溶剂干燥指南

中国化学化工论坛整理

http://delloyd.50megs.com/moreinfo/drying.html

常用的干燥剂有氯化钙 ($CaCl_2$), 硫酸钠 (Na_2SO_4) 硫酸钙 ($CaSO_4$, as Drierite (R)) 和硫酸镁 ($MgSO_4$), 必须是无水形态.

TO DRY	USE ONE OF THE FOLLOWING DRYING AGENTS
Alcohols	Anhydrous forms of potassium carbonate; magnesium or calcium sulphate; quicklime.
Alkyl halides Aryl halides	Anhydrous calcium chloride; anhydrous sodium, magnesium or calcium sulphate; sodium pentoxide.
Saturated and Aromatic hydrocarbons	Anhydrous calcium chloride or sulphate; metallic sodium; phosphorus pentoxide.
Aldehydes	Anhydrous sodium, magnesium or calcium sulphate.
Ketones	Anhydrous sodium, magnesium or calcium sulphate; anhydrous potassium carbonate.
Organic bases (amines)	Solid potassium or sodium hydroxide; quicklime; barium oxide.
Organic acids	Anhydrous sodium, magnesium or calcium sulphate.

溶剂: 性质和干燥方法

Solvent	Boiling Pt. °C	Density	Flash Pt. °C	Drying agent
Acetone	56	0.791	-18	K_2CO_3; Molecular sieve 0.3nm; $CaCl_2$
Acetic acid	118	1.049	+40	P_2O_5; $CuSO_4$
Acetic anhydride	136	1.082	+49	$CaCl_2$
Acetonitrile	82	0.782	+6	$CaCl_2$; P_2O_5; K_2CO_3; calcium hydride; Molecular sieve 0.3nm
Aniline	184	1.022	+76	KOH; BaO
Anisole	154	0.995	+51	$CaCl_2$; Na; distillation
Benzene	80	0.879	-10	$CaCl_2$; distillation; Na; Pb/Na; ; calcium hydride; Na wire; Molecular sieve 0.4nm
1-Butanol	117	0.810	+29	K_2CO_3; distillation
2-Butanol	100	0.808	+24	K_2CO_3; distillation
tert-Butanol	82	0.882	+11	CaO; Freezing
n-Butyl acetate	127	0.882	+33	$MgSO_4$;
Carbon disulphide	46	1.263	-30	$CaCl_2P_2O_5$;
Carbon tetrachloride	77	1.594	none	distillation; P_2O_3; Pb/Na; Molecular sieve 0.4nm
Chlorobenzene	132	1.106	+29	$CaCl_2$; distillation;P_2O_5
Chloroform	62	1.486	none	$CaCl_2$; P_2O_5; Pb/Na; Molecular sieve 0.4nm
Cyclohexane	81	0.799	none	Na; Na/Pb; $LiAlH_4$; Molecular sieve 0.4nm
Cyclohexanone	155	na	na	Distillation
Decahydronaphthalene				

(Dekalin)	~190	0.886	<54	$CaCl_2$; Na; Pb/Na
Dichloromethane	40	1.325	none	$CaCl_2$; Pb/Na; calcium hydride; Molecular sieve 0.4nm
Dicyclopentadiene: (cyclopentadiene dimer)	170	na	na	Refractionation: distillate at 40 - 42°C. (Use at once! or keep in dry ice/acetone bath no longer than 1 Hr.)
Diethyl carbonate	126	0.975	+25	Na_2SO_4; K_2CO_3
Diethylene glycoldibutyl ether	225	0.885	+118	$CaCl_2$; Na
Diethylene glycol dimethyl ether	155 165	0.906	+70	$CaCl_2$; Na
Diethyl ether	34	0.714	-40	$CaCl_2$; Na; Pb/Na; $LiAlH_4$; Na wire/benzophenone; Molecular sieve 0.4nm
Di-isopropyl ether	68	0.726	-23	$CaCl_2$; Na; Molecular sieve 0.4nm
Dimethyl formamide	153	0.950	+62	distillation; Molecular sieve 0.4nm
Dimethyl sulfoxide	189	1.101	+95	distillation; Molecular sieve 0.4nm
1,4 Dioxane	101	1.034	+11.8	$CaCl_2$; Na; Molecular sieve 0.4nm
Ethanol	79	0.791	+12	CaO; Mg; MgO; Molecular sieve 0.3nm
Ethyl acetate	77	0.901	-4	K_2CO_3; P_2O_5; Na_2SO_4; calcium hydride; Molecular sieve 0.4nm
Ethylenediamine: (1-2 diaminoethane)	118	na	na	Simple distillation.
Ethylene glycol	197	1.109	+111	distillation; Na_2SO_4
Ethylene glycol monoethyl ether	135	0.930	+41	distillation
Ethylene glycol monomethyl ether	125	0.965	+52	distillation
Ethyl formate	54	0.924	-20	$MgSO_{4;\ Na2SO4;}$
Formamide	211	1.134	155	Na_2SO_4; CaO
Glycerol	290	1.260	+176	distillation
Heptane	98	0.684	-4	calcium hydride; Na wire
n-Hexane	69	0.659	-23	Na; Pb/Na; $LiAlH_4$; calcium hydride; Na wire/benzophenone; Molecular sieve 0.4nm
Isobutanol	108	0.803	+28	K_2CO_3; CaO; Mg;
Isobutyl methyl ketone	117	0.801	+15.5-4	K_2CO_3;
Methanol	65	0.792	+11	Mg; CaO; Molecular sieve 0.3nm
Methyl acetate	57	0.933	-10	K_2CO_3; CaO;
1-Methyl-2-pyrrolidone	202	1.026	+95	Na_2SO_4; distillation; Molecular sieve 0.4nm
Methyl Ethyl ketone	80	0.806	-44	K_2CO_3;
Nitrobenzene	211	1.204	+92	$CaCl_2$; P_2O_5; distillation;
n-Pentane	36	0.626	-49	Na; Pb/Na;calcium hydride; Na wire
Pet ether	mixture	na	na	calcium hydride; Na wire/benzophenone; Molecular sieve type 4A
1- Propanol	97	0.804	+15	CaO; Mg
2-Propanol	82	0.785	+12	CaO; Mg; Molecular sieve 0.3nm
Pyridine	116	0.982	+20	KOH; BaO; Molecular sieve 0.4nm
Tetrahydrofuran	66	0.887	-17.5	Molecular sieve 0.4nm
Tetrahydronaphthalene (Tetralin)	208	0.973		$CaCl_2$; Na
Thionyl chloride	48	na	na	Redistill.
Toluene	111	0.867	+4	distillation; Ca; $CaCl_2$; Na; Molecular sieve 0.4nm
Trichloroethylene	87	1.462	none	distillation; Na_2SO_4; K_2CO_3
Xylene	137/140	-0.86	+25	distillation; Na; $CaCl_2$; Molecular sieve 0.4nm