Tables of Maximum Incremental Reactivity (MIR) Values

SUBCHAPTER 8.6 MAXIMUM INCREMENTAL REACTIVITY

Article 1. Tables of Maximum Incremental Reactivity (MIR) Values

§ 94700. MIR Values for Compounds.

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
	Alkanes		
1	methane	0.01	0.014
2	ethane	0.31	0.28
3	propane	0.56	0.49
4	cyclopropane	0.10	0.09
5	n-butane	1.33	1.15
6	isobutane	1.35	1.23
7	cyclobutane	1.05	1.20
8	n-pentane	1.54	1.31
9	branched C5 alkane(s)	1.68	1.45
10	neopentane	0.69	0.67
11	isopentane	1.68	1.45
12	cyclopentane	2.69	2.39
13	n-hexane	1.45	1.24
14	branched C6 alkane(s)	1.53	1.31
15	2,2-dimethyl butane	1.33	1.17
16	2,3-dimethyl butane	1.14	0.97
17	2-methyl pentane	1.80	1.50
18	3-methyl pentane	2.07	1.80
19	C6 cycloalkane(s)	1.46	1.25
20	cyclohexane	1.46	1.25
21	isopropyl cyclopropane	1.52	1.22
22	methyl cyclopentane	2.42	2.19
23	unspeciated C6 alkane(s)	1.48	1.27
24	n-heptane	1.28	1.07
25	2,2,3-trimethyl butane	1.32	1.11
26	2,2-dimethyl pentane	1.22	1.12
27	2,3-dimethyl pentane	1.55	1.34
28	2,4-dimethyl pentane	1.65	1.55
29	2-methyl hexane	1.37	1.19

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
30	3,3-dimethyl pentane	1.32	1.20
31	3-methyl hexane	1.86	1.61
32	3-ethyl pentane*	1.79	1.90
33	branched C7 alkane(s)	1.63	1.48
34	1,1-dimethyl cyclopentane*	1.01	1.08
35	1,2-dimethyl cyclopentane*	1.87	1.99
36	C7 cycloalkane(s)	1.99	1.70
37	1,3-dimethyl cyclopentane	2.15	1.94
38	cycloheptane	2.26	1.96
39	ethyl cyclopentane	2.27	2.01
40	methyl cyclohexane	1.99	1.70
41	unspeciated C7 alkane(s)	1.79	1.41
42	n-octane	1.11	0.90
43	branched C8 alkane(s)	1.57	1.45
44	2,2,3,3-tetramethyl butane	0.44	0.33
45	2,2,4-trimethyl pentane	1.44	1.26
46	2,2-dimethyl hexane	1.13	1.02
47	2,3,4-trimethyl pentane	1.23	1.03
48	2,3-dimethyl hexane	1.34	1.19
49	2,4-dimethyl hexane	1.80	1.73
50	2,5-dimethyl hexane	1.68	1.46
51	2-methyl heptane	1.20	1.07
52	3-methyl heptane	1.35	1.24
53	4-methyl heptane	1.48	1.25
54	2,3,3-trimethyl pentane*	0.95	1.02
55	3,3-dimethyl hexane*	1.16	1.24
56	2,2,3-trimethyl pentane*	1.15	1.22
57	3,4-dimethyl hexane*	1.41	1.51
58	3-ethyl 2-methyl pentane*	1.25	1.33
59	C8 bicycloalkane(s)	1.75	1.51
60	1,1,2-trimethyl cyclopentane*	1.04	1.12
61	1,1,3-trimethyl cyclopentane*	0.94	1.01
62	1,1-dimethyl cyclohexane*	1.13	1.22
63	1,2,3-trimethyl cyclopentane*	1.52	1.63
64	1,2,4-trimethyl cyclopentane*	1.43	1.53
65	1-methyl-3-ethyl cyclopentane*	1.53	1.64
66	1,2-dimethyl cyclohexane*	1.30	1.41
67	1,4-dimethyl cyclohexane*	1.51	1.62
68	C8 cycloalkane(s)	1.75	1.47
69	1,3-dimethyl cyclohexane	1.72	1.52
70	cyclooctane	1.73	1.46

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
71	ethyl cyclohexane	1.75	1.47
72	propyl cyclopentane	1.91	1.69
73	unspeciated C8 alkane(s)	1.64	1.27
74	n-nonane	0.95	0.78
75	branched C9 alkane(s)	1.25	1.14
76	2,2,5-trimethyl hexane	1.33	1.13
77	2,3,5-trimethyl hexane	1.33	1.22
78	2,4-dimethyl heptane	1.48	1.38
79	2-methyl octane	0.96	0.83
80	3,3-diethyl pentane	1.35	1.21
81	3,5-dimethyl heptane	1.63	1.56
82	4-ethyl heptane	1.44	1.22
83	4-methyl octane	1.08	0.95
84	2,4,4-trimethyl hexane*	1.26	1.34
85	3,3-dimethyl heptane*	1.05	1.13
86	4,4-dimethyl heptane*	1.19	1.27
87	2,2-dimethyl heptane*	0.93	1.00
88	2,2,4-trimethyl hexane*	1.19	1.26
89	2,6-dimethyl heptane*	0.96	1.04
90	2,3-dimethyl heptane*	1.01	1.09
91	2,5-dimethyl heptane*	1.25	1.35
92	3-methyl octane*	0.91	0.99
93	3,4-dimethyl heptane*	1.15	1.24
94	3-ethyl heptane*	1.01	1.10
95	cis-hydrindane; bicyclo[4.3.0] nonane*	1.20	1.31
96	C9 bicycloalkane(s)	1.57	1.39
97	1,2,3-trimethyl cyclohexane*	1.12	1.22
98	1,3,5-trimethyl cyclohexane*	1.06	1.15
99	1,1,3-trimethyl cyclohexane	1.37	1.19
100	1-ethyl-4-methyl cyclohexane	1.62	1.44
101	propyl cyclohexane	1.47	1.29
102	C9 cycloalkane(s)	1.55	1.36
103	unspeciated C9 alkane(s)	2.13	1.09
104	n-decane; n-C10	0.83	0.68
105	branched C10 alkane(s)	1.09	0.94
106	2,4,6-trimethyl heptane*	1.20	1.28
107	2,4-dimethyl octane	1.09	1.03
108	2,6-dimethyl octane	1.27	1.08
109	2-methyl nonane	0.86	0.73
110	3,4-diethyl hexane	1.20	0.89
111	3-methyl nonane	0.89	0.75

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
112	4-methyl nonane	0.99	0.86
113	4-propyl heptane	1.24	1.02
114	2,4,4-trimethyl heptane*	1.23	1.31
115	2,5,5-trimethyl heptane*	1.17	1.25
116	3,3-dimethyl octane*	1.01	1.09
117	4,4-dimethyl octane*	1.06	1.14
118	2,2-dimethyl octane*	0.77	0.83
119	2,2,4-trimethyl heptane*	1.09	1.16
120	2,2,5-trimethyl heptane*	1.18	1.26
121	2,3,6-trimethyl heptane*	0.82	0.90
122	2,3-dimethyl octane*	0.79	0.86
123	2,5-dimethyl octane*	0.94	1.03
124	2-methyl-3-ethyl heptane*	0.91	0.99
125	4-ethyl octane*	0.71	0.79
126	C10 bicycloalkane(s)	1.29	1.09
127	isobutyl cyclohexane; (2-methylpropyl) cyclohexane*	0.90	0.99
128	sec-butyl cyclohexane*	0.90	0.99
129	C10 cycloalkane(s)	1.27	1.07
130	1,3-diethyl cyclohexane	1.34	1.26
131	1,4-diethyl cyclohexane	1.49	1.23
132	1-methyl-3-isopropyl cyclohexane	1.26	1.00
133	butyl cyclohexane	1.07	0.99
134	unspeciated C10 alkane(s)	1.16	0.90
135	n-undecane; n-C11	0.74	0.61
136	branched C11 alkane(s)	0.87	0.73
137	2,3,4,6-tetramethyl heptane	1.26	1.11
138	2,6-dimethyl nonane	0.95	0.79
139	3,5-diethyl heptane	1.21	1.11
140	3-methyl decane	0.77	0.65
141	4-methyl decane	0.80	0.68
142	C11 bicycloalkane(s)	1.01	0.91
143	C11 cycloalkane(s)	0.99	0.90
144	1,3-diethyl-5-methyl cyclohexane	1.11	1.04
145	1-ethyl-2-propyl cyclohexane	0.95	0.81
146	pentyl cyclohexane	0.91	0.84
147	unspeciated C11 alkane(s)	0.90	0.74
148	n-dodecane; n-C12	0.66	0.55
149	branched C12 alkane(s)	0.80	0.63
150	2,3,5,7-tetramethyl octane	1.06	0.91
151	2,6-diethyl octane	1.09	0.97
152	3,6-dimethyl decane	0.88	0.70

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
153	3-methyl undecane	0.70	0.59
154	5-methyl undecane	0.72	0.55
155	C12 tricycloalkane(s)*	0.74	0.82
156	C12 bicycloalkane(s)	0.88	0.81
157	C12 cycloalkane(s)	0.87	0.80
158	1,3,5-triethyl cyclohexane	1.06	1.02
159	1-methyl-4-pentyl cyclohexane	0.81	0.72
160	hexyl cyclohexane	0.75	0.65
161	unspeciated C12 alkane(s)	0.81	0.66
162	n-tridecane; n-C-13	0.62	0.53
163	branched C13 alkane(s)	0.73	0.60
164	2,3,6-trimethyl 4-isopropyl heptane	1.24	0.93
165	2,4,6,8-tetramethyl nonane	0.94	0.76
166	3,6-dimethyl undecane	0.82	0.69
167	3,7-diethyl nonane	1.08	0.89
168	3-methyl dodecane	0.64	0.54
169	5-methyl dodecane	0.64	0.47
170	C13 tricycloalkane(s)*	0.64	0.71
171	C13 bicycloalkane(s)	0.79	0.70
172	C13 cycloalkane(s)	0.78	0.70
173	1,3-diethyl-5-propyl cyclohexane	0.96	0.96
174	1-methyl-2-hexyl cyclohexane	0.70	0.58
175	heptyl cyclohexane	0.66	0.55
176	unspeciated C13 alkane(s)	0.73	0.61
177	n-tetradecane; n-C14	0.58	0.51
178	branched C14 alkane(s)	0.67	0.55
179	2,4,5,6,8-pentamethyl nonane	1.11	0.95
180	2-methyl 3,5-diisopropyl heptane	0.78	0.56
181	3,7-dimethyl dodecane	0.74	0.62
182	3,8-diethyl decane	0.68	0.60
183	3-methyl tridecane	0.57	0.51
184	6-methyl tridecane	0.62	0.46
185	C14 tricycloalkane(s)*	0.60	0.66
186	C14 bicycloalkane(s)	0.71	0.66
187	C14 cycloalkane(s)	0.71	0.65
188	1,3-dipropyl-5-ethyl cyclohexane	0.94	0.91
189	trans-1-methyl-4-heptyl cyclohexane	0.58	0.53
190	octyl cyclohexane	0.60	0.51
191	unspeciated C14 alkane(s)	0.67	0.57
192	n-pentadecane; n-C15	0.53	0.50
193	branched C15 alkane(s)	0.60	0.50

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
194	2,6,8-trimethyl 4-isopropyl nonane	0.76	0.63
195	3,7-dimethyl tridecane	0.64	0.55
196	3,9-diethyl undecane	0.62	0.51
197	3-methyl tetradecane	0.53	0.48
198	6-methyl tetradecane	0.57	0.42
199	C15 tricycloalkane(s)*	0.56	0.63
200	C15 bicycloalkane(s)	0.69	0.62
201	C15 cycloalkane(s)	0.68	0.61
202	1,3,5-tripropyl cyclohexane	0.90	0.87
203	1-methyl-2-octyl cyclohexane	0.60	0.50
204	nonyl cyclohexane	0.54	0.47
205	1,3-diethyl-5-pentyl cyclohexane	0.99	0.66
206	unspeciated C15 alkane(s)	0.61	0.54
207	n-hexadecane; n-C16	0.52	0.45
208	branched C16 alkane(s)	0.54	0.47
209	2,7-dimethyl 3,5-diisopropyl heptane	0.69	0.52
210	3-methyl pentadecane	0.50	0.46
211	4,8-dimethyl tetradecane	0.55	0.49
212	7-methyl pentadecane	0.51	0.45
213	C16 tricycloalkane(s)*	0.53	0.59
214	C16 bicycloalkane(s)*	0.52	0.58
215	C16 cycloalkane(s)	0.61	0.55
216	1,3-propyl-5-butyl cyclohexane	0.77	0.75
217	1-methyl-4-nonyl cyclohexane	0.55	0.46
218	decyl cyclohexane	0.50	0.43
219	unspeciated C16 alkane(s)	0.55	0.49
220	n-heptadecane; n-C17	0.49	0.42
221	branched C17 alkane(s)	0.51	0.44
222	C17 tricycloalkane(s)*	0.50	0.55
223	C17 bicycloalkane(s)*	0.49	0.55
224	C17 cycloalkane(s)*	0.46	0.52
225	unspeciated C17 alkane(s)	0.52	0.46
226	n-octadecane; n-C18	0.44	0.40
227	branched C18 alkane(s)	0.48	0.42
228	C18 tricycloalkane(s)*	0.47	0.52
229	C18 bicycloalkane(s)*	0.46	0.52
230	C18 cycloalkane(s)*	0.44	0.49
231	unspeciated C18 alkane(s)	0.49	0.44
232	n-nonadecane; n-C19	0.44	0.38
233	branched C19 alkane(s)*	0.35	0.40
234	C19 tricycloalkane(s)*	0.44	0.49

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
235	C19 bicycloalkane(s)*	0.44	0.49
236	C19 cycloalkane(s)*	0.42	0.46
237	n-eicosane; icosane; n-C20	0.42	0.36
238	branched C20 alkane(s)*	0.34	0.38
239	C20 tricycloalkane(s)*	0.42	0.47
240	C20 bicycloalkane(s)*	0.42	0.46
241	C20 cycloalkane(s)*	0.39	0.44
242	n-heneicosane; n-C21	0.40	0.34
243	branched C21 alkane(s)*	0.32	0.36
244	C21 tricycloalkane(s)*	0.40	0.44
245	C21 bicycloalkane(s)*	0.40	0.44
246	C21 cycloalkane(s)*	0.38	0.42
247	n-docosane, n-C22	0.38	0.33
248	branched C22 alkane(s)*	0.31	0.34
249	C22 tricycloalkane(s)*	0.38	0.42
250	C22 bicycloalkane(s)*	0.38	0.42
251	C22 cycloalkane(s)*	0.36	0.40
	Alkenes		
252	ethene	9.08	9.00
253	propene	11.58	11.66
254	1,2-propadiene; allene*	8.11	8.45
255	1-butene	10.29	9.73
256	C4 terminal alkenes	10.29	9.73
257	isobutene	6.35	6.29
258	cis-2-butene	13.22	14.24
259	trans-2-butene	13.91	15.16
260	C4 internal alkenes	13.57	14.70
261	1,2-butadiene*	9.03	9.35
262	1,3-butadiene	13.58	12.61
263	C4 alkenes	11.93	12.22
264	1-pentene	7.79	7.21
265	3-methyl-1-butene	6.99	6.99
266	C5 terminal alkenes	7.79	7.21
267	2-methyl-1-butene	6.51	6.40
268	2-methyl-2-butene	14.45	14.08
269	cis-2-pentene	10.24	10.38
270	trans-2-pentene	10.23	10.56
271	2-pentenes	10.23	10.47
272	C5 internal alkenes	10.23	10.47
273	cyclopentene	7.38	6.77
274	trans-1,3-pentadiene*	12.10	12.50

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275	cis-1,3-pentadiene*	12.10	12.50
276	1,4-pentadiene*	8.92	9.24
277	1,2-pentadiene*	7.59	7.86
278	3-methyl-1,2-butadiene*	9.95	10.29
279	isoprene; 2-methyl-1,3-butadiene	10.69	10.61
280	cyclopentadiene	7.61	6.98
281	C5 alkenes	9.01	8.84
282	1-hexene	6.17	5.49
283	3,3-dimethyl-1-butene	6.06	5.82
284	3-methyl-1-pentene	6.22	6.14
285	4-methyl-1-pentene	6.26	5.68
286	C6 terminal alkenes	6.17	5.49
287	2,3-dimethyl-1-butene	4.77	4.75
288	2-ethyl-1-butene	5.04	5.07
289	2-methyl-1-pentene	5.18	5.26
290	2,3-dimethyl-2-butene	13.32	12.49
291	2-methyl-2-pentene	12.28	11.00
292	cis-4-methyl-2-pentene*	7.88	8.12
293	cis-2-hexene	8.44	8.31
294	cis-3-hexene	8.22	7.61
295	cis-3-methyl-2-pentene	12.84	12.49
296	trans-3-methyl-2-pentene*	14.17	13.17
297	trans-4-methyl-2-pentene*	7.88	8.12
298	trans-2-hexene	8.44	8.62
299	trans-3-hexene	8.16	7.57
300	2-hexenes	8.44	8.47
301	C6 internal alkenes	8.44	8.47
302	3-methyl cyclopentene*	4.92	5.10
303	1-methyl cyclopentene	13.95	12.49
304	cyclohexene	5.45	5.00
305	trans,trans-2,4-hexadiene*	8.57	8.83
306	trans-1,3-hexadiene*	10.03	10.37
307	trans-1,4-hexadiene*	8.36	8.64
308	C6 cyclic olefins or di-olefins	8.65	8.68
309	C6 alkenes	6.88	6.98
310	trans-4-methyl-2-hexene	7.88	7.18
311	trans-3-methyl-2-hexene	14.17	10.07
312	2,3-dimethyl-2-hexene	10.41	8.53
313	1-heptene	4.20	4.43
314	3,4-dimethyl-1-pentene*	4.66	4.84
315	3-methyl-1-hexene*	4.24	4.41

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
316	2,4-dimethyl-1-pentene*	5.81	6.01
317	2,3-dimethyl-1-pentene*	4.97	5.15
318	3,3-dimethyl-1-pentene*	4.71	4.91
319	2-methyl-1-hexene*	4.92	5.10
320	2,3,3-trimethyl-1-butene	4.62	4.49
321	C7 terminal alkenes	4.20	4.43
322	4,4-dimethyl-cis-2-pentene*	6.45	6.64
323	2,4-dimethyl-2-pentene*	9.03	9.29
324	2-methyl-2-hexene*	9.22	9.47
325	3-ethyl-2-pentene*	9.49	9.75
326	3-methyl-trans-3-hexene*	9.44	9.72
327	cis-2-heptene*	6.94	7.16
328	2-methyl-trans-3-hexene*	6.03	6.25
329	3-methyl-cis-3-hexene*	9.44	9.72
330	3,4-dimethyl-cis-2-pentene*	8.91	9.15
331	2,3-dimethyl-2-pentene*	10.41	9.74
332	cis-3-heptene	6.96	6.33
333	trans-4,4-dimethyl-2-pentene	6.99	6.64
334	trans-2-heptene	7.33	7.14
335	trans-3-heptene	6.96	6.32
336	cis-3-methyl-2-hexene	13.38	10.07
337	2-heptenes	6.96	6.32
338	C7 internal alkenes	6.96	6.32
339	1-methyl cyclohexene	7.81	6.61
340	4-methyl cyclohexene	4.48	4.18
341	C7 cyclic olefins or di-olefins	7.49	7.29
342	C7 alkenes	5.76	5.37
343	1-octene	3.45	3.25
344	C8 terminal alkenes	3.45	3.25
345	2,4,4-trimethyl-1-pentene*	3.24	3.34
346	3-methyl-2-isopropyl-1-butene	3.29	3.31
347	trans-2-octene*	5.81	6.00
348	2-methyl-2-heptene*	8.10	8.33
349	cis-4-octene	5.94	4.73
350	trans-2,2-dimethyl 3-hexene	5.97	5.00
351	trans-2,5-dimethyl 3-hexene	5.44	4.82
352	trans-3-octene	6.13	5.34
353	trans-4-octene	5.90	4.81
354	3-octenes	6.13	5.34
355	C8 internal alkenes	5.90	4.81
356	2,4,4-trimethyl-2-pentene	8.52	6.29

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
357	1,2-dimethyl cyclohexene	6.77	5.63
358	C8 cyclic olefins or di-olefins	6.01	4.89
359	C8 alkenes	4.68	4.03
360	1-nonene	2.76	2.60
361	C9 terminal alkenes	2.76	2.60
362	4,4-dimethyl-1-pentene*	3.00	3.13
363	4-nonene*	4.37	4.54
364	3-nonenes	5.31	4.54
365	C9 internal alkenes	5.31	4.54
366	trans-4-nonene	5.23	4.54
367	C9 cyclic olefins or di-olefins	5.40	4.62
368	C9 alkenes	4.03	3.57
369	1-decene	2.28	2.17
370	C10 terminal alkenes	2.28	2.17
371	3,4-diethyl-2-hexene	3.95	3.38
372	cis-5-decene	4.89	3.66
373	trans-4-decene	4.50	3.87
374	C10 3-alkenes	4.50	3.87
375	C10 internal alkenes	4.50	3.87
376	C10 cyclic olefins or di-olefins	4.56	3.93
377	3-carene	3.21	3.24
378	α-pinene	4.29	4.51
379	β-pinene	3.28	3.52
380	d-limonene	3.99	4.55
381	sabinene	3.67	4.19
382	terpinolene*	6.16	6.36
383	camphene*	4.38	4.51
384	terpene (monoterpenes)	3.79	4.04
385	C10 alkenes	3.39	3.31
386	1-undecene	1.95	1.87
387	C11 terminal alkenes	1.95	1.87
388	trans-5-undecene	4.23	3.60
389	C11 3-alkenes	4.23	3.60
390	C11 internal alkenes	4.23	3.60
391	C11 cyclic olefins or di-olefins	4.29	3.65
392	C11 alkenes	3.09	2.73
393	C12 terminal alkenes	1.72	1.64
394	1-dodecene	1.72	1.64
395	C12 2-alkenes	3.75	3.14
396	C12 3-alkenes	3.75	3.14
397	C12 internal alkenes	3.75	3.14

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
398	trans-5-dodecene	3.74	3.14
399	C12 cyclic olefins or di-olefins	3.79	3.18
400	C12 alkenes	2.73	2.39
401	1-tridecene	1.55	1.48
402	C13 terminal alkenes	1.55	1.48
403	trans-5-tridecene	3.38	2.59
404	C13 3-alkenes	3.38	2.59
405	C13 internal alkenes	3.38	2.59
406	C13 cyclic olefins or di-olefins	3.42	2.62
407	C13 alkenes	2.46	2.03
408	1-tetradecene	1.41	1.34
409	C14 terminal alkenes	1.41	1.34
410	trans-5-tetradecene	3.08	2.35
411	C14 3-alkenes	3.08	2.35
412	C14 internal alkenes	3.08	2.35
413	C14 cyclic olefins or di-olefins	3.11	2.38
414	C14 alkenes	2.28	1.85
415	1-pentadecene	1.27	1.25
416	C15 terminal alkenes	1.27	1.25
417	trans-5-pentadecene	2.82	2.16
418	C15 3-alkenes	2.82	2.16
419	C15 internal alkenes	2.82	2.16
420	C15 cyclic olefins or di-olefins	2.85	2.19
421	C15 alkenes	2.06	1.71
	Aromatic Hydrocarbons		
422	benzene	0.81	0.72
423	toluene	3.97	4.00
424	ethyl benzene	2.79	3.04
425	m-xylene	10.61	9.75
426	o-xylene	7.49	7.64
427	p-xylene	4.25	5.84
428	C8 disubstituted benzenes	7.48	7.76
429	isomers of ethylbenzene	5.16	6.57
430	styrene	1.95	1.73
431	unspeciated C8 aromatics*	7.42	7.64
432	C9 monosubstituted benzenes	2.20	2.03
433	n-propyl benzene	2.20	2.03
434	isopropyl benzene; cumene	2.32	2.52
435	C9 disubstituted benzenes	6.61	5.81
436	m-ethyl toluene	9.37	7.39
437	o-ethyl toluene	6.61	5.59

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
438	p-ethyl toluene	3.75	4.44
439	C9 trisubstituted benzenes	9.90	10.87
440	1,2,3-trimethyl benzene	11.26	11.97
441	1,2,4-trimethyl benzene	7.18	8.87
442	1,3,5-trimethyl benzene	11.22	11.76
443	isomers of propyl benzene	6.12	6.23
444	indene	3.21	1.55
445	indane	3.17	3.32
446	allylbenzene*	1.45	1.53
447	α-methyl styrene	1.72	1.53
448	C9 styrenes	1.72	1.53
449	β-methyl styrene*	0.95	1.01
450	unspeciated C9 aromatics*	7.92	7.99
451	C10 monosubstituted benzenes	1.97	2.36
452	n-butyl benzene	1.97	2.36
453	sec-butyl benzene	1.97	2.36
454	tert-butyl benzene*	1.89	1.95
455	o-cymene; 1-methyl-2-(1-methylethyl) benzene*	5.34	5.49
456	1-methyl-2-n-propyl benzene*	5.34	5.49
457	m-cymene; 1-methyl-3-(1-methylethyl) benzene*	6.92	7.10
458	1-methyl-3-n-propyl benzene*	6.92	7.10
459	1-methyl-4-n-propyl benzene*	4.31	4.43
460	C10 disubstituted benzenes	5.92	5.68
461	m-C10 disubstituted benzenes*	6.92	7.10
462	o-C10 disubstituted benzenes*	5.34	5.49
463	p-C10 disubstituted benzenes*	4.31	4.43
464	m-diethyl benzene	8.39	7.10
465	o-diethyl benzene	5.92	5.49
466	1-methyl-4-isopropyl benzene; p-cymene*	4.32	4.44
467	p-diethyl benzene	3.36	4.43
468	1,2,3-C10 trisubstituted benzenes*	9.89	10.15
469	1,2,4-C10 trisubstituted benzenes*	7.35	7.55
470	1,3,5-C10 trisubstituted benzenes*	9.80	10.08
471	1,2,3,4-tetramethyl benzene*	9.01	9.26
472	1,2,4,5-tetramethyl benzene*	9.01	9.26
473	1,2-dimethyl-3-ethyl benzene*	9.89	10.15
474	1,2-dimethyl-4-ethyl benzene*	7.35	7.55
475	1,3-dimethyl-2-ethyl benzene*	9.89	10.15
476	1,3-dimethyl-4-ethyl benzene*	7.35	7.55
477	1,3-dimethyl-5-ethyl benzene*	9.80	10.08
478	1,4-dimethyl-2-ethyl benzene*	7.35	7.55

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
479	1,2,3,5-tetramethyl benzene	8.25	9.26
480	C10 trisubstituted benzenes	8.86	9.26
481	C10 tetrasubstituted benzenes	8.86	9.26
482	butylbenzenes	5.48	5.76
483	methyl indanes	2.83	2.97
484	tetralin; 1,2,3,4-tetrahydronaphthalene	2.83	2.97
485	naphthalene	3.26	3.34
486	C10 styrenes	1.53	1.37
487	unspeciated C10 aromatics	5.48	7.07
488	n-pentyl benzene*	2.04	2.12
489	C11 monosubstituted benzenes	1.78	2.12
490	m-C11 disubstituted benzenes*	5.98	6.15
491	o-C11 disubstituted benzenes*	4.60	4.73
492	p-C11 disubstituted benzenes*	3.77	3.88
493	1-butyl-2-methyl benzene*	4.60	4.73
494	1-ethyl-2-n-propyl benzene*	4.60	4.73
495	o-tert-butyl toluene; 1-(1,1-dimethylethyl)-2-methyl benzene*	4.60	4.73
496	1-methyl-3-n-butyl benzene*	5.98	6.15
497	p-isobutyl toluene; 1-methyl-4-(2-methylpropyl) benzene*	3.77	3.88
498	C11 disubstituted benzenes	5.35	4.92
499	1,2,3-C11 trisubstituted benzenes*	8.64	8.88
500	1,2,4-C11 trisubstituted benzenes*	6.44	6.62
501	1,3,5-C11 trisubstituted benzenes*	8.65	8.90
502	pentamethyl benzene*	7.91	8.13
503	1-methyl-3,5-diethyl benzene*	8.65	8.90
504	C11 trisubstituted benzenes	8.03	8.13
505	C11 tetrasubstituted benzenes	8.03	8.13
506	C11 pentasubstituted benzenes	8.03	8.13
507	pentyl benzenes	4.96	4.90
508	C11 tetralins or indanes	2.56	2.69
509	methyl naphthalenes	4.61	3.06
510	1-methyl naphthalene	4.61	3.06
511	2-methyl naphthalene	4.61	3.06
512	unspeciated C11 aromatics	4.96	6.95
513	C12 monosubstituted benzenes	1.63	1.90
514	m-C12 disubstituted benzenes*	5.35	5.49
515	o-C12 disubstituted benzenes*	4.11	4.23
516	p-C12 disubstituted benzenes*	3.38	3.49
517	1,3-di-n-propyl benzene*	4.11	4.23
518	1,4 di-isopropyl benzene*	3.38	3.49

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
519	3-isopropyl cumene; 1,3-di-isopropyl benzene*	5.35	5.49
520	C12 disubstituted benzenes	4.90	4.40
521	1,2,3-C12 trisubstituted benzenes*	7.74	7.95
522	1,2,4-C12 trisubstituted benzenes*	5.78	5.94
523	1,3,5-C12 trisubstituted benzenes*	7.79	8.02
524	1-(1,1-dimethylethyl)-3,5-dymethylbenzene*	7.79	8.02
525	C12 trisubstituted benzenes	7.33	7.30
526	C12 tetrasubstituted benzenes	7.33	7.30
527	C12 pentasubstituted benzenes	7.33	7.30
528	C12 hexasubstituted benzenes	7.33	7.30
529	hexyl benzenes	4.53	4.39
530	C12 tetralins or indanes	2.33	2.45
531	1-ethyl naphthalene*	2.69	2.78
532	C12 naphthalenes*	3.76	3.89
533	C12 monosubstituted naphthalene	4.20	2.78
534	C12 disubstituted naphthalenes	5.54	4.99
535	2,3-dimethyl naphthalene	5.54	4.99
536	dimethyl naphthalenes	5.54	4.99
537	unspeciated C12 aromatics	4.53	6.02
538	C13 monosubstituted benzenes	1.50	1.74
539	m-C13 disubstituted benzenes*	4.80	4.93
540	o-C13 disubstituted benzenes*	3.67	3.78
541	p-C13 disubstituted benzenes*	3.03	3.13
542	C13 disubstituted benzenes	4.50	3.95
543	1,2,3-C13 trisubstituted benzenes*	6.94	7.13
544	1,2,4-C13 trisubstituted benzenes*	5.20	5.35
545	1,3,5-C13 trisubstituted benzenes*	7.04	7.24
546	C13 trisubstituted benzenes	6.75	6.57
547	C13 tetralins or indanes*	2.17	2.25
548	C13 naphthalenes*	3.45	3.57
549	C13 monosubstituted naphthalene	3.86	2.55
550	C13 disubstituted naphthalenes	5.08	4.58
551	C13 trisubstituted naphthalenes	5.08	4.58
552	unspeciated C13 aromatics*	4.88	4.81
553	C14 monosubstituted benzenes*	1.53	1.60
554	m-C14 disubstituted benzenes*	4.32	4.45
555	o-C14 disubstituted benzenes*	3.30	3.40
556	p-C14 disubstituted benzenes*	2.75	2.84
557	C14 disubstituted benzenes*	3.46	3.56
558	1,2,3-C14 trisubstituted benzenes*	6.31	6.49
559	1,2,4-C14 trisubstituted benzenes*	4.75	4.89

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
560	1,3,5-C14 trisubstituted benzenes*	6.44	6.63
561	C14 trisubstituted benzenes*	5.84	6.00
562	C14 tetralins or indanes*	2.01	2.09
563	C14 naphthalenes*	3.19	3.30
564	unspeciated C14 aromatics*	3.93	3.80
565	C15 monosubstituted benzenes*	1.42	1.48
566	C15 disubstituted benzenes*	3.15	3.25
567	m-C15 disubstituted benzenes*	3.93	4.04
568	o-C15 disubstituted benzenes*	3.00	3.09
569	p-C15 disubstituted benzenes*	2.51	2.59
570	C15 trisubstituted benzenes*	5.35	5.50
571	1,2,3-C15 trisubstituted benzenes*	5.77	5.94
572	1,2,4-C15 trisubstituted benzenes*	4.35	4.47
573	1,3,5-C15 trisubstituted benzenes*	5.92	6.10
574	C15 tetralins or indanes*	1.87	1.94
575	C15 naphthalenes*	2.97	3.06
576	unspeciated C15 aromatics*	3.35	3.20
577	C16 monosubstituted benzenes*	1.32	1.38
578	m-C16 disubstituted benzenes*	3.60	3.71
579	o-C16 disubstituted benzenes*	2.74	2.83
580	p-C16 disubstituted benzenes*	2.30	2.38
581	C16 disubstituted benzenes*	2.88	2.97
582	1,2,3-C16 trisubstituted benzenes*	5.31	5.46
583	1,2,4-C16 trisubstituted benzenes*	4.01	4.13
584	1,3,5-C16 trisubstituted benzenes*	5.47	5.63
585	C16 trisubstituted benzenes*	4.93	5.07
586	C16 tetralins or indanes*	1.75	1.82
587	C16 naphthalenes*	2.77	2.86
588	unspeciated C16 aromatics*	2.96	2.79
589	C17 monosubstituted benzenes*	1.24	1.30
590	C17 disubstituted benzenes*	2.71	2.79
591	C17 trisubstituted benzenes*	4.63	4.77
592	C17 tetralins or indanes*	1.64	1.70
593	C17 naphthalenes*	2.60	2.68
594	C18 monosubstituted benzenes*	1.17	1.23
595	C18 disubstituted benzenes*	2.55	2.63
596	C18 trisubstituted benzenes*	4.37	4.49
597	C18 tetralins or indanes*	1.55	1.61
598	C18 naphthalenes*	2.45	2.53
599	C19 monosubstituted benzenes*	1.11	1.16
600	C19 disubstituted benzenes*	2.42	2.49

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
601	C19 trisubstituted benzenes*	4.13	4.25
602	C19 tetralins or indanes*	1.46	1.52
603	C19 naphthalenes*	2.31	2.39
604	C20 monosubstituted benzenes*	1.05	1.10
605	C20 disubstituted benzenes*	2.29	2.36
606	C20 trisubstituted benzenes*	3.92	4.04
607	C20 tetralins or indanes*	1.39	1.44
608	C20 naphthalenes*	2.19	2.26
609	C21 monosubstituted benzenes*	1.00	1.05
610	C21 disubstituted benzenes*	2.18	2.25
611	C21 trisubstituted benzenes*	3.73	3.84
612	C21 tetralins or indanes*	1.32	1.37
613	C21 naphthalenes*	2.08	2.15
614	C22 monosubstituted benzenes*	0.96	1.00
615	C22 disubstituted benzenes*	2.08	2.14
616	C22 trisubstituted benzenes*	3.56	3.66
617	C22 tetralins or indanes*	1.26	1.31
618	C22 naphthalenes*	1.98	2.05
	Oxygenated Organics		
	Alcohols		
619	methanol	0.71	0.67
620	ethanol	1.69	1.53
621	isopropyl alcohol	0.71	0.61
622	n-propyl alcohol	2.74	2.50
623	isobutyl alcohol	2.24	2.51
624	n-butyl alcohol	3.34	2.88
625	sec-butyl alcohol	1.60	1.36
626	tert-butyl alcohol	0.45	0.41
627	cyclopentanol	1.96	1.72
628	2-pentanol	1.74	1.61
629	3-pentanol	1.73	1.63
630	n-pentyl alcohol	3.35	2.83
631	isoamyl alcohol; 3-methyl-1-butanol	2.73	3.16
632	2-methyl-1-butanol	2.60	2.40
633	cyclohexanol	2.25	1.95
634	1-hexanol	2.74	2.69
635	2-hexanol	2.46	2.08
636	4-methyl-2-pentanol; methyl isobutyl carbinol	2.89	2.64
637	1-heptanol	2.21	1.84
638	dimethylpentanol; 2,3-dimethyl-1-pentanol	2.51	2.23
639	1-octanol	2.01	1.43

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
640	2-ethyl-1-hexanol	2.20	2.00
641	2-octanol	2.16	1.97
642	3-octanol	2.57	2.28
643	4-octanol	3.07	2.23
644	5-methyl-1-heptanol	1.95	1.79
645	trimethyl cyclohexanol	2.17	1.86
646	dimethylheptanol; 2,6-dimetnyl-2-heptanol	1.07	0.94
647	2,6-dimethyl-4-heptanol	2.37	2.09
648	menthol	1.70	1.43
649	8-methyl-1-nonanol; isodecyl alcohol	1.23	1.06
650	1-decanol	1.22	1.06
651	3,7-dimethyl-1-octanol	1.42	1.20
652	trimethylnonanol,threo +erythro; 2,6,8-trimethyl-4-nonanol	1.55	1.33
	Aldehydes		
653	formaldehyde	8.97	9.46
654	acetaldehyde	6.84	6.54
655	propionaldehyde	7.89	7.08
656	2-methyl propanal	5.87	5.25
657	butanal	6.74	5.97
658	C4 aldehydes	6.74	5.97
659	2,2-dimethylpropanal; pivaldehyde	5.40	4.89
660	3-methylbutanal; isovaleraldehyde	5.52	4.97
661	pentanal; valeraldehyde	5.76	5.08
662	C5 aldehydes	5.76	5.08
663	glutaraldehyde	4.79	4.31
664	hexanal	4.98	4.35
665	C6 aldehydes	4.98	4.35
666	heptanal	4.23	3.69
667	C7 aldehydes	4.23	3.69
668	2-methyl-hexanal	3.97	3.54
669	octanal	3.65	3.16
670	C8 aldehydes	3.65	3.16
671	glyoxal	14.2	12.5
672	methyl glyoxal	16.2	16.5
673	acrolein	7.60	7.45
674	crotonaldehyde	10.0	9.39
675	methacrolein	6.23	6.01
676	hydroxyl-methacrolein	6.61	6.24
677	benzaldehyde	0.00	0.00
678	tolualdehyde	0.00	0.00
	Carboxylic Acids and Oxides		

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
679	carbon monoxide	0.06	0.05
680	ethylene oxide	0.04	0.03
681	propylene oxide	0.32	0.29
682	1,2-epoxy butane	1.02	0.91
683	formic acid	0.08	0.06
684	acetic acid	0.50	0.68
685	glycolic acid	2.67	2.38
686	peroxyacetic acid	12.6	0.54
687	acrylic acid	11.6	11.3
688	propionic acid	0.79	1.22
689	methacrylic acid	18.7	18.5
690	isobutyric acid	1.22	1.20
691	butanoic acid	1.78	1.82
692	malic acid	7.51	6.94
693	3-methyl butanoic acid	4.26	4.23
694	adipic acid; hexanedioic acid	3.37	3.08
695	2-ethyl hexanoic acid	3.49	3.32
696	methyl acrylate	12.2	11.4
697	vinyl acetate	3.26	3.20
698	2-methyl-3-butene-2-ol	5.12	4.91
699	ethyl acrylate	8.78	7.77
700	methyl methacrylate	15.8	15.6
701	ethyl methacrylate*	12.1	12.4
702	hydroxypropyl acrylate	5.56	4.90
703	n-butyl acrylate	5.52	5.02
704	isobutyl acrylate	5.05	4.72
705	butyl methacrylate	9.09	8.70
706	isobutyl methacrylate	8.99	8.62
707	α-terpineol	5.16	4.63
708	2-ethyl-hexyl acrylate	2.42	2.52
709	isobornyl methacrylate	8.64	5.51
710	furan	16.5	9.15
711	2-methyl furan*	8.02	8.30
712	3-methyl furan*	6.64	6.90
713	2-ethyl furan*	6.85	7.09
714	2,5-dimethyl furan*	7.60	7.88
	Esters of Carboxylic Acids		
715	methyl formate	0.06	0.06
716	ethyl formate	0.52	0.48
717	methyl acetate	0.07	0.07
718	gamma-butyrolactone	1.15	0.96

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
719	ethyl acetate	0.64	0.63
720	methyl propionate	0.71	0.66
721	n-propyl formate	0.93	0.78
722	isopropyl formate	0.42	0.37
723	ethyl propionate	0.79	0.77
724	isopropyl acetate	1.12	1.07
725	methyl butyrate	1.18	1.09
726	methyl isobutyrate	0.70	0.61
727	n-butyl formate	0.95	0.83
728	propyl acetate	0.87	0.78
729	ethyl butyrate	1.25	1.17
730	isobutyl acetate	0.67	0.62
731	methyl pivalate	0.39	0.35
732	n-butyl acetate	0.89	0.83
733	n-propyl propionate	0.93	0.84
734	sec-butyl acetate	1.43	1.32
735	tert-butyl acetate; tBAc	0.20	0.18
736	methyl pentanoate; methyl valerate*	1.00	1.05
737	butyl propionate	0.89	0.84
738	amyl acetate; n-pentyl acetate	0.96	0.84
739	n-propyl butyrate	1.17	1.05
740	isoamyl acetate; 3-methyl-butyl acetate	1.18	1.09
741	2-methyl-1-butyl acetate	1.17	1.08
742	methyl hexanoate*	0.96	1.02
743	ethyl 3-ethoxy propionate	3.61	3.58
744	hexyl acetates*	0.74	0.80
745	2,3-dimethylbutyl acetate	0.84	0.75
746	2-methylpentyl acetate	1.11	0.98
747	3-methylpentyl acetate	1.31	1.07
748	4-methylpentyl acetate	0.92	0.82
749	isobutyl isobutyrate	0.61	0.60
750	n-butyl butyrate	1.12	1.08
751	n-hexyl acetate	0.87	0.69
752	methyl amyl acetate; 4-methyl-2-pentanol acetate	1.46	1.35
753	n-pentyl propionate	0.79	0.71
754	methyl heptanoate*	0.76	0.82
755	2,4-dimethylpentyl acetate	0.98	0.92
756	2-methylhexyl acetate	0.89	0.69
757	3-ethylpentyl acetate	1.24	1.10
758	3-methylhexyl acetate	1.01	0.89
759	4-methylhexyl acetate	0.91	0.82

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
760	5-methylhexyl acetate	0.79	0.59
761	isoamyl isobutyrate	0.89	0.82
762	n-heptyl acetate	0.73	0.65
763	methyl octanoate*	0.64	0.69
764	2,4-dimethylhexyl acetate	0.93	0.76
765	2-ethyl-hexyl acetate	0.79	0.66
766	3,4-dimethyl-hexyl acetate	1.16	0.87
767	3,5-dimethyl-hexyl acetate	1.09	0.99
768	3-ethyl-hexyl acetate	1.03	0.91
769	3-methyl-heptyl acetate	0.76	0.67
770	4,5-dimethyl-hexyl acetate	0.86	0.68
771	4-methyl-heptyl acetate	0.72	0.66
772	5-methyl-heptyl acetate	0.73	0.61
773	n-octyl acetate	0.64	0.57
774	methyl nonanoate*	0.54	0.59
775	2,3,5-trimethyl-hexyl acetate	0.86	0.85
776	2,3-dimethyl-heptyl acetate	0.84	0.71
777	2,4-dimethyl-heptyl acetate	0.88	0.68
778	2,5-dimethyl-heptyl acetate	0.86	0.78
779	2-methyloctyl acetate	0.63	0.52
780	3,5-dimethyl-heptyl acetate	1.01	0.81
781	3,6-dimethyl-heptyl acetate	0.87	0.78
782	3-ethyl-heptyl acetate	0.71	0.63
783	4,5-dimethyl-heptyl acetate	0.96	0.69
784	4,6-dimethyl-heptyl acetate	0.83	0.78
785	4-methyloctyl acetate	0.68	0.61
786	5-methyloctyl acetate	0.67	0.56
787	n-nonyl acetate	0.58	0.52
788	methyl decanoate*	0.48	0.53
789	3,6-dimethyl-octyl acetate	0.88	0.79
790	3-isopropyl-heptyl acetate	0.71	0.54
791	4,6-dimethyl-octyl acetate	0.85	0.76
792	methyl undecanoate*	0.45	0.50
793	3,5,7-trimethyl-octyl acetate	0.83	0.66
794	3-ethyl-6-methyl-octyl acetate	0.80	0.63
795	4,7-dimethyl-nonyl acetate	0.64	0.50
796	methyl dodecanoate; methyl laurate	0.53	0.47
797	2,3,5,7-tetramethyl-octyl acetate	0.74	0.62
798	3,5,7-trimethyl-nonyl acetate	0.76	0.62
799	3,6,8-trimethyl-nonyl acetate	0.72	0.59
800	methyl tridecanoate*	0.40	0.45

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
801	2,4,6,8-tetramethyl-nonyl acetate	0.63	0.51
802	3-ethyl-6,7-dimethyl-nonyl acetate	0.76	0.61
803	4,7,9-trimethyl-decyl acetate	0.55	0.42
804	methyl myristate; methyl tetradecanoate	0.47	0.43
805	methyl cis-9-pentadecenoate*	1.63	1.80
806	methyl cis-9-hexadecenoate; methyl palmitoleate*	1.63	1.70
807	methyl pentadecanoate*	0.42	0.47
808	2,3,5,6,8-pentamethyl-nonyl acetate	0.74	0.65
809	3,5,7,9-tetramethyl-decyl acetate	0.58	0.48
810	5-ethyl-3,6,8-trimethyl-nonyl acetate	0.77	0.77
811	dimethyl carbonate; DMC	0.06	0.06
812	propylene carbonate	0.25	0.28
813	methyl lactate	2.75	2.67
814	2-methoxyethyl acetate	1.18	1.15
815	ethyl lactate	2.71	2.48
816	methyl isopropyl carbonate	0.69	0.62
817	1-methoxy-2-propyl acetate	1.71	1.70
818	2-ethoxyethyl acetate	1.90	1.84
819	2-methyoxy-1-propyl acetate	1.12	1.12
820	methoxypropanol acetate	1.97	1.86
821	dimethyl succinate	0.23	0.23
822	ethylene glycol diacetate	0.72	0.66
823	1,2-propylene glycol diacetate	0.94	0.61
824	diisopropyl carbonate	1.04	0.98
825	dimethyl glutarate	0.51	0.42
826	2-butoxyethyl acetate	1.67	1.62
827	dimethyl adipate	1.95	1.80
828	2-(2-ethoxyethoxy) ethyl acetate	1.50	1.48
829	dipropylene glycol n-propyl ether isomer #1	2.13	2.00
830	dipropylene glycol methyl ether acetate isomer # 1	1.41	1.38
831	dipropylene glycol methyl ether acetate isomer # 2	1.58	1.52
832	dipropylene glycol methyl ether acetate isomers	1.49	1.45
833	glyceryl triacetate	0.57	0.55
834	2-(2-butoxyethoxy) ethyl acetate	1.38	1.38
835	substituted C7 ester (C12)	0.92	0.81
836	1-hydroxy-2,2,4-trimethylpentyl-3-isobutyrate	0.92	0.89
837	3-hydroxy-2,2,4-trimethylpentyl-1-isobutyrate	0.88	0.77
838	2,2,4-trimethyl-1,3-pentanediol monoisobutyrate and isomers (texanol ®)	0.89	0.81
839	substituted C9 ester (C12)	0.89	0.81
840	dimethyl sebacate	0.48	0.43

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
841	diisopropyl adipate	1.42	1.28
	Glycols, Ethers, and Glycol Ethers		
842	dimethyl ether	0.93	0.81
843	ethylene glycol	3.36	3.13
844	propylene glycol	2.75	2.58
845	dimethoxy methane	1.04	0.94
846	glycerol	3.27	3.15
847	1,3-butanediol*	3.21	3.36
848	1,2-butanediol	2.21	2.52
849	1,4-butanediol	3.22	2.72
850	2,3-butanediol*	4.23	4.38
851	pentaerythritol	2.42	2.17
852	1,2-dihydroxyhexane	2.75	2.55
853	2-methyl-2,4-pentanediol	1.04	1.45
854	2-ethyl-1,3-hexanediol	2.62	2.05
855	trimethylene oxide	5.22	4.56
856	1,3-dioxolane	5.47	4.96
857	2-methoxy ethanol	2.98	2.93
858	tetrahydrofuran	4.95	4.31
859	diethyl ether	4.01	3.76
860	1,4-dioxane	2.71	2.62
861	1-methoxy-2-propanol	2.62	2.44
862	2-ethoxy-ethanol	3.78	3.71
863	2-methoxy-1-propanol	3.01	3.01
864	3-methoxy-1-propanol	4.01	3.84
865	diethylene glycol	3.55	3.35
866	α-methyl tetrahydrofuran	4.62	3.97
867	tetrahydropyran	3.81	3.22
868	ethyl isopropyl ether	3.86	3.74
869	methyl n-butyl ether	3.66	3.15
870	methyl t-butyl ether	0.78	0.73
871	tetrahydro-2-furanmethanol; tetrahydrofurfuryl alcohol	3.54	3.31
872	2,2-dimethoxy-propane	0.52	0.48
873	1-ethoxy-2-propanol	3.25	3.09
874	2-propoxy-ethanol	3.52	3.30
875	3-ethoxy-1-propanol	4.24	4.09
876	3-methoxy-1-butanol	0.97	3.87
877	2-(2-methoxyethoxy) ethanol	2.90	2.66
878	di-n-propyl ether	3.24	3.08
879	ethyl n-butyl ether	3.86	3.48
880	ethyl tert-butyl ether	2.11	2.01

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
881	methyl tert-amyl ether; TAME	2.14	1.69
882	diisopropyl ether	3.56	3.52
883	ethylene glycol diethyl ether; 1,2-diethoxyethane	2.84	2.95
884	acetal (1,1-diethoxyethane)	3.68	3.58
885	1-propoxy-2-propanol; propylene glycol n-propyl ether	2.86	2.68
886	2-butoxy-ethanol	2.90	2.90
887	3-methoxy-3-methyl-butanol	1.74	2.88
888	n-propoxy-propanol	3.84	3.77
889	2-(2-ethoxyethoxy) ethanol	3.19	3.26
890	dipropylene glycol isomer (1-[2-hydroxypropyl]-2-propanol)	2.48	2.31
891	triethylene glycol	3.41	3.25
892	4,4-diethyl-3-oxahexane; tert-amyl ethyl ether; TAEE	2.03	1.95
893	1-tert-butoxy-2-propanol	1.71	1.61
894	2-tert-butoxy-1-propanol	1.81	1.81
895	n-butoxy-2-propanol; propylene glycol n-butyl ether	2.70	2.72
896	2-(2-propoxyethoxy) ethanol	3.00	2.85
897	dipropylene glycol methyl ether; 1-methoxy-2-(2-hydroxypropoxy)-propane	2.21	1.98
898	dipropylene glycol methyl ether; 2-(2-methoxypropoxy)-1-propanol	2.70	2.58
899	2-[2-(2-methoxyethoxy) ethoxy] ethanol	2.62	2.58
900	2-butyl tetrahydrofuran	2.53	2.13
901	di-isobutyl ether	1.29	1.20
902	di-n-butyl ether	3.17	2.84
903	2-n-hexyloxyethanol	2.45	2.09
904	2,2,4-trimethyl-1,3-pentanediol	1.74	1.54
905	2-methoxy-1-(2-methoxy-1-methylethoxy)-propane; dipropylene glycol dimethyl ether	2.09	2.02
906	2-(2-butoxyethoxy)-ethanol	2.87	2.39
907	dipropylene glycol ethyl ether	2.75	2.72
908	2-[2-(2-ethoxyethoxy) ethoxy] ethanol	2.66	2.46
909	tetraethylene glycol	2.84	2.51
910	2-(2-ethylhexyloxy) ethanol	1.71	1.55
911	1-(butoxyethoxy)-2-propanol	2.08	1.93
912	2-[2-(2-propoxyethoxy) ethoxy] ethanol	2.46	2.17
913	tripropylene glycol*	2.07	2.18
914	2,5,8,11-tetraoxatridecan-13-ol	2.15	1.97
915	di-n-pentyl ether	2.64	2.15
916	2-(2-hexyloxyethoxy) ethanol	2.03	1.84

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
917	glycol ether DPnB; dipropylene glycol n-butyl ether; 1-(2-butoxy-1-methylethoxy)-2-propanol)	1.96	1.83
918	2-[2-(2-butoxyethoxy) ethoxy] ethanol	2.24	1.96
919	tripropylene glycol monomethyl ether	1.90	1.92
920	diethylene glycol mono-(2-ethylhexyl) ether*	1.46	1.56
921	tripropylene glycol n-butyl ether*	1.55	1.64
	Ketones		
922	acetone	0.43	0.36
923	cyclobutanone	0.68	0.62
924	methyl ethyl ketone	1.49	1.48
925	cyclopentanone	1.43	1.15
926	C5 cyclic ketones	1.43	1.15
927	2-pentanone	3.07	2.81
928	3-pentanone	1.45	1.24
929	C5 ketones	3.07	2.81
930	methyl isopropyl ketone	1.64	1.65
931	2,4-pentanedione	1.02	1.01
932	cyclohexanone	1.61	1.35
933	C6 cyclic ketones	1.61	1.35
934	4-methyl-2-pentanone; methyl isobutyl ketone	4.31	3.88
935	methyl n-butyl ketone	3.55	3.14
936	methyl tert-butyl ketone	0.78	0.65
937	C6 ketones	3.55	3.14
938	C7 cyclic ketones	1.41	1.18
939	2-heptanone	2.80	2.36
940	2-methyl-3-hexanone	1.79	1.53
941	di-isopropyl ketone	1.63	1.31
942	C7 ketones	2.80	2.36
943	5-methyl-2-hexanone	2.10	2.41
944	3-methyl-2-hexanone	2.81	2.55
945	C8 cyclic ketones	1.25	1.05
946	2-octanone	1.66	1.40
947	C8 ketones	1.66	1.40
948	C9 cyclic ketones	1.13	0.94
949	2-propyl cyclohexanone	1.71	1.54
950	4-propyl cyclohexanone	2.08	1.85
951	2-nonanone	1.30	1.08
952	di-isobutyl ketone; 2,6-dimethyl-4-heptanone	2.94	2.68
953	C9 ketones	1.30	1.08
954	C10 cyclic ketones	1.02	0.86
955	2-decanone	1.06	0.90

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
956	C10 ketones	1.06	0.90
957	2,6,8-trimethyl-4-nonanone; isobuthyl heptyl ketone	1.86	1.66
958	biacetyl; diacetyl; butanedione	20.7	20.0
959	methylvinyl ketone	8.73	9.65
960	mesityl oxide; 2-methyl-2-penten-4-one	17.3	6.51
961	isophorone; 3,5,5-trimethyl-2-cyclohexenone	10.5	4.63
962	1-nonene-4-one	3.39	3.14
963	hydroxy acetone	3.08	3.23
964	dihydroxy acetone	4.02	3.99
965	methoxy-acetone	2.14	2.03
966	diacetone alcohol	0.68	0.60
	Phenols		
967	phenol	1.82	2.76
968	C7 alkyl phenols	2.34	2.40
969	m-cresol	2.34	2.40
970	p-cresol	2.34	2.40
971	o-cresol	2.34	2.40
972	4-vinyl phenol	1.43	1.50
973	2,4-dimethyl phenol*	2.07	2.12
974	2,5-dimethyl phenol*	2.07	2.12
975	3,4-dimethyl phenol*	2.07	2.12
976	2,3-dimethyl phenol*	2.07	2.12
977	2,6-dimethyl phenol*	2.07	2.12
978	C8 alkyl phenols	2.07	2.12
979	2,3,5-trimethyl phenol*	1.86	1.90
980	2,3,6-trimethyl phenol*	1.86	1.90
981	C9 alkyl phenols	1.86	1.90
982	C10 alkyl phenols	1.68	1.73
983	C11 alkyl phenols	1.54	1.58
984	C12 alkyl phenols	1.42	1.46
985	2-phenoxyethanol; ethylene glycol phenyl ether	3.61	4.49
986	1-phenoxy-2-propanol	1.73	1.60
987	2,6-di-tert-butyl-p-cresol*	1.15	1.18
	Other Oxygenated Organics		
988	glycolaldehyde*	4.96	5.10
989	lumped C5+ unsaturated carbonyl species*	6.18	6.38
990	benzyl alcohol*	4.98	5.11
991	methoxybenzene; anisole*	6.49	6.66
992	β-phenethyl alcohol; 2-phenyl ethyl alcohol*	4.41	4.53
993	phthalic anhydride*	2.50	2.58
994	methylparaben; 4-hydroxybenzoic acid, methyl ester*	1.66	1.71

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
995	cinnamic aldehyde*	4.68	4.84
996	cinnamic alcohol*	0.84	0.89
997	anethol; p-propenyl-anisole*	0.76	0.80
998	camphor*	0.45	0.49
999	citronellol; 3,7-dimethyl-6-octen-1-ol*	5.63	5.79
1000	hydroxycitronella*; hydroxycitronellal	2.50	2.61
1001	linalool*	5.28	5.43
1002	1,2-diacetyl benzene*	2.17	2.25
1003	geraniol*	4.97	5.12
1004	propylparaben*; 4-hydroxybenzoic acid, propyl ester	1.40	1.44
1005	diethyl phthalate*	1.56	1.62
1006	3,6,9,12-tetraoxa-hexadecan-1-ol	1.90	1.72
1007	triethyl citrate*	0.66	0.70
1008	amyl cinnamal*	3.06	3.16
1009	hexyl cinnamal*	2.86	2.96
1010	2-ethyl-hexyl benzoate*	0.93	0.98
1011	dibutyl phthalate*	1.20	1.25
1012	2,2,4-trimethyl-1,3-pentanediol diisobutyrate*	0.34	0.38
1013	methyl hexadecanoate; methyl palmitate*	0.40	0.44
1014	methyl cis-9-heptadecenoate*	1.56	1.62
1015	methyl heptadecanoate; methyl margarate*	0.38	0.42
1016	methyl linolenate; methyl cis,cis,cis-9,12,15-octadecatrienoate*	1.77	2.32
1017	methyl linoelate; methyl cis,cis-9,12-octadecadienoate*	1.48	1.84
1018	methyl cis-9-octadecenoate; methyl oleate*	1.48	1.54
1019	methyl octadecanoate; methyl stearate*	0.36	0.40
	Other Organic Compounds		
1020	methylamine*	7.29	7.70
1021	methyl chloride	0.03	0.04
1022	methyl nitrite*	10.50	10.84
1023	nitromethane	7.86	0.07
1024	carbon disulfide*	0.23	0.25
1025	dichloromethane	0.07	0.04
1026	methyl bromide	0.02	0.02
1027	chloroform	0.03	0.02
1028	methyl iodide*	0.00	0.00
1029	carbon tetrachloride	0.00	0.00
1030	chloropicrin; trichloro-nitro-methane*	1.80	1.85
1031	methylene bromide	0.00	0.00
1032	acetylene	1.25	0.95
1033	dimethyl amine	9.37	3.17

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
1034	ethyl amine	7.80	5.78
1035	ethanolamine	5.97	6.81
1036	vinyl chloride	2.92	2.83
1037	ethyl chloride	0.25	0.29
1038	1,1-difluoroethane; HFC-152a	0.00	0.02
1039	methyl isothiocyanate*; MITC	0.31	0.32
1040	nitroethane	12.79	0.06
1041	dimethyl sulfoxide; DMSO	6.90	6.68
1042	chloroacetaldehyde*	12.00	12.30
1043	1,1-dichloroethene*	1.69	1.79
1044	trans-1,2-dichloroethene	0.81	1.70
1045	cis-1,2-dichloroethene*	1.65	1.70
1046	1,1-dichloroethane	0.10	0.07
1047	1,2-dichloroethane	0.10	0.21
1048	1,1,1,2-tetrafluoroethane; HFC-134a	0.00	0.00
1049	ethyl bromide	0.11	0.13
1050	trichloroethylene; TCE	0.60	0.64
1051	1,1,1-trichloroethane	0.00	0.01
1052	1,1,2-trichloroethane	0.06	0.09
1053	perchloroethylene; perc	0.04	0.03
1054	1,2-dibromoethane	0.05	0.10
1055	methyl acetylene	6.45	6.72
1056	acrylonitrile*	2.16	2.24
1057	trimethyl amine	7.06	6.32
1058	isopropyl amine*	6.93	7.23
1059	n-methyl acetamide**	19.70	20.19
1060	1-amino-2-propanol	13.42	5.42
1061	3-chloropropene*	11.98	12.22
1062	1-nitropropane	16.16	0.22
1063	2-nitropropane	16.16	0.11
1064	chloroacetone*	9.22	9.41
1065	trans-1,3-dichloropropene*	4.92	5.03
1066	cis-1,3-dichloropropene*	3.61	3.70
1067	1,3-dichloropropene mixture*	4.19	4.29
1068	1,2-dichloropropane*	0.28	0.29
1069	trans-1,3,3,3-tetrafluoropropene*; trans-HFO-1234ze	0.09	0.10
1070	2,3,3,3-tetrafluoropropene*; HFO-1234yf	0.27	0.28
1071	n-propyl bromide	0.35	0.42
1072	1,1,1,3,3-pentafluoropropane*; HFC-245fa	0.00	0.00
1073	3,3-dichloro-1,1,1,2,2-pentafluoro-propane; HCFC-225ca*	0.00	0.00
1074	1,3-dichloro-1,1,2,2,3-pentafluoro-propane; HCFC-225cb*	0.00	0.00

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
1075	1,3-butadiyne*	5.53	5.76
1076	1-buten-3-yne; vinyl acetylene*	10.15	10.48
1077	2-butyne	16.33	16.32
1078	ethyl acetylene	6.20	6.11
1079	tert-butyl amine*	0.00	0.00
1080	morpholine	15.43	1.98
1081	ethyl methyl ketone oxime; methyl ethyl ketoxime*	22.04	1.58
1082	dimethylaminoethanol; DMAE	4.76	5.62
1083	2-amino-1-butanol*	4.78	4.98
1084	2-amino-2-methyl-1-propanol; AMP	15.08	0.25
1085	1-chlorobutane*	1.04	1.10
1086	diethylenetriamine**	13.03	15.53
1087	diethanol-amine	4.05	2.47
1088	2-(chloro-methyl)-3-chloro-propene	1.13	7.00
1089	n-butyl bromide	0.60	0.82
1090	1,1,1,3,3-pentafluorobutane; HFC-365mfc*	0.00	0.00
1091	n-methyl-2-pyrrolidone	2.56	2.41
1092	2-amino-2-ethyl-1,3-propanediol*	0.00	0.78
1093	hydroxyethylethylene urea**	14.75	11.22
1094	methoxy-perfluoro-n-butane*; methyl- nonafluoro-butyl ether; HFE-7100 isomer	0.00	0.00
1095	methoxy-perfluoro-isobutene*; methyl-nonafluoro-isobutyl ether; HFE-7100 isomer	0.00	0.00
1096	1,1,1,2,2,3,4,5,5,5-decafluoro-pentane; HFC-43-10mee*	0.00	0.00
1097	triethyl amine	16.60	3.84
1098	triethylene diamine*	3.31	3.46
1099	monochlorobenzene	0.36	0.32
1100	nitrobenzene	0.07	0.06
1101	p-dichlorobenzene	0.20	0.18
1102	o-dichlorobenzene*	0.17	0.18
1103	triethanolamine*	2.76	4.21
1104	hexamethyl-disiloxane*	0.00	0.00
1105	hydroxymethyl-disiloxane*	0.00	0.00
1106	hexafluoro-benzene*	0.05	0.05
1107	ethoxy-perfluoro-n-butane*; ethyl nonafluoro-butyl ether; HFE-7200 isomer	0.01	0.01
1108	ethoxy-perfluoro-isobutane*; ethyl nonafluoro-isobutyl ether; HFE-7200 isomer	0.01	0.01
1109	perfluoro-n-hexane*	0.00	0.00
1110	2-chlorotoluene*	2.82	2.92
1111	m-nitrotoluene*	0.48	0.50

	Organic Compound	MIR Value (July 18, 2001)	New MIR Value October 2, 2010
1112	benzotrifluoride	0.26	0.29
1113	p-trifluoromethyl-chloro-benzene	0.11	0.13
1114	p-toluene isocyanate	0.93	1.06
1115	3-(chloromethyl)-heptane*	0.88	0.95
1116	cyclosiloxane D4; octamethylcyclotetrasiloxane*	0.00	0.00
1117	cumene hydroperoxide; 1-methyl-1-phenylethylhydroperoxide**	12.61	9.08
1118	2,4-toluene diisocyanate*	0.00	0.00
1119	2,6-toluene diisocyanate*	0.00	0.00
1120	toluene diisocyanate (mixed isomers)*	0.00	0.00
1121	molinate; S-ethyl hexahydro-1H-azepine-1-carbothioate*	1.43	1.51
1122	EPTC; S-ethyl dipropyl-thiocarbamate*	1.58	1.67
1123	triisopropanolamine*	2.60	2.70
1124	dexpanthenol; pantothenylol**	9.35	6.15
1125	pebulate; S-propyl butylethylthio-carbamate*	1.58	1.67
1126	cyclosiloxane D5; decamethyl-cyclopentasiloxane*	0.00	0.00
1127	thiobencarb; S-[4-chlorobenzyl] N,N-diethylthiolcarbamate*	0.65	0.68
1128	methylene diphenylene diisocyanate	0.79	0.89
1129	lauryl pyrrolidone*	0.89	0.94
	Complex Mixtures		
1130	base ROG mixture	3.71	3.60
1131	kerosene*	1.46	1.62
1132	oxo-tridecyl acetate	0.67	0.55
1133	oxo-dodecyl acetate	0.72	0.59
1134	oxo-decyl acetate	0.83	0.70
1135	oxo-nonyl acetate	0.85	0.72
1136	oxo-octyl acetate	0.96	0.81
1137	oxo-heptyl acetate	0.97	0.83
1138	oxo-hexyl acetate	1.03	0.86
1139	turpentine*	4.12	4.28
1140	soy methyl esters; alkyl C16-C18 methyl esters*	1.52	1.58

* This reactive organic compound was added to the Table of MIR Values on October 2, 2010, and may be used in aerosol coating products after this date, as specified in section 94522(i)(3)(B), title 17, California Code of Regulations

** ULMIR (as defined in section 94521(a)(81), title 17, California Code of Regulations.)

NOTE: Authority cited: Sections 39600, 39601, and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 40000 and 41712, Health and Safety Code

§ 94701. MIR Values for Hydrocarbon Solvents.

(a) Aliphatic Hydrocarbon Solvents

Bin	*Average Boiling Point* (degrees F)*	*Criteria*	*MIR Value (July 18, 2001)*	*MIR Value October 2, 2010*
1	80-205	Alkanes (< 2% Aromatics)	2.08	1.42
2	80-205	N- & Iso-Alkanes (≥ 90% and < 2% Aromatics)	1.59	1.31
3	80-205	Cyclo-Alkanes (≥ 90% and < 2% Aromatics)	2.52	1.63
4	80-205	Alkanes (2 to < 8% Aromatics)	2.24	1.47
5	80-205	Alkanes (8 to 22% Aromatics)	2.56	1.56
6	>205-340	Alkanes (< 2% Aromatics)	1.41	1.17
7	>205-340	N- & Iso-Alkanes (≥ 90% and < 2% Aromatics)	1.17	1.03
8	>205-340	Cyclo-Alkanes (≥ 90% and < 2% Aromatics)	1.65	1.44
9	>205-340	Alkanes (2 to < 8% Aromatics)	1.62	1.44
10	>205-340	Alkanes (8 to 22% Aromatics)	2.03	1.98
11	>340-460	Alkanes (< 2% Aromatics)	0.91	0.70
12	>340-460	N- & Iso-Alkanes (≥ 90% and < 2% Aromatics)	0.81	0.62
13	>340-460	Cyclo-Alkanes (≥ 90% and < 2% Aromatics)	1.01	0.86
14	>340-460	Alkanes (2 to < 8% Aromatics)	1.21	0.99
15	>340-460	Alkanes (8 to 22% Aromatics)	1.82	1.57
16	>460-580	Alkanes (< 2% Aromatics)	0.57	0.52
17	>460-580	N- & Iso-Alkanes (≥ 90% and < 2% Aromatics)	0.51	0.48
18	>460-580	Cyclo-Alkanes (≥ 90% and < 2% Aromatics)	0.63	0.60
19	>460-580	Alkanes (2 to < 8% Aromatics)	0.88	0.66
20	>460-580	Alkanes (8 to 22% Aromatics)	1.49	0.95

* Average Boiling Point = (Initial Boiling Point + Dry Point) / 2

(b) Aromatic Hydrocarbon Solvents

Bin	*Boiling Range (degrees F)*	*Criteria*	*MIR Value (July 18, 2001)*	*MIR Value October 2, 2010*
21	280-290	Aromatic Content (≥ 98%)	7.37	7.64
22	320-350	Aromatic Content (≥ 98%)	7.51	7.60
23	355-420	Aromatic Content (≥ 98%)	8.07	6.85
24	450-535	Aromatic Content (≥ 98%)	5.00	3.82