Paramount® Chemical Guide

Use this table to evaluate additional chemicals that you may decide to use after the Paramount has been set up for its intended application. Following the table is a chart key and explanation of how to determine if additional and/or alternative chemical applications are appropriate for use in the Paramount Filtered Enclosure.

Protecting your laboratory environment
LABCONCO®

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CHEMICAL	NIOSH TWA (PPM)	Odor Thrsh. (PPM)	Estimated Filter Life in Hours at Inlet Concentration					PPM = ml/min x	Detection Method
			1 PPM	5 PPM	10 PPM	25 PPM	50 PPM		
1,1,1,2 Tetrachloro-2,2 difluoroethane	500		1530	390	236	100	52	25	1,3
1,1,2 Trichloro-1,2,2 Tri-fluoroethane	1000	200	1318	379	213	98	54	26	1,2
1,2,3 Trimethylbenzene	25		2700	530	270	140	57	23	3
1,2,4 Trimethylbenzene	25		2330	520	265	140	60	23	2,3
1,3 Butadiene	1000	0.45	160	70	54	30	16	38	1,2
1,3,5 Trimethylbenzene	25	2.4	2400	525	265	135	60	22	3
1,2-Dichloro-ethylene	200	17	255	120	85	46	31	41	1,2
2-Butanone	200	30	685	240	155	77	47	35	1,2
2-Butoxyethanol	5	0.1	2100	500	260	105	55	24	2,3
2-Diethylaminoethanol	10	0.011	2090	485	300	125	65	24	2,3
2-Hexanone	50	0.085	1898	451	306	140	77	25	3
2-Pentanone	150	7.7	1325	360	201	91	54	29	1,3
5-Methyl-3-heptanone	25	6	3052	736	385	163	84	20	3
a-Methyl styrene	50	0.3	2295	545	280	120	60	24	3
Acetic acid	10	0.15	300	190	151	50	26	55	2,3
Acetic anhydride	5	0.014	1835	510	295	125	65	33	2,3
Acetone	250	653	200	95	70	43	30	43	1,2
Acrylic acid	2	0.092	285	47	26	13	6	46	2,3
Butyl acrylate	10	0.1	2378	627	338	147	78	22	2,3
Carbon disulfide	1	0.42	108	50	35	21	14	52	2,3
Chlorobenzene	75	1.3	1570	437	245	115	63	31	2,3
Chlorobromomethane	200	400	150	85	61	42	30	47	1,2
Crotonaldehyde	2	0.2	920	339	210	109	65	39	3
Cumene	50	0.132	2380	633	342	149	79	22	2,3
Cyclohexanol	50	0.16	1885	685	353	145	74	30	2,3
Cyclohexanone	25	3.5	3000	505	280	125	67	30	2,3
Cyclohexene	300	0.018	930	285	170	82	46	31	1,2
Cyclohexylamine	10	2.6	1980	520	400	130	55	27	2,3
Cyclopentadiene	75	1.8	383	140	87	46	28	38	3
Cyclopentane	600		620	210	148	72	42	33	1,3
Diacetone alcohol	50	0.27	2235	515	275	115	60	25	2,3
Diethylene triamine	1		4394	1066	558	237	124	29	3
Diethyl ketone	200		1126	370	219	107	62	29	1,3
Difluorodibromomethane	100		419	145	88	45	27	34	1,3
Diisobutyl ketone	25	0.31	1785	380	199	82	44	18	2,3
Diisopropylamine	5	0.13	1350	325	175	77	43	22	2,3
Dipropyl ketone	50		2427	646	348	153	81	22	3
Ethyl acetate	400	18	860	270	160	80	52	32	1,2
Ethyl benzene	100	0.6	1760	440	236	102	55	26	1,2
Ethyl bromide	200	3.1	256	105	69	38	24	42	1,2
Ethyl butyl ketone	50	0.35	2150	475	245	102	52	23	3
Ethyl chloride	1000	4.2	64	30	21	12	9	108	1,2
Ethyl ether	400	7	570	185	110	57	32	30	1,3
Ethyl formate	100	20	320	132	161	80	47	39	1,3
Furfural	8	0.636	2310	655	166	86	45	38	2,3
Furfuryl alcohol	10	8	2895	742	460	199	100	36	3
Hexone	50	7.8	1662	488	275	127	70	25	2,3
Isoamyl acetate	100	0.22	1795	410	212	87	47	21	1,2
Isoamyl alcohol (primary)	100	0.072	2100	520	283	122	65	29	1,2
Isoamyl alcohol (secondary)	100	0.072	1520	474	275	131	74	29	1,3
Isobutyl acetate	150	1.1	1590	390	207	91	42	23	1,2
Isobutyl alcohol	50	3.6	1450	430	255	116	66	34	2,3
Isobutyronitrile	8		853	323	202	106	64	34	3
Isophorone	4	0.19	3312	802	417	174	90	21	2,3
Isopropoxyethanol	25		1731	497	276	125	68	27	3
Isopropyl alcohol	400	610	590	237	155	87	52	41	1,2

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			1 PPM	5 PPM	10 PPM	25 PPM	50 PPM		
Isopropyl ether	500	0.017	1180	295	162	72	40	22	1,2
m-Xylene	100	0.62	1800	442	237	102	55	25	1,2
Mesityl oxide	10	0.017	1730	445	242	104	52	27	3
Methyl (n-anyl) ketone	100	0.19	2403	646	348	153	81	22	1,3
Methyl acetate	200	180	310	135	95	50	34	39	1,3
Methyl acrylate	10	0.02	444	155	95	49	29	35	2,3
Methylal	1000		525	175	125	65	40	35	1,3
Methyl cyclohexane	400		1620	405	235	100	55	25	2,3
Methyl isopropyl ketone	200	4.8	1740	500	290	125	65	29	1,3
Methyl methacrylate	100	0.049	1600	410	240	115	60	29	1,2
Methyl isoamyl ketone	50	0.013	2000	465	244	101	52	22	3
Morpholine	20	0.011	1410	440	259	122	57	36	2,3
n-Amyl acetate	100	7.3	1840	420	215	92	48	21	1,2
n-Butyl acetate	150	0.31	1700	410	220	95	51	24	1,2
n-butyl alcohol	50	11	1815	500	285	132	72	34	2,3
n-Butyl lactate	5	7	2818	698	370	159	84	21	3
n-Butyronitrile	8		1160	365	203	90	48	37	3
n-Pentane	120	1147	560	187	112	56	33	27	2,3
n-Propyl acetate	200	0.18	1440	370	205	90	50	26	1,2
n-Propyl alcohol	200	41	840	315	200	105	65	42	1,2
Naphthalene	10	0.038	2955	650	330	134	69	28	2,3
o-Dichlorobenzene	50	0.7	2340	560	299	125	65	28	2,3
o- Chlorotoluene	50	0.32	2295	560	305	130	85	27	3
o-Methylcyclohexanone	400		3118	820	439	191	101	26	2,3
o-sec-Butylphenol	5		2050	440	285	90	40	19	3
o-Xylene	100	20	1860	456	245	107	56	26	1,2
p-tert-Butyltoluene	10	5	1890	400	205	84	44	18	3
p-Xylene	100	5.4	1790	437	235	102	55	25	1,2
Phenol	5	0.06	3100	780	480	195	100	35	2,3
Propionitrile	6		410	190	96	42	24	44	2,3
Pyridine	5	1.9	1010	340	172	75	41	39	2,3
sec-Amyl acetate	125	0.002	2427	638	341	149	78	21	1,3
sec-Butyl acetate	200	7	1687	483	270	123	66	23	1,3
sec-Butyl alcohol	100	3.2	1340	400	232	112	62	34	1,2
sec-Hexyl acetate	50	0.39	1860	400	205	85	44	19	3
Styrene	50	1.9	150	52	34	19	13	27	2,3
tert-Butyl acetate	200	47	1454	425	239	110	61	23	1,3
tert-Butyl alcohol	100	957	1090	330	193	91	52	33	1,2
Tetrahydrofuran	200	31	390	160	105	60	37	39	1,2
Toluene	100	1.6	1380	375	212	97	52	30	1,2
Trichloroacetic acid	1		3585	770	385	160	80	31	2,3
Turpentine	100	50	2859	702	365	153	79	20	1,2
Vinyl toluene	100	10	2920	752	395	169	88	24	1,3
Vinylacetate	4	0.12	720	212	120	53	29	34	2,3

Chart Key

NIOSH TWA: Recommended time weighted exposure limit as determined by NIOSH for each chemical given in parts per million (PPM), based on 10 hours per day, 4 days per week.

Odor Threshold: Concentration in PPM that must be reached for odor to be detected. Threshold limits are somewhat subjective due to varying odor sensitivity from person to person.

Estimated Filter Life: Estimation of time (in hours) before filter change is required. The table lists 5 different inlet concentrations in PPM. To calculate concentration, see instructions below.

PPM = ml/min x: Conversion factors for turning chemical evaporation (ml/min) into inlet concentration (PPM). Use the estimated ml/min and multiply by this factor to determine inlet concentration in PPM.

Detection Method: Recommended method(s) for monitoring chemical concentrations in the Paramount. The recommendations are given as a number representing primary detection method, followed by a secondary detection method.

The number "1" stands for Labconco's Safety-First™ Vapor Sensor
The number "2" represents the use of a chemical detector tube.
The number "3" refers to the use of an analytical instrument.

Steps for Calculating PPM

1) Determine the amount of the proposed chemical lost to evaporation over a given amount of time. For example, if you use Toluene and lose approximately 500 ml per week during 2 hours of use per day.

2) Convert the amount lost into ml/min. For this example:

$$\frac{500\text{ ml}}{\text{week}} \times \frac{1\text{ week}}{10\text{ hours use}} \times \frac{10\text{ hours}}{600\text{ minutes}} = \frac{500\text{ ml lost}}{600\text{ minutes}} = .83\text{ ml/min}$$

3) Convert ml/min to PPM by multiplying ml/min by the conversion factor found in the second to the last column on the right. For Toluene, this would be .83 x 30 = 24.9 PPM.

4) Find the PPM value on the chart that comes closest to the value you just calculated in step #3. In this example, 25 PPM is close to the calculated 24.9. We may approximate the filter life to be around 100 hours of actual use.

5) Insert the estimated filter life into the estimated usage to determine how long filters will last.

$$\frac{\text{100 hours filter life}}{\text{10 hours per week use}} = \text{10 weeks before filter saturation}$$

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