

Huntsman Miscibility Predictor

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HUNTSMAN

Miscibility Number(s)	Compound	Miscible With Compounds With Miscibility Numbers of	Miscibility Number(s)	Compound	Miscible With Compounds With Miscibility Numbers of
8	Acetol (hydroxy acetone)	1-23	21	Iodomethane	6-31
15,17	Acetone	2-30	18	Isophorone	3-31
11,17	Acetonitrile	2-26	25	Isoprene	10-31
15,18	Acetophenone	3-30	7,17	JEFFSOL EC	2-22
14,18	Acrylonitrile	3-29	9,17	JEFFSOL PC	2-24
14	Allyl alcohol	1-29	14	JEFFOX® PPG-400	1-29
5	N-(2-Aminoethyl) ethanolamine	1-20	14,23	JEFFOX PPG-2000	8-29
6	1-Amino-2-propanol	1-21	13,17	JEFFOX WL-440	2-28
25	sec-Amylbenzene	10-31	12,17	JEFFOX WL-660	2-27
12	Aniline	1-27	10,17	JEFFOX WL-1400	2-25
25	Aromatic solvent 150	10-31	12,19	JEFFOX WL-5000	4-27
24	Aromatic solvent 400	11-31	30	Kerosene	15-31
24	Aromatic solvent 7545	11-31	9	Mercaptoethanol	1-24
21	Benzene	6-31	24	Mesitylene	9-31
15,19	Benzonitrile	4-30	18	Mesityl oxide	3-31
13	Benzyl alcohol	1-28	15,19	Methacrylonitrile	4-30
29	Bicyclohexyl	14-31	12	Methanol	1-27
21	Bromobenzene	6-31	8	Methoxyacetic acid	1-23
23	1-Bromobutane	8-31	11,17	3-Methoxypropionitrile	2-26
24	1-Bromo-3-methylbutane	9-31	15,17	Methyl acetate	2-30
26	1-Bromooctane	11-31	19	Methyl iso-amyl ketone	4-31
6	1,2-Butanediol	1-21	23	Methyl t-butyl ether	8-31
3	1,4-Butanediol	1-18	19	Methyl iso-butyl ketone	4-31
21	iso-Butyl acetate	6-31	29	Methylcyclohexane	14-31
22	n-Butyl acetate	7-31	11	N-Methylethanolamine	1-26
22	sec-Butyl acetate	7-31	17	Methyl ethyl ketone	2-31
15	iso-Butyl alcohol	1-30	14,19	Methyl formate	4-29
15	n-Butyl alcohol	1-30	20	Methyl methacrylate	5-31
16	sec-Butyl alcohol	1-31	16	N-METHYLMORPHOLINE	1-31
16	t-Butyl alcohol	1-31	14	2-Methyl-2,4-pentanediol	1-29
23	iso-Butyl iso-butyrate	8-31	17	4-Methyl-2-pentanol*	2-31
10,19	1,2 Butylene carbonate	4-25	13	1-Methyl-2-pyrrolidone	1-28
10	Butyrolactone	1-25	23	alpha-Methylstyrene	8-31
26	Carbon disulfide	11-31	29	Mineral spirits (Texsolve S or S-66)	14-31
24	Carbon tetrachloride	9-31	2	MONOETHANOLAMINE	1-17
25	Castor oil*	10-31	14	MORPHOLINE	1-29
21	Chlorobenzene	6-31	29	Naphtha, VM & P (Texsolve V)	14-31
11	2-Chloroethanol	1-26	14,20	Nitrobenzene	5-29
19	Chloroform	4-31	13,20	Nitroethane	5-28
29	Coconut oil	14-31	10,19	Nitromethane	4-25
28	CYCLOHEXANE	13-31	15,20	2-Nitropropane	5-30
16	Cyclohexanol*	1-31	17	NONYLPHENOL	2-31
17	Cyclohexanone	2-31	22	2-Octanone	7-31
26	Cyclohexene	11-31	6	3,3'-Oxydipropionitrile	1-21
29	Decalin	14-31	15,19	Paraldehyde (acetaldehyde trimer)	4-30
29	Decane	14-31	17	1-Pentanol*	2-31
18	1-Decanol*	3-31	23	n-Pentyl acetate	8-31
14	Diacetone alcohol	1-29	16	t-Pentyl alcohol	1-31
22	1,2-Dibromobutane	7-31	31	Petrolatum (mineral oil)	16-31
23	Di-iso-butyl ketone	8-31	12	2-Phenoxyethanol	1-27
22	Di-butyl phthalate	7-31	13,17	1-Phenoxy-2-propanol	2-28
21	o-Dichlorobenzene	6-31	10	N-Phenylethanolamine	1-25
20	1,1- or 1,2-Dichloroethane	5-31	22	Phenyl ether	7-31
20	Dichloromethane	5-31	7	Polyethylene glycol PEG-200	1-22
26	Dicyclopentadiene	11-31	7	Polyethylene glycol PEG-300	1-22
1	DIETHANOLAMINE	1-16	8	Polyethylene glycol PEG-600	1-23
19	Diethyl adipate	4-31	14	POLYPROPYLENE GLYCOL (JEFFOX PPG-400)	1-29
21	Diethyl carbonate	6-31	14,23	POLYPROPYLENE GLYCOL (JEFFOX PPG-2000)	8-29
5	DIETHYLENE GLYCOL	1-20	13,17	Propionitrile	2-28
15	Diethylene glycol monobutyl ether	1-30	19	n- or iso-Propyl acetate	4-31
13	Diethylene glycol monoethyl ether	1-28	15	n- or iso-Propyl alcohol	1-30
14,18	Diethylene glycol monoethyl ether acetate	3-29	24	iso-Propylbenzene	9-31
12	Diethylene glycol monomethyl ether	1-27	9,17	PROPYLENE CARBONATE (JEFFSOL PC)	2-24
9	Diethylenetriamine	1-24	4	PROPYLENE GLYCOL	1-19
18	Diethyl ketone	3-31	15	Propylene glycol monomethyl ether	1-30
2	DIGLYCOLAMINE® 2-(2-AMINOETHOXY) ETHANOL	1-17	17	PROPYLENE OXIDE	2-31
15,17	Diglyme (Diethylene glycol dimethyl ether)	2-30	26	iso-Propyl ether	11-31
13	N,N-Dimethylacetamide	1-28	16	Pyridine	1-31
14,19	Dimethyl carbonate	4-29	10	2-Pyrrolidone	1-25
14	N,N-DIMETHYLETHANOLAMINE	1-29	29	Skellite®	14-31
12	Dimethylformamide	1-27	22	Styrene	7-31
9	Dimethylsulfoxide	1-24	9,17	Sulfolane	2-24
24	Diethyl phthalate	9-31	19	1,1,2,2-Tetrachloroethane	4-31
17	p-Dioxane	2-31	30	Tetradecane	15-31
23	Dipropyl carbonate	8-31	7	Tetraethylene glycol	1-22
11	DIPROPYLENE GLYCOL	1-26	17	Tetrahydrofuran	2-31
15	Dipropylene glycol monomethyl ether	1-30	13	Tetrahydrofurfuryl alcohol	1-28
23	Di-iso-propyl ketone	8-31	24	Tetralin	9-31
19	Ethyl acetate	4-31	15	Tetramethylurea	1-30
14	Ethyl alcohol	1-29	29	Texsolve B	14-31
24	Ethylbenzene	9-31	29	Texsolve C	14-31
7,17	ETHYLENE CARBONATE (JEFFSOL™ EC)	2-22	29	Texsolve H	14-31
9	Ethylenediamine	1-24	29	Texsolve S	14-31
2	ETHYLENE GLYCOL	1-17	29	Texsolve S-2	14-31
12,19	Ethylene glycol diacetate	4-27	29	Texsolve S-66	14-31
16	Ethylene glycol monobutyl ether	1-31	29	Texsolve S-LO	14-31
14	Ethylene glycol monoethyl ether	1-29	29	Texsolve V	14-31
15,19	Ethylene glycol monoethyl ether acetate	4-30	4	2,2'-Thiodiethanol	1-19
13	Ethylene glycol monomethyl ether	1-28	20	Thiophene	5-31
12	Ethylene glycol monopropyl ether	1-27	23	Toluene — Nitration grade	8-31
23	Ethyl ether	8-31	18	Tributyl phosphate	3-31
17	2-Ethylhexanol*	2-31	22	1,1,1-Trichloroethane	7-31
14	Ethyl lactate	1-29	21	Tricresyl phosphate	6-31
16	N-ETHYLMORPHOLINE	1-31	2	TRIETHANOLAMINE	1-17
21	Ethyl propionate	6-31	6	TRIETHYLENE GLYCOL	1-21
10	N-Formylmorpholine	1-25	9	Triethylenetetramine	1-24
20	Furan	5-31	14	Triethyl phosphate	1-29
11	Furfuryl alcohol	1-26	29	2,2,4-Trimethylpentane	14-31
1	Glycerol	1-16	12	Tripropylene glycol	1-27
3	Glycerol carbonate	1-18	20	Vinyl acetate	5-31
29	Heptane (Texsolve C)	14-31	26	4-Vinylcyclohexene	11-31
22	3-Heptanone	7-31	29	VM & P Naphtha (Texsolve V)	14-31
23	4-Heptanone	8-31	23	m- or o-Xylene	8-31
15	Hexamethylphosphoramide	1-30	24	p-Xylene	9-31
29	Hexane (Texsolve B)	14-31			
17	1-Hexanol*	2-31			

*May be several units higher in mixture with certain nonhydroxylic solvents.

Miscibility Predictor for Organic Liquids

When contemplating the use of two organic liquids in a system, it is desirable to be able to predict the miscibility of these liquids. We have devised this list of miscibility numbers to help predict the miscibility of one organic liquid with another organic liquid. The numbers are based on miscibility with 31 standard solvents.

A liquid which has a miscibility number (left column) that falls within the miscibility range (right column) of another liquid, should be miscible with that compound. Here is an example of how the miscibility predictor works:

Suppose you are interested in a formulation containing tetralin and ethylene carbonate. As shown in the table, ethylene carbonate is soluble in liquids with miscibility numbers from 2 through 22. Since tetralin has a miscibility number of 24, the predictor tells us that these two liquids are not miscible. On the other hand, triethylene glycol (miscibility number = 6) would be predicted to be miscible with ethylene carbonate (miscibility range = 2-22).

Ethylene carbonate has two miscibility numbers, (7,17). Such liquids, with two miscibility numbers, are miscible with other liquids having two miscibility numbers.

This system works the majority of the time. However, there are exceptions and confirmation in the laboratory is a good idea.

We have highlighted the solvents marketed by Huntsman Corporation. If you have questions about how this miscibility predictor works, or about our products, please contact our technical service representative at (512) 483-0056.

The basis for the miscibility predictor is the article by Norman B. Godfrey, *Chemtech* (1972), 359.

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