Rotary Evaporator Solvent Library

Bath temperature, vacuum and condenser coolant settings for 47 laboratory solvents

Popular Traders, Ambala · Since 1942
WhatsApp / Call: +91-8199900060
popular1942@gmail.com · www.populartradersindia.com

20-degree rule: solvent vapour about 20 °C below the bath, coolant about 20 °C below the vapour. Vacuum = pressure at which the solvent boils at the vapour temperature. Values in mbar absolute (27″ Hg ≈ 100 mbar, 29.5″ Hg ≈ 15 mbar). Starting points – lower the vacuum gradually to avoid bumping.

Peroxide former – never to dryness · Freezing risk in condenser · Pump to use · Needs a chiller · Hazard

ALCOHOLS

Solvent	Boiling point °C	Bath °C	Vacuum mbar	Coolant °C
Methanol CH_4O	64	50	220	10
Ethanol C_2H_6O Piston pump PT-89/35 advised	78	50	105	10
2-Propanol C_3H_8O · IPA	82	50	80	10
1-Propanol C_3H_8O · n-propanol	97	60	70	20
1-Butanol $C_4H_{10}O$ · n-butanol	118	70	45	30
Isobutanol $C_4H_{10}O$ · 2-methyl-1-propanol	108	70	70	30
tert-Butanol $C_4H_{10}O$ Freezes at 25 °C	82	60	135	25–30
Isoamyl alcohol $C_5H_{12}O$ · 3-methyl-1-butanol	131	80	45	40

KETONES

Solvent	Boiling point °C	Bath °C	Vacuum mbar	Coolant °C
Acetone C_3H_6O	56	50	380	10
Methyl ethyl ketone C_4H_8O · MEK, 2-butanone	80	50	155	10
Methyl isobutyl ketone $C_6H_{12}O$ · MIBK	116	60	60	20

ESTERS

Solvent	Boiling point °C	Bath °C	Vacuum mbar	Coolant °C
Methyl acetate $C_3H_6O_2$	57	50	360	10
Ethyl acetate $C_4H_8O_2$	77	50	160	10
Isopropyl acetate $C_5H_{10}O_2$	89	50	100	10
n-Butyl acetate $C_6H_{12}O_2$	126	70	60	30

ETHERS

Solvent	Boiling point °C	Bath °C	Vacuum mbar	Coolant °C
Diethyl ether $C_4H_{10}O$ Peroxide former	34	40	590	0
Methyl tert-butyl ether $C_5H_{12}O$ · MTBE	55	50	410	10
Diisopropyl ether $C_6H_{14}O$ · DIPE Strong peroxide former	68	50	250	10
Tetrahydrofuran C_4H_8O · THF Peroxide former	66	50	270	10
2-Methyltetrahydrofuran $C_5H_{10}O$ · 2-MeTHF Peroxide former	80	50	160	10
1,4-Dioxane $C_4H_8O_2$ Peroxide former Freezes at 12 °C	101	60	105	20
Anisole C_7H_8O	154	80	35	40

HYDROCARBONS

Solvent	Boiling point °C	Bath °C	Vacuum mbar	Coolant °C
n-Pentane C_5H_{12} Chiller at 0 °C	36	40	570	0
Cyclopentane C_5H_{10} Chiller at 0 °C	49	40	350	0
n-Hexane C_6H_{14}	69	50	250	10
Cyclohexane C_6H_{12} Freezes at 7 °C	81	50	160	10
n-Heptane C_7H_{16}	98	60	125	20
Isooctane C_8H_{18} · 2,2,4-trimethylpentane	99	60	130	20
Petroleum ether 40–60 °C mixture (C5–C6 alkanes) Start at 500 mbar, lower slowly	40–60	40	400	0
Petroleum ether 60–80 °C mixture (C6–C7 alkanes) Start at 300 mbar, lower slowly	60–80	50	200	10
Benzene C_6H_6 Carcinogen – avoid	80	50	160	10
Toluene C_7H_8	111	60	80	20
Xylene C_8H_{10} · mixed isomers Coolant ≥ 15 °C	138	70	45	30

CHLORINATED SOLVENTS

Solvent	Boiling point °C	Bath °C	Vacuum mbar	Coolant °C
Dichloromethane CH_2Cl_2 · DCM, methylene chloride Chiller recommended	40	40	470	0
Chloroform $CHCl_3$ Toxic – fume hood	61	50	320	10
1,2-Dichloroethane $C_2H_4Cl_2$ · EDC	84	50	135	10
Chlorobenzene C_6H_5Cl	132	70	55	30

POLAR APROTIC AND NITROGEN SOLVENTS

Solvent	Boiling point °C	Bath °C	Vacuum mbar	Coolant °C
Acetonitrile C_2H_3N	82	50	150	10
Pyridine C_5H_5N Fume hood – strong odour	115	60	60	20
N,N-Dimethylformamide C_3H_7NO · DMF Piston pump PT-89/35	153	80	35	40
N,N-Dimethylacetamide C_4H_9NO · DMAc Piston pump PT-89/35	166	90	33	50
Dimethyl sulfoxide C_2H_6OS · DMSO Freezes at 18 °C Piston pump PT-89/35	189	90	12	50
N-Methyl-2-pyrrolidone C_5H_9NO · NMP Needs < 10 mbar	202	90	7.5	50

ACIDS AND WATER

Solvent	Boiling point °C	Bath °C	Vacuum mbar	Coolant °C
Formic acid CH_2O_2 Corrosive PTFE pump PT-89/30	101	60	115	20
Acetic acid $C_2H_4O_2$ · glacial Freezes at 17 °C	118	60	45	20
Trifluoroacetic acid $C_2HF_3O_2$ · TFA Corrosive PTFE pump PT-89/30	72	50	180	10
Water H_2O Antifoam for foaming samples	100	60	75	20

Pumps: ≥100 mbar – PT-89/10, /20 diaphragm · below ~100 mbar – PT-89/35 piston · acid vapours – PT-89/30 PTFE-coated. **Chiller:** PT-80 (-10 °C to ambient).
Calculated from published vapour-pressure data (DIPPR, Wagner, NIST). Full guide: populartradersindia.com/rotary-evaporator-solvent-library/