with the text "Select a Solvent Group" and a downward arrow. Below it is a "Solvent Selection" field with the instruction "Hold CTRL key for multiple selection". A "Blend 1" button is visible in the top right corner.

You can select multiple solvents and solvent functionalities to blend at once.

If the solvent you want to assess is not listed, you can add that solvent to the system by selecting "Add Unlisted Solvent."

A screenshot of a web interface showing a button labeled "Add Unlisted Solvent" circled in blue. To its left is a text input field labeled "Add Selected Solvent(s)". To its right are buttons for "View Solvent Blend Profiles" and "Add".

You will need to know pertinent information about that solvent to enter it into the system. Once you have filled in the necessary information, click "Add Solvent."

A screenshot of a web interface for adding a solvent. It contains several input fields and dropdown menus for the following properties: Solvent Name, Solvent Group (with a "Select One" dropdown), Viscosity (cP), Evaporation Rate (n-Butyl Acetate = 1), Density (lbs/gal), Molecular Weight, Surface Tension @20 C (dynes/cm), Refractive Index @25 C, SARA Title III Sec. 313 (Yes/No), HAP (Yes/No), Hansen Values (Dispersion, Polar, Hydrogen Bonding) in units of  $[\text{cal}/\text{cm}^3]^{1/2}$ , and Threshold Limit Values (PPM, MG/M3). At the bottom, there are "Add Solvent" and "Cancel" buttons, with "Add Solvent" circled in blue.

When you have made your selections and entered the ratio of each solvent, click "View Solvent Blend Profiles."

A screenshot of a web interface showing a table of solvent blend profiles. The table has columns for "Solvent Name", "Weight", and "Cents Per Pound". It lists two solvents: "CYCLOHEXANOL" with a weight of 30 and "EASTMAN DB (99%)" with a weight of 70. Each row has a "Delete" button. Below the table are buttons for "Clear All Solvents", "View Solvent Blend Profiles" (circled in blue), and "Add Blend".

Solvent Name	Weight	Cents Per Pound
CYCLOHEXANOL	30	
EASTMAN DB (99%)	70	

The following data table will appear which contains information about the blend

Blend 1

<a href="#">Normalize Volume / Weight</a>	<b>Solvent Name</b>	<b>SARA</b>	<b>HAP</b>	<b>Volume</b>	<b>Weight</b>	<b>Cents/Pound*</b>	<b>Cents/Kilogram*</b>
<a href="#">Retain Volume / Weight</a>	CYCLOHEXANOL	Y	N	30.186	30	0	0
<a href="#">Simulation Evaporation Profile</a>	EASTMAN DB (99%)	Y	Y	69.814	70	0	0
<a href="#">Escape Coefficient by Type</a>	<b>TOTAL</b>			<b>100</b>	<b>100</b>		
<a href="#">Reformulation Summary</a>	<b>Physical Properties</b>						
<a href="#">Edit Blends</a>	VISCOSITY, cP 5.739						
<a href="#">Download To Spreadsheet</a>	SURFACE TENSION @20 C (dynes/cm) 31.497						
	REFRACTIVE INDEX @25 C 1.442						
	<b>Hansen Solubility Parameters</b>						
	DISPERSION 16.423						
	POLAR 6.125						
	HYDROGEN BONDING 11.475						
	<b>TOTAL HANSEN 20.95</b>						
	<b>Economics Data</b>						
	CENTS/POUND* 0						
	CENTS/KILOGRAM* 0						
	DOLLARS/GAL* 0						
	DOLLARS/LITER* 0						
	POUNDS/GAL 7.919						
	KILOGRAMS/LITER 0.949						
	<b>Evaporation Data</b>						
	TIME ** 105462.822 SEC						
	RELATIVE EVAPORATION RATE (R.E.R) 0.004 (N-BUTYL ACETATE = 1.0)						
	ETHYL ETHER NUMBER (E.E.N) 2752.564 (ETHYL ETHER = 1.0)						
	* The cost values will be displayed only if the cost of the raw material is entered by the user						
	**Based on 488 seconds for 90% of one ml of butyl acetate to evaporate.						

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**Documents**

- [Selecting Effective Xylene Replacements for Protective Coatings](#)
- [Replacing Acetone with Eastman Methyl Acetate, High Purity](#)
- [Suggested Replacements for Toluene](#)
- [A Non-HAP Replacement for Xylene in Solventborne Coatings](#)
- [A Non-HAP Replacement for Toluene in Solventborne Coatings](#)
- [Eastman IBIB vs PM Acetate in Industrial Wood Coatings](#)
- [Diisobutyl Ketone \(DIBK\) Solvent Substitution Options](#)
- [Solvent Substitution or Replacement Options for MIBK](#)

For more information on blend properties, you can click on one of these headings:

[Normalize Volume / Weight](#)

[Retain Volume / Weight](#)

[Simulation Evaporation Profile](#)

[Escape Coefficient by Type](#)

[Reformulation Summary](#)

[Edit Blends](#)

[Download To Spreadsheet](#)

This will allow you to better understand blend evaporation as well as give you the option to export the blend to Excel.<sup>a</sup>

[Normalize Volume / Weight](#)

[Retain Volume / Weight](#)

[Simulation Evaporation Profile](#)

[Escape Coefficient by Type](#)

[Reformulation Summary](#)

[Edit Blends](#)

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Clicking "Edit Blends" will take you to the following screen where you can choose to make "Weight" changes or "Delete" a solvent and select a new solvent to compare.

Solvent Name	Weight	Cents Per Pound	
CYCLOHEXANOL	30		Delete
EASTMAN DB (99%)	70		Delete
<input type="button" value="Clear All Solvents"/>			
<input type="button" value="View Solvent Blend Profiles"/> <input type="button" value="Add Blend"/>			

<sup>a</sup> "Simulation Evaporation Profile" and "Escape Coefficient by Type" do not indicate the formation of an azeotrope.



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