

Chemical Essentials Handbook

Essentials & Storage Guidelines



Introduction

This handbook includes a selection of essential chemicals for analysis, synthesis, inorganic and life science applications, plus key information on safe storage, handling and packaging to support your chemistry.

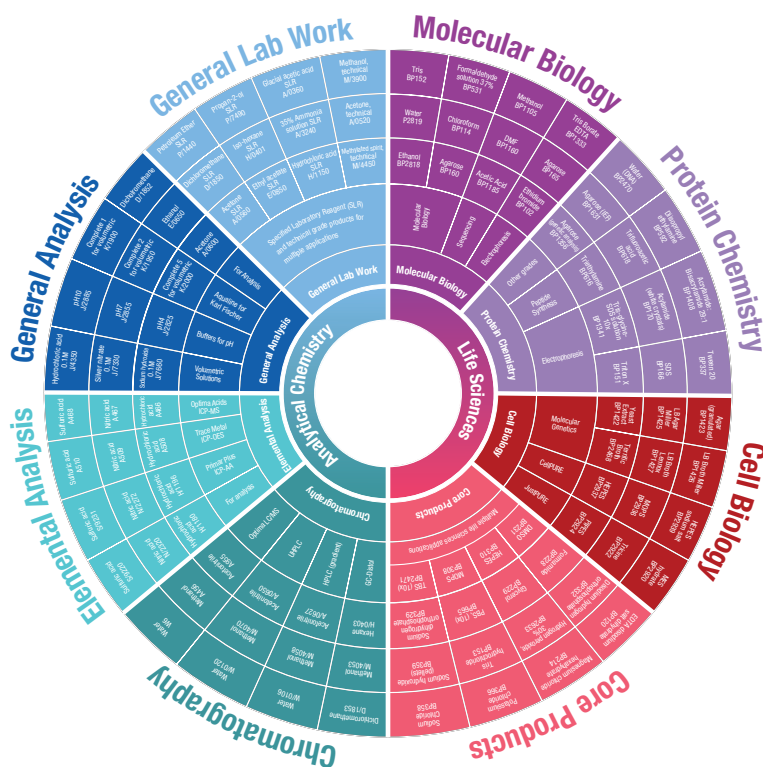


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Find the perfect chemicals for your discovery, synthesis and analysis

Our portfolio of brands and product grades offer a range of solutions for your chemistry applications.

For	Category/Application	Grades/Product Ranges
Analysis	Liquid Chromatography	UHPLC-MS Optima LC-MS and Certified HPLC-MS UHPLC Gradient Certified Advanced HPLC Gradient Certified HPLC Gradient
	Gas Chromatography	Distol – For Pesticides and Residue analysis GC Headspace
	Elemental Analysis	Optima Grade TraceMetal Grade PrimarPlus Grade
	Molecular Spectroscopy and Micro Analysis	For Spectroscopy IR and For Spectrophometry UV For NMR
	Other Analysis	For Analysis Extra Pure and Specified Laboratory Reagent (SLR) For Electronic Use
	Titration	For Volumetry For pH Metry For Karl Fischer – Aqualine
Research	Organic Synthesis	Building blocks Catalysts Deuterated products Extra dry solvents Functional reagents Organometallics Silica gel
	Inorganic Reagents	High purity inorganics - Puratronic High purity metal products - Premion Precious metal compounds Anhydrous materials - Ultra Dry Rare earth products - Reacton Fuel cells catalysts & compounds High purity materials for photovoltaics Cerion nanoparticles
Discovery	Life Sciences	For Electrophoresis For Peptide Synthesis For Cell Biology For Molecular Biology For Proteomics and Genomics
	Drug Discovery	Heterocyclic building blocks Screening libraries Fragment collections

Fisher Chemical

Find the perfect chemicals for your analytical application

- Rigorous quality assurance and testing procedures throughout the production process ensure the lot-to-lot consistency required for reproducible results
- Fisher Chemical™ products come in a variety of innovative packaging options designed for safety, environmental protection, convenient handling and storage, and preservation of product integrity
- High-volume solvent delivery systems, available in 10 L to 1000 L, offer environmentally friendly solvent handling solutions for your applications, enhancing safety and improving productivity within your lab
- For the complete portfolio of Thermo Scientific™ & Fisher Chemical products available locally, please visit thermofisher.com.au/chemicals



Grade	Application	Definition
UHPLC-MS	UHPLC-MS	Ultra high-purity solvents specifically qualified for UHPLC-MS instrumentation. Specification based on higher ionization efficiency to detect organic contaminants in full scan MS with the absence of an additive. Signal to noise specification greater than ten when measured with 250 ppt Propazine using MS/MS. Filtered at 0.1µm, packaged in borosilicate glass and tightened metal specifications minimizes metal ion adduct formation.
Optima LC-MS	LC-MS	Optima LC-MS grade products meet stringent purity requirements of LC-MS and UHPLC by addressing the need for minimal organic contamination with 0.1µm filtration to make particle free. Evaluated for 17 metal impurities at ppb concentrations for minimal metal mass adduct formation. High ionization efficiency to detect organic contaminants at 50 ppb max (positive) and 300 ppb max (negative) in full scan MS. Screened for UV-absorbing contaminants at every wavelength in the 200 to 400 nm range to afford smooth baselines and to reduce interferences.
LC-MS	LC-MS	Ideal mobile phase for routine LC-MS applications. Guaranteed for low level of trace metals and nonvolatile residue. Low level of absorbance, performance under gradient conditions. Filtered at 0.2µm.
UHPLC Gradient grade	UHPLC-UV	Solvent certified for UHPLC analysis with high UV transmission. Low background noise at 210nm and 254nm. Filtered at 0.1µm for ultra low particulates.
Advanced HPLC Gradient grade	HPLC Gradient grade	Advanced HPLC gradient grade specifically manufactured to guarantee a very low level of gradient baseline drift. Includes lot analysis and absorbance curve on the label. Filtered at 0.2µm.
HPLC Gradient grade	HPLC Gradient grade	HPLC solvents suitable for gradient analysis. Guaranteed for low absorbance/high UV transmission and low concentration of non-volatile impurities. In some instances may be suitable for fluorescence detection. Includes lot analysis and absorbance curve on the label. Filtered at 0.2µm.
HPLC Fluorescence	HPLC with Fluorescence and UV detectors	HPLC solvents suitable for Fluorescence and UV detectors. Guaranteed for low fluorescence between 250nm and 750nm emission & excitation wavelengths.
HPLC Electrochemical	HPLC with Electrochemical and UV detectors	HPLC solvents suitable for Electrochemical and UV detectors. Guaranteed for low electrochemical activity and low UV absorbance/high transmission. Includes lot analysis and absorbance curve on label.
GPC	GPC - Gel Permeation Chromatography	Solvents manufactured for gel permeation chromatography. Filtered at 0.2µm. Low water, residue and colour. Unique chemical range – Actual lot analysis on the pack label.
GC Headspace	GC-HS - Gas Chromatography Headspace	High purity solvents for accurate and reliable analysis of organic volatile impurities (OVIs) by gas chromatography headspace (GC-HS).
Distol	GC - Gas Chromatography	Range of solvents suitable for pesticide and petroleum residue analysis. Guaranteed to meet the ECD, NPD and FID detectors requirement.
Optima Grade	ICP-MS	Highest purity acids, bases and water specifically qualified for Ultra trace elemental analysis by ICP-MS instrument. Ultra-pure quality tested for up to 65 parameters at 1-100 ppt level.
Trace Metal™ Grade	ICP	Trace Metal grade qualified for trace elemental analysis by ICP instrument. Acids & reagents tested for up to 65 parameters at ppb levels.
Primar Plus™ Grade	AAS	Primar Plus grade suitable for trace elemental analysis by AAS instrument. Acids & reagents are tested for up to 40 parameters at 1 to 10 ppb level.
For Analysis	General analytical applications	Certified reagents for analytical applications. Tested for up to 18 guaranteed parameters. Actual lot analysis on the pack label.
For Analysis Conform Eur.Ph.	General analytical applications	Certified reagents for analytical application meeting the Eur.Ph requirement. Tested for up to 18 guaranteed parameters. Actual lot analysis on the pack label.
Specified Laboratory Reagents (SLR)	Laboratory applications	Specified Laboratory Reagents for general laboratory applications. Extra pure grade tested for up to 13 parameters.
Technical	General use	For general use in the laboratory.
Buffers	pH-Metry	Buffer NIST Standard solutions certified for pH measurement. Ready to use, with an accuracy factor of ±0.02 pH at 20°C. Also available as concentrates, packaged in ampules.
Volumetric solution	Volumetry	Standard solutions for volumetric analysis. Accuracy factor up to 0.999 - 1.001 NIST traceability. Ready to use.
Solute	Volumetry	Concentrated standard solutions for volumetric analysis. NIST traceability. Supplied in singles or pack of six sealed ampules.
Aqualine™	Karl Fischer titration	Karl Fischer reagents for the determination of moisture. Volumetric and coulometric reagents and standards. Pyridine free, rapid titration and a stable end-point. Supplied in single packs or in ampules.

The Fisher Chemical product range includes over 4,400 products. A selection of our most essential products from this range can be found in the list below.

MPC*	Product Name	Product Code/ Size			Merck	Honeywell	VWR
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* MPC= Manufacturer Product Code

UHPLC-MS: Ultrapure solvents specifically designed for UHPLC-MS application

A956	Acetonitrile, UHPLC-MS grade New!	FSBA956-1	1L				
A458	Methanol, UHPLC-MS grade New!	FSBA458-1	1L				
W8	Water, UHPLC-MS grade New!	FSBW8-1	1L				

LC-MS Optima: High purity solvents specifically qualified to meet the stringent purity requirements of LC-MS

A955	Acetonitrile, Optima LC-MS grade	FSBA955-4	4L	FSBA955-212	2.5L	100029	14261
A461	Iso-propanol, Optima LC-MS grade	FSBA461-4	4L	FSBA461-212	2.5L		34965
A456	Methanol, Optima LC-MS grade	FSBA456-4	4L	FSBA456-212	2.5L	106035	14262
W6	Water, Optima LC-MS grade	FSBW6-4	4L	FSBAW6-1	1L		14263

LC-MS: Solvents qualified for routine LC-MS applications

A/0638	Acetonitrile, for HPLC-MS	FSBA/0638/15	1L	FSBA/0638/17	2.5L		34967	83640
M/4062	Methanol, for HPLC-MS	FSBM/4062/15	1L	FSBM/4062/17	2.5L		34966 646377	83638
W/0112	Water, for HPLC-MS	FSBW/0112/15	1L	FSBW/0112/17	2.5L		39253	83645

UHPLC-UV: Solvents qualified for routine UHPLC-UV applications

A/0650	Acetonitrile, for UHPLC gradient grade analysis	FSBA/0650/15	1L	FSBA/0650/17	2.5L	100030		83642
M/4070	Methanol, for UHPLC gradient grade analysis	FSBM/4070/PB15		FSBM/4070/PB17		106007		
W/0120	Water, for UHPLC gradient grade analysis	FSBW/0120/PB15		FSBW/0120/PB17		115333		

HPLC Gradient grade: Solvents qualified for routine Gradient grade Liquid chromatography

A/0627	Acetonitrile, HPLC for gradient analysis, meets Ph.Eur.	FSBA/0627/15	1L	FSBA/0627/17	2.5L	100030	34998 34851	20060 83639
P/7508	Isopropanol, HPLC for gradient analysis			FSBP/7508/17	2.5L	101040	650447	
M/4058	Methanol, HPLC for gradient analysis	FSBM/4058/15	1L	FSBM/4058/17	2.5L	106007	34885	20864
W/0106	Water, HPLC for gradient analysis	FSBW/0106/15	1L	FSBW/0106/17	2.5L	115333	34877 270733	23650

HPLC grade: Solvents qualified for routine Liquid chromatography

A/0626	Acetonitrile, for HPLC	FSBA/0626/15	1L	FSBA/0626/17	2.5L	114291	34881	20048
C/4966	Chloroform, for HPLC, stabilized with amylene	FSBC/4966/15	1L	FSBC/4966/17	2.5L	102444	34854	83626
E/0906	Ethyl acetate, for HPLC	FSBE/0906/15	1L	FSBE/0906/17	2.5L	100868	34858	83621
H/0106	Heptane, for HPLC, approx. 99% n-Heptane	FSBH/0106/15	1L	FSBH/0106/17	2.5L	104390	34873	24539
H/0405	Isohexane, for HPLC, contains <5% n-Hexane	FSBH/0405/PB15		FSBH/0405/PB17		104335		83622
P/7507	Isopropanol, for HPLC	FSBP/7507/15	1L	FSBP/7507/17	2.5L	101040	34863	20880
H/0406	Hexanes, for HPLC, 95% n-Hexane approx.	FSBH/0406/15	1L	FSBH/0406/17	2.5L		439207	
M/4056	Methanol, for HPLC	FSBM/4056/15	1L	FSBM/4056/17	2.5L	104391	34859	24575
T/0706	Tetrahydrofuran, for HPLC, unstabilized	FSBT/0706/PB15	1L	FSBT/0706/PB17		106018	34860	20837

Solvents qualified for Gas chromatography

A/0603	Acetone, for residue analysis, Distol	FSBA/0603/15	1L	FSBA/0603/17	2.5L	100012	34480	83656
D/1853	Dichloromethane, for residue analysis, Distol, stabilized with amylene	FSBD/1853/15	1L	FSBD/1853/17	2.5L	106054	34488	83665
H/0403	Hexanes, for residue analysis, Distol, 95% n-Hexane approx.	FSBH/0403/15	1L	FSBH/0403/17	2.5L	104371	34484	83661
M/4053	Methanol, for residue analysis, Distol	FSBM/4053/15	1L	FSBM/4053/17	2.5L	106011	34485	83967
D160	DMAC, N,N-Dimethylacetamide, GC Headspace New!	FSBD160-1	1L			100399	44901	
D133	DMF, N,N-Dimethylformamide, GC Headspace New!	FSBD133-1	1L			100202	51781	
D139	DMSO, Dimethyl Sulfoxide, GC Headspace New!	FSBD139-1	1L			101900	51779	
N140	NMP, N-Methyl-2-Pyrrolidone, GC Headspace New!	FSBN140-1	1L				69337	
W10	Water, GC Headspace New!	FSBW10-1	1L			100577	53463	

MPC*	Product Name	Product Code/ Size		Merck	Honeywell	VWR
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* MPC= Manufacturer Product Code

Solvents for Analysis, Certified AR

A/0600	Acetone, Certified AR for analysis, meets Ph.Eur.	FSBA/0600/15 1L	FSBA/0600/17 2.5L	100014	24201 32201	20066
C/4960	Chloroform, 99.8+%, Certified AR for analysis, stabilized with amylene	FSBC/4960/15 1L	FSBC/4960/17 2.5L	102445	32211	22709
C/8921	Cyclohexane, Certified AR for analysis	FSBC/8921/15 1L	FSBC/8921/17 2.5L	109666	33117	23224
D/1852	Dichloromethane, Certified AR for analysis, stabilized with amylene	FSBD/1852/15 1L	FSBD/1852/17 2.5L	106050	24233	25630
D/2450	Diethyl ether, Certified AR for analysis, stabilized with BHT, meets Ph.Eur.	FSBD/2450/15 1L	FSBD/2450/17 2.5L		32222	
D/3841	Dimethylformamide, Certified AR for analysis	FSBD/3841/15 1L	FSBD/3841/17 2.5L	100921	32203	23811
D/4550	1,4-Dioxane, Certified AR for analysis, stabilized with BHT	FSBD/4550/PB15	FSBD/4550/PB17	103053	33120	23466
E/0650	Ethanol absolute 99.8+%, Certified AR for analysis, meets Ph.Eur., BP, USP	FSBE/0650DF/17		109671	33147	23540
E/0900	Ethyl acetate, Certified AR for analysis	FSBE/0900/15 1L	FSBE/0900/PC17	100983	32221	20821
H/0160	n-Heptane, Certified AR for analysis	FSBH/0160/15 1L	FSBH/0160/17 2.5L	109623	33211	23882
H/0421	n-Hexane, Certified AR for analysis	FSBH/0421/17 2.5L		104379	32287	24551
H/0355	Hexanes, Certified AR for analysis, 95% n-Hexane approx	FSBH/0355/15 1L	FSBH/0355/17 2.5L	104367	32293	24577
P/7500	Isopropanol, Certified AR for analysis	FSBP/7500/15 1L	FSBP/7500/17 2.5L	104374		83992
M/4000	Methanol, Certified AR for analysis	FSBM/4000/15 1L	FSBM/4000/17 2.5L	109634	24137	20842
P/1021	n-Pentane, Certified AR for analysis	FSBP/1021/15 1L	FSBP/1021/17 2.5L	106009	24229	20847
P/1760	Petroleum ether 40-60°C, Certified AR for analysis, n-hexane < 2%	FSBP/1760/15 1L	FSBP/1760/17 2.5L	107177	76871	26185
T/0701	Tetrahydrofuran, Certified AR for analysis, stabilized with 0.025% BHT	FSBT/0701/15 1L	FSBT/0701/17 2.5L	101775	32299	23835
T/2300	Toluene, Certified AR for analysis	FSBT/2300/15 1L	FSBT/2300/PB17	108325	32249 89681	28676

Solvents, SLR, Extra-pure grade

A/0560	Acetone, extra pure, SLR	FSBA/0560/15 1L	FSBA/0560/17 2.5L	822251	179973	20065
C/4920	Chloroform, 99+%, extra pure, stabilized with amylene, SLR	FSBC/4920/15 1L	FSBC/4920/17 2.5L	822265	472476	22707
C/8920	Cyclohexane, extra pure, SLR		FSBC/8920/17 2.5L	102832	C100307	23223
D/1850	Dichloromethane, 99+%, extra pure, stabilized with amylene, SLR	FSBD/1850/15 1L	FSBD/1850/17 2.5L	822271		23367
D/2400	Diethyl ether, extra pure, SLR, stabilized with BHT		FSBD/2400/17 2.5L	100923	14775	23819
D/3840	Dimethylformamide, extra pure, SLR	FSBD/3840/15 1L	FSBD/3840/17 2.5L	103034	D5879	23470
D/4500	1,4-Dioxane, extra pure, SLR, stabilized with BHT		FSBD/4500/PB17	103115	D201863	23532
E/0600	Ethanol 99%+, absolute, extra pure, SLR		FSBE/0600DF/17	107017	24103	20816
E/0850	Ethyl acetate, extra pure, SLR	FSBE/0850/15 1L	FSBE/0850/17 2.5L	822277	16371	23880
H/0155	n-Heptane, extra pure, SLR		FSBH/0155/17 2.5L	104365	H2198	24549
H/0420	n-Hexane, extra pure, SLR		FSBH/0420/PB17	104368	15671	24580
M/3950	Methanol, extra pure, SLR	FSBM/3950/15 1L	FSBM/3950/17 2.5L	107018	179337 320390	20846
P/1440	Petroleum ether 40-60°C, extra pure, SLR		FSBP/1400/17 2.5L			23826
T/2200	Toluene, 99+%, extra pure, SLR		FSBT/2200/17 2.5L	107019	179965	28675

Acids & Reagents for Trace Elemental Analysis

A466	Hydrochloric acid 32-35%, Optima™, for ultra trace elemental analysis	FSBA466-1 1L	FBSA466-500 500mL	101514	96208	83878
A508	Hydrochloric acid 34-37%, Trace Metal™, for trace metal analysis	FSBA508-P1 1L	FBSA508-P212 2.5mL	100318	84415	83871
A467	Nitric acid 67-69%, Optima, for ultra trace elemental analysis	FSBA467-1 1L	FBSAA467-500 500mL	101518	2650	83879
A509	Nitric acid 67-69%, Trace Metal, for trace metal analysis	FSBA509-P1 1L	FBSA5097-P212 2.5mL	100441	84385	83872
A468	Sulfuric acid 93-98%, Optima, for ultra trace elemental analysis	FSBA468-1 1L	FBSA468-500 500mL	101516	77239	
A510	Sulfuric acid 93-98%, Trace Metal, for trace metal analysis	FSBA510-P1 1L	FBSA510-P212 2.5mL	100714	84716	83875
W9	Water, Optima, for ultra trace elemental analysis	FSBW9-1 1L	FSBW9-2 2L	101262	14211	83877

Acids & Bases for Analysis, Certified AR

A/0400	Acetic acid glacial, Certified AR for analysis, meets Ph.Eur., BP, USP	FSBA/0400/PB15	FSBA/0400/PB17	100063	27225	20104
A/3280	Ammonia solution, 35%, Certified AR for analysis, d=0.88	FSBA/3280/PB15	FSBA/3280/PB17	105423	5002	21190
F/1900	Formic acid, 98-100%, Certified AR for analysis	FSBF/1900/PB15	FSBF/1900/PB17	100264	33015	20318
H/1200	Hydrochloric acid, 37%, Certified AR for analysis, d=1.18	FSBH/1200/PB15	FSBH/1200/PB17	100317	30721	20252
N/2300	Nitric acid 68 % d= 1.42, Certified AR, for analysis		FSBN/2300/PB17	100452	84380	20425
P/5640	Potassium hydroxide, Certified AR for analysis, pellets, meets Ph.Eur., BP	FSBP/5640/60 1Kg		105029	30603	26668
S/4920	Sodium hydroxide, Certified AR for analysis, pellets, meets Ph.Eur., BP	FSBS/4920/60 1Kg		106469	S5881	28244
S/9240	Sulfuric acid min 95% d=1.83, Certified AR, for analysis	FSBS/9240/PB15	FSBS/9240/PB17	100731	30743	20700

Salts for analysis & SLR, Extra-pure grade

A/3440	Ammonium acetate, Certified AR for analysis	FSBA/3440/60 1Kg		101116	32301	21200
A/3400	Ammonium acetate, extra pure, SLR, crystals	FSBA/3400/60 1Kg		101115	A7262	21198
A/3920	Ammonium chloride, Certified AR, for analysis, meets analytical specification of Ph.Eur., BP	FSBA/3920/60 1Kg		101145	31107	21236
A/3880	Ammonium chloride, 99+%, extra pure, SLR	FSBA/3880/60 1Kg			A4514 11209	21235

MPC*	Product Name	Product Code/ Size	Merck	Honeywell	VWR
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* MPC= Manufacturer Product Code

C/1500	Calcium chloride dihydrate, Certified AR for analysis, meets Ph.Eur.	FSBC/1500/60 1Kg		102382	31307	22317
P/4120	Potassium carbonate anhydrous, Certified AR, for analysis, meets Ph.Eur.	FSBP/4120/60 1Kg		104928	60109	26726
P/4280	Potassium chloride, Certified AR for analysis	FSBP/4280/60 1Kg		104936	31248	26764
P/4240	Potassium chloride, extra pure, SLR, Eur. Ph.	FSBP/4240/60 1Kg			60130	26760
P/4800	Potassium dihydrogen orthophosphate, Certified AR for analysis	FSBP/4800/60 1Kg		104873	PO662	26936
P/5880	Potassium iodide, Certified AR for analysis	FSBP/5880/60 1Kg		105043	30315	26846
P/6120	Potassium nitrate, Certified AR for analysis, meets analytical specification of Ph.Eur., BP	FSBP/6120/60 1Kg		105063	31263	26869
S/2040	Sodium acetate trihydrate, Certified AR for analysis, crystal	FSBS/2040/60 1Kg		106267	32318	27652
S/3160	Sodium chloride, Certified AR for analysis, meets analytical specification of Ph.Eur.	FSBS/3160/60 1Kg		106404	31434	27810
S/3120	Sodium chloride, extra pure, SLR	FSBS/3120/60 1Kg			S9888	27800
S/4240	Sodium hydrogen carbonate, Certified AR for analysis, meets Ph.Eur.	FSBS/4240/60 1Kg		106329	31437	27778
S/6650	Sodium sulfate anhydrous, Certified AR for analysis, fine powder	FSBS/6650/60 1Kg		106649	31481	28114
S/6640	Sodium sulfate anhydrous, Certified AR for analysis, granular	FSBS/6640/60 1Kg		106637	71962	
S/6600	Sodium sulfate anhydrous, 99+%, extra pure	FSBS/6600/60 1Kg		106639	S9627	28111

Buffer NIST Standard Solutions & Concentrated

J/2820	Buffer solution pH 4.00 (phthalate), NIST Standard solution ready to use for pH measurement	FSBJ/2820/15 1L		109435	B5020	32095
J/2820C	Buffer concentrated solution pH 4 (phthalate)	FSBJ/2820/05 1AMP		109884	38743	32084
J/2850	Buffer solution pH 7.00 (phosphate), NIST Standard solution ready to use for pH measurement	FSBJ/2850/15 1L	FSBJ/2850/08	109439	B4770	32096
J/2850C	Buffer concentrated solution pH 7.00 (phosphate), NIST Standard for pH measurement	FSBJ/2850C/05 1AMP		109887	38746	
J/2855	Buffer colour coded solution pH 7.00 (phosphate) Yellow, NIST Standard solution ready to use	FSBJ/2855/15 1L	FSBJ/2855/08	109477	33666	32045
J/2880	Buffer solution pH 10.00 (borate), NIST Standard solution ready to use for pH measurement	FSBJ/2880/15 1L	FSBJ/2880/08	109438	B4895	32040
J/2880C	Buffer concentrated solution pH 10 (borate),	FSBJ/2880C/90 6AMP		109890	38749	
J/2885	Buffer colour coded solution pH 10.00 (borate) Blue, NIST Standard solution ready to use	FSBJ/2885/15 1L	FSBJ/2885/08	109400	33668	

Karl Fischer reagents for titration by Volumetry

K/2000	Karl Fischer Aqualine™ Complete 5	FSBK/2000/15 1L	FSBK/2000/17 2.5L	188005	34805	
K/2250R	Karl Fischer Aqualine complete 5K	FSBK/2250R/15 1L	FSBK/2250R/08 500mL	188006	34816	
K/2300R	Karl Fischer Aqualine Matrix-K	FSBK/2300R/15 1L	FSBK/2300R/08 500mL	188008	34817	
K/2100	Karl Fischer Aqualine Solvent	FSBK/2100/15 1L	FSBK/2100/17 2.5L	188015	34800	
K/2110	Karl Fischer Aqualine solvent CM	FSBK/2110/15 1L	FSBK/2110/17 2.5L	188016	34812	
K/2200	Karl Fischer Aqualine Titrant 5	FSBK/2200/15 1L	FSBK/2200/17 2.5L	188010	34801	

Standard Volumetric solutions

J/3700	Ethylenediaminetetraacetic acid disodium salt solution 0.1M (0.2N), ready to use solution	FSBJ/3700/15 1L	FSBJ/3700/17 2.5L	108431	34550	28662
J/3720C	Ethylenediaminetetraacetic acid trisodium salt solution 0.1M (0.2N), Standard Concentrate	FSBJ/3720C/05 1AMP	FSBJ/3720C/90 6AMP	109992		
J/4320	Hydrochloric acid solution 1M (1N), NIST Standard solution ready to use, Eur.Ph., USP, BP	FSBJ/4320/15 1L	FSBJ/4320/17 2.5L	109057	318949	30024
J/4320C	Hydrochloric acid solution 1M (1N), NIST Standard Concentrate, for Volumetric analysis	FSBJ/4320C/05 1AMP	FSBJ/4320C/90 6AMP	109970	38283	32050
J/6630	Potassium hydroxide solution 1M (1N), NIST Standard solution ready to use, For Volumetric	FSBJ/6630/PB15	FSBJ/6630/17 2.5L	109918	35112	31300
J/6630C	Potassium hydroxide solution 1M (1N), NIST Standard Concentrate, for Volumetric analysis	FSBJ/6630C/05 1AMP		109107	38073	
J/7330	Silver nitrate solution 0.1M (0.1N), NIST Standard sol. ready to use, meets Ph.Eur., BP, USP	FSBJ/7330/15 1L	FSBJ/7330/17 2.5L	109081	35375	30471
J/7330C	Silver nitrate solution 0.1M (0.1N), NIST Standard Concentrate, for Volumetric analysis	FSBJ/7330C/05 1AMP	FSBJ/7330C/90 6AMP	109990	38310	
J/7620	Sodium hydroxide solution 1M (1N), NIST Standard solution ready to use, meets Ph.Eur., BP	FSBJ/7620/15 1L	FSBJ/7620/17 2.5L	109137	319511	31627
J/7620C	Sodium hydroxide solution 1M (1N), NIST Standard Concentrate, for Volumetric analysis	FSBJ/7620C/05 1AMP	FSBJ/7620C/90 6AMP	109956	38215	32066
J/7950	Sodium thiosulfate solution 0.1M (0.1N), NIST Standard solution ready to use	FSBJ/7950/15 1L	FSBJ/7950/17 2.5L	109147	35245	31553
J/7950C	Sodium thiosulfate solution 0.1M (0.1N), NIST Standard Concentrate, for Volumetric analysis	FSBJ/7950C/05 1AMP	FSBJ/7950C/90 6AMP	109950	38200	32065
J/8430	Sulfuric acid solution 0.5M (1N), NIST Standard solution ready to use	FSBJ/8430/15 1L	FSBJ/8430/17 2.5L	109072	72238	30144
J/8430C	Sulfuric acid solution 0.5M (1N), NIST Standard Concentrate, for Volumetric analysis	FSBJ/8430C/05	FSBJ/8430C/90	109981	38294	32053

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Material Grade	Definition
DNA Grade	Designates reagents suitable for use in Molecular Biology applications involving the manipulation of DNA. Tested for specific contaminants such as DNase and protease.
DNA Synthesis	Designates reagents suitable for use with automated DNA synthesis instrumentation.
Electrophoresis	Material used specifically for electrophoresis applications.
Genetic Analysis Grade	Material that is specially prepared for various molecular cloning applications. Tested for specific contaminants such as DNase and RNase.
IEF Grade	Material suitable for use with isoelectric focusing of proteins.
Islet Isolation Grade	Material suitable for isolation of pancreatic islets.
Molecular Biology Grade	Designates reagents suitable for use in Molecular Biology applications. Tested for specific contaminants such as nucleases and bacteria where appropriate.
Molecular Genetics	Reagent chemicals that have been specifically purified and assayed for Molecular Genetics applications.
PCR Grade	Material suitable for use in Polymerase Chain Reaction (PCR).
Peptide Synthesis	Designates reagents suitable for use with protein synthesis instrumentation.
Protein Electrophoresis Grade	Material used specifically for protein electrophoresis applications.
Sequencing	Material designed for use with automated DNA or protein sequencing equipment.
Super Pure	Material with a purity level exceeding the various monograph grades.
Tissue Culture Grade	Materials of superior quality where there are no published standards and that are suitable for use in Tissue Culture applications.
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The Fisher Bioreagents™ product range includes approximately 1000 products. A selection of our most essential products from this range can be found in the list below.

MPC*	Product Name	Product Code/ Size	ST**	Sigma/ Merck	Bio-Rad
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* MPC= Manufacturer Product Code / ** Storage Conditions

Core Bioreagents

BP1145	Chloroform, molecular biology grade, approx. 0.75% ethanol	FSBBP1145-1	1L		RT	496189	
BP231	Dimethyl sulfoxide	FSBBP231-1	1L	FSBBP231-100	100mL	RT	34869
BP2818	Ethanol, Molecular Biology Grade	FSBBP2818-500	500mL	FSBBP2818-100	100mL	RT	E7023
BP120	EDTA Disodium salt dihydrate	FSBBP120-500	500mL	FSBBP120-1	1L	RT	E5134
BP227	Formamide, molecular biology	FSBBP227-500	500mL	FSBBP227-100	100mL	4°C	47671
BP228	Formamide, super pure			FSBBP228-100	100mL	4°C	F9037
BP229	Glycerol, molecular biology	FSBBP229-1	1L	FSBBP229-4	4L	RT	G7893
BP2618	Isopropanol, Molecular Biology Grade	FSBBP2618-1	1L	FSBBP2618-212	2.5L	RT	I9516

MPC*	Product Name	Product Code/ Size		ST**	Sigma/ Merck	Bio-Rad
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* MPC= Manufacturer Product Code / ** Storage Conditions

BP1105	Methanol, peroxide-free, sequencing	FSBBP1105-1	1L	FSBBP1105-4	4L	RT	494437	
BP8201	70% Molecular Biology Ethanol solution	FSBBP8201-1	1L	FSBBP8201-4	4L	RT		
BP8202	96% Molecular Biology Ethanol solution	FSBBP8202-1	1L	FSBBP8202-4	4L	RT	E7148	
BP2944	PBS Tablets	FSBBP2944-100				RT	P4417	
BP665	Phosphate buffered saline, 10X powder concentrate, white granular powder	FSBBP665-1	2each			RT	P3813	31098
BP399	Phosphate buffered saline, 10X solution	FSBBP399-1	1L	FSBBP399-4	4L	RT	79378	161-0780
BP358	Sodium chloride (dry basis), >99.5%	FSBBP358	1Kg			RT	31434	
BP166	Sodium dodecyl sulfate, white powder, electrophoresis	FSBBP166-100		FSBBP166-500		RT	L4509	161-0302
BP152	Tris base, white crystals or crystalline powder, molecular biology	FSBBP152-1	1Kg	FSBBP152-500		RT	93362	161-0716
BP2471	Tris buffered saline, 10X Solution, pH 7.4, molecular biology	FSBBP2471-1	1L	FSBBP2471-500		RT	T5912	170-6435
BP337	Tween 20	FSBBP337-100		FSBBP337-500		RT	P2287	170-6531
BP2485	Water, Biotech grade, sterile	FSBBP2485-4	4L			RT	W3513	
BP2470	Water, DNA grade	FSBBP2470-1	1L			RT	W4502	163-2091
BP561	Water, for RNA work, DEPC-treated and nuclease-free, molecular biology	FSBBP561-1	1L			RT	95289	700-7253
BP2484	Water, nuclease free	FSBBP2484-100		FSBBP2484-50		RT	95284	700-7253

Protein and Nucleic Acid for Electrophoresis

BP1356	Agarose, broad separation range for DNA/RNA, genetic analysis grade	FSBBP1356-100		FSBBP1356-500		RT	A9539	161-3101
BP160	Agarose, low-EEO/multi-purpose, molecular biology grade	FSBBP160-100		FSBBP160-500		RT	A6013	161-3102
BP172	Dithiothreitol, white crystals or powder, for electrophoresis	FSBBP172-5	5g	FSBBP172-25	25g	4°C	D9163	161-0611
BP1302	Ethidium bromide, 1% solution, molecular biology	FSBBP1302-10				RT	E1510	161-0433
BP310	HEPES (Fine White Crystals) for Molecular Biology	FSBBP310-1	1Kg	FSBBP310-500		RT	54457	
BP300	MES, fine white crystals	FSBBP300-100				RT	M3671	
BP1105	Methanol, peroxide-free, sequencing	FSBBP1105-1	1L	FSBBP1105-4	4L	RT	494437	
BP308	MOPS (Fine White Crystals) for Molecular Biology	FSBBP308-100	1	FSBBP308-500		RT	69950	
BP1750I	Phenol, saturated, liquid, pH 6.6/7.9	FSBBP1750I-100		FSBBP1750I-400		4°C	P4557	
BP1700	Proteinase K, from Tritirachium album, DNase and RNase free	FSBBP1700-100		FSBBP1700-500		-20°C	P2308	
BP8200	Sodium Dodecyl Sulfate (SDS), Micropellets New!	FSBBP8200-100		FSBBP8200-500		RT	74255	
BP150	TEMED, Electrophoresis	FSBBP150-100		FSBBP150-20		RT	T9281	
BP1332	Tris-acetate-EDTA (TAE) solution 50X, DNase RNase and protease free	FSBBP1332-1		FSBBP1332-500		RT	T4948	161-0743
BP1333	Tris-Borate-EDTA, 10X solution, electrophoresis	FSBBP1333-1		FSBBP1333-4		RT	93290	161-0733
BP151	Triton X-100 for Electrophoresis	FSBBP151-100		FSBBP151-500		RT	T8532	161-0407
BP169	Urea, molecular biology grade, Colorless-to-White Crystals or Crystalline powder	FSBBP169-500		FSBBP169-212		RT	51461	161-0731

Cell and Tissue Culture

BP1760	Ampicillin Sodium Salt, crystalline powder	FSBBP1760-5		FSBBP1760-25		4°C	A0166	166-0407EDU
BP220	D-Sucrose, molecular biology	FSBBP220-1	1Kg	FSBBP220-212		RT	S0389	
BP381	Glycine, white crystals or crystalline powder	FSBBP381-1	1Kg	FSBBP381-500		RT	G8898	161-0718
BP1755	Isopropyl-8-D-thiogalactopyranoside, dioxane-free	FSBBP1755-1	1Kg	FSBBP1755-100		4°C	I6758	
BP906	Kanamycin Sulfate, white powder	FSBBP906-5	5g			RT	K1377	
BP399	Phosphate Buffered Saline, 10X solution	FSBBP399-1		FSBBP399-20		RT	79378	161-0780
BP2956	Puromycin Dihydrochloride	FSBBP2956-100				RT	P7255	
BP2963	Rapamycin	FSBBP2963-1				RT	R0395	
BP2958	Vancomycin	FSBBP2958-1				RT	V1130	
BP2820	Water, Microbial Cell Culture Grade	FSBBP2820-1L		FSBBP2820-100		RT	W3500	
BP1422	Yeast Extract	FSBBP1422-2		FSBBP1422-100		RT	Y1625	
BP9727	Yeast Extract (Granulated)	FSBBP9727-2		FSBBP9727-500		RT	Y1626	

Together the Acros Organics and Alfa Aesar brands provide an additional range of life science research tools. The product lines focus on high quality reagents and biochemicals to support academic and biotech research. Manufacturing and supplying novel reagents for many life science research areas including, but not limited, to genomic & proteomic analysis, cell culture, molecular biology and imaging.

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Pure	Basic specification, suitable for chemical synthesis and general laboratory work.
Extra pure	Extended specifications for exacting chemical synthesis.
For analysis ACS	The specification complies with the recommendations of the American Chemical Society.
Extra dry	Extra dry solvents with water content of 50 ppm or lower at the time of manufacture, filtered over 0.2µm PTFE filter and filled under inert gas.
Extra dry over molecular sieves	Extra dry solvents with water content of 50 ppm or lower at the time of manufacture, filled under inert gas and stored over molecular sieve for enduring shelf life.
For spectroscopy	The solvents show a very low absorption in the UV or IR spectrum and a high purity.
For NMR	Deuterium labeled compounds and solvents for NMR spectroscopy.

The Acros Organics product range includes over 33,000 products. A selection of our most essential products from this range can be found in the list below.

MPC*	CAS Number	Product Name	Product Code/ Size				Sigma/Merck
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* MPC= Manufacturer Product Code

Boronic acids

33057	73183-34-3	Bis(pinacolato)diboron, 98%	ACR330570050	5g	ACR330570250	25g	473294
37838	N/A	4-Methoxy-3-pyridineboronic acid hydrate, 97%	ACR378380010	1g	ACR378382500	250mg	
13036	98-80-6	Phenylboronic acid, 98+%, may contain varying amounts of anhydride	ACR130360100	10g	ACR130360500	50g	78181, P20009
36773	191162-39-7	Quinoline-3-boronic acid, 97%	ACR367730050	5g			709522
36638	214360-73-3	4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)aniline, 97%	ACR366380010	1g	ACR366380050	5g	518751
36751	181219-01-2	4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine, 97%	ACR367510010	5g	ACR367510050	1g	578770

Catalysts

14827	1122-58-3	4-Dimethylaminopyridine, 99%	ACR148270250		ACR148271000		
19470	546-68-9	Titanium(IV) isopropoxide, 98+%	ACR194702500		ACR194700010		

MPC*	CAS Number	Product Name	Product Code		Sigma/ Merck
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* MPC= Manufacturer Product Code

Catalysts - metal

34868	95464-05-4	1,1'-Bis(diphenylphosphino)ferrocene-palladium(II)dichloride dichloromethane adduct	ACR348680050 5g	ACR348680010 1g	379670
29925	13965-03-2	Bis(triphenylphosphine)palladium(II) chloride, 98%	ACR299250050 5g	ACR299250025 2.5g	208671, 15253
40501	26023-84-7	Hydrogen hexachloroplatinate(IV) hydrate, ACS reagent	ACR405010010 1g	ACR405010050 5g	520896, 206083, P7082
19537	26023-84-7	Hydrogen hexachloroplatinate(IV) hydrate, ca. 40% Pt	ACR195370010 1g	ACR195370050 5g	81080
19518	3375-31-3	Palladium(II) acetate, 47.5% Pd	ACR195180020 2g	ACR195180010 1g	205869, 76044, 520764
36935	15170-57-7	Platinum(II) acetylacetonate, 98%	ACR369350050 5g	ACR369350010 1g	282782, 55944
19532	1314-15-4	Platinum(IV) oxide, 83% Pt	ACR195320010 1g	ACR195320050 5g	206032, 81090
19535	16921-30-5	Potassium hexachloroplatinate(V), ca. 40% Pt	ACR195350010 1g	ACR195350050 5g	206067, 60260, 520861
26863	15956-28-2	Rhodium(II) acetate dimer, anhydrous, ca 46% Rh	ACR268632500 250mg	ACR268630010 1g	209058, 83725
19548	14898-67-0	Ruthenium(III) chloride hydrate, 35 - 40% Ru	ACR195480050 5g	ACR195480010 1g	463779, 84050, 206229
20238	14221-01-3	Tetrakis(triphenylphosphine)palladium(0), 99%	ACR202380050 5g	ACR202380010 1g	697265, 87645
31877	51364-51-3	Tris(dibenzylideneacetone)dipalladium(0), 97%	ACR318770050 5g	ACR318775000	

Catalysts - phase transfer

22716	57-09-0	Hexadecyltrimethylammonium bromide, 99+%	ACR227165000	ACR227161000	H5882
16838	32503-27-8	Tetrabutylammonium hydrogen sulfate, 98%	ACR168380250 25g	ACR168381000 100g	86868, 155837
21291	2052-49-5	Tetrabutylammonium hydroxide, 1M solution in methanol	ACR212911000 100mL	ACR212918000 800mL	86882, 230189
17661	2052-49-5	Tetrabutylammonium hydroxide, 40 wt.% (1.5M) solution in water	ACR176612500 250g	ACR176610500 50g	86880, 178780
21816	4368-51-8	Tetraheptylammonium bromide, 99%	ACR218160250 25g	ACR218161000 100g	87301, T6533

Catalysts - solid supported

19962	12135-22-7	Palladium hydroxide on carbon, powder, unreduced, 20% Pd, moisture ca 60%	ACR199620100	ACR199620500	330094
42298	5/3/7440	Palladium on activated carbon, 10% Pd, (50% wet with water for safety), unreduced	ACR422980250 25g	ACR422980100 10g	205699
19503	5/3/7440	Palladium on activated carbon, 10% Pd, unreduced	ACR195030100 10g	ACR195030500 50g	205699, 75990
19502	5/3/7440	Palladium on activated carbon, unreduced, 5% Pd	ACR195020100 10g	ACR195021000 100g	276707, 75992
19507	5/3/7440	Palladium on calcium carbonate, poisoned with 3.5% lead, 5% Pd	ACR195070100	ACR195070500	205737
19524	6/4/7440	Platinum on activated carbon, 10% Pt, ca .50% moisture	ACR195240100 10g	ACR195240010 1g	205958, 80983
19523	6/4/7440	Platinum on activated carbon, 5% Pt	ACR195230100 10g	ACR195230500 50g	205931, 80981
19957	7440-16-6	Rhodium on alumina, 5% Rh, powder	ACR199570050	ACR199570250	

Cesium compounds

19204	534-17-8	Cesium carbonate, 99.5%, for analysis	ACR192041000 100g	ACR192040250 25g	562572, 20960, 441902
18950	7647-17-8	Cesium chloride, 99+%, for analysis	ACR189500500 50g	ACR189502500 250g	562599, 20968, C6914
18951	13400-13-0	Cesium fluoride, 99%, for analysis	ACR189510250 25g	ACR189511000 100g	198323, 20990

Chromatography

36668	1344-28-1	Aluminium oxide, neutral, Brockmann I, for chromatography, 50-200µm, 60A	ACR366680010 1Kg	ACR366680025 2.5Kg	06300, 199974, A1522
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MPC*	CAS Number	Product Name	Product Code/ Size		Sigma/ Merck
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* MPC= Manufacturer Product Code

20545	1343-88-0	Florisil™, 60-100 mesh, for column chromatography	ACR205455000 500g	ACR205450010 1Kg	15025, 24278, 46385, 220744
41929	7631-86-9	Silica gel, for chromatography, 0.030-0.200 mm, 60 A	ACR419290010 1Kg	ACR419292500 250g	60741, 288616
24036	7631-86-9	Silica gel, for chromatography, 0.035-0.070 mm, 60 A	ACR240360010 1Kg	ACR240360050 5Kg	645524, 12479, 227196
24037	7631-86-9	Silica gel, for chromatography, 0.060-0.200 mm, 60 A	ACR240370010	ACR240370050	288624
36005	7631-86-9	Silica gel, for column chrom., ultra-pure, 40-60µm, 60A	ACR360050010 1Kg	ACR360050050 5Kg	645524, 60752, 227196
36006	7631-86-9	Silica gel, for column chrom., ultra-pure, 60-200µm, 60A	ACR360060010 1Kg	ACR360062500 250g	60738, 288624

Deuterated solvents

16625	865-49-6	Chloroform-d, for NMR, 99.8 atom % D	ACR166251000	ACR166250500	151823
32068	865-49-6	Chloroform-d, for NMR, 100 atom % D, packaged in 0.75 ml ampoules	ACR320680075		444731
42677	865-49-6	Chloroform-d, for NMR, 99.8 atom % D, AcroSeal™	ACR426771000		151823
35142	865-49-6	Chloroform-d, for NMR, 99.8 atom % D, stabilized with silver foil	ACR351421000	ACR351420250	530735
20956	865-49-6	Chloroform-d, for NMR, 99.8+ atom % D, contains 0.03 v/v% TMS	ACR209561000	ACR209560250	225789
16630	7789-20-0	Deuterium oxide, for NMR, 99.8 atom % D	ACR166300010	ACR166300100	
32075	811-98-3	Methanol-d4, for NMR, packaged in 0.75 ml ampoules, 99.8 atom % D	ACR320750075		441384
35147	811-98-3	Methanol-d4, for NMR, with 0.03% TMS, in 0.75 ml ampoules, 99.8 atom % D	ACR351470075		530530
16629	2206-27-1	Methyl sulfoxide-d6, for NMR, 99.9 atom % D	ACR166290100	ACR166290500	151874
32077	2206-27-1	Methyl sulfoxide-d6, for NMR, packaged in 0.75 ml ampoules, 99.9 atom % D	ACR320770075		545880
35145	2206-27-1	Methyl sulfoxide-d6, for NMR, with 0.03% TMS, 99.9 atom % D	ACR351450100	ACR351450250	296147
35254	2206-27-1	Methyl sulfoxide-d6, for NMR, with 0.03% TMS, in 0.75 ml ampoules, 99.9 atom % D	ACR352540075		545880

Dry solvents

32681	75-05-8	Acetonitrile, 99.9+%, Extra Dry, AcroSeal	ACR326810010	ACR326810025	151823
32696	67-63-0	Isopropanol, 99.8%, Extra Dry, AcroSeal	ACR326860010	ACR326860025	444731
32695	67-56-1	Methanol, 99.9%, Extra Dry, AcroSeal	ACR326950010	ACR326950025	151823
32697	109-99-9	Tetrahydrofuran, 99.85%, Extra Dry, stabilised, AcroSeal	ACR326970010	ACR326970025	530735
32687	68-12-2	N,N-Dimethylformamide, 99.8%, Extra Dry, AcroSeal	ACR326870010	ACR326870025	225789

Dry solvents - Extra Dry over Molecular Sieves

34846	75-09-2	Dichloromethane, 99.8%, Extra Dry over Molecular Sieve, Stabilised, AcroSeal	ACR348460010	ACR348465000	441384
36433	60-29-7	Diethyl ether, 99.5%, Extra Dry over Molecular Sieve, Stabilised, AcroSeal	ACR364330010	ACR364330025	530530
36434	123-91-1	1,4-Dioxane, 99.5%, Extra Dry over Molecular Sieve, Stabilised, AcroSeal	ACR364340010	ACR364340025	151874
36439	67-56-1	Methanol, 99.8%, Extra Dry over Molecular Sieve, AcroSeal	ACR364390010	ACR364390025	545880
34843	68-12-2	N,N-Dimethylformamide, 99.8%, Extra Dry over Molecular Sieve, AcroSeal	ACR348430010	ACR348430025	296147
34845	109-99-9	Tetrahydrofuran, 99.5%, Extra Dry over Molecular Sieve, Stabilised, AcroSeal	ACR348450010	ACR348450025	545880

Drying Agents

34961	10043-52-4	Calcium chloride, 96%, extra pure, powder, anhydrous	ACR349615000 500g	ACR349610250 25g	22313, 06991, 12095, 21074, C4901
41348	7487-88-9	Magnesium sulfate, 97%, pure, anhydrous	ACR413485000 500g	ACR413480025 2.5Kg	203726, 63135, 208094, M7506
19727	70955-01-0	Molecular sieves 4A, 8 to 12 mesh	ACR197275000 500g	ACR197270050 5Kg	208604, 334308
39203	1327-36-2	Silica gel orange, for drying purposes, non toxic grade, 2-5 mm	ACR392030010	ACR392030050	94098
35740	7631-86-9	Silica gel, for drying purposes, non-toxic grade, 3-6 mm	ACR357400010 1Kg	ACR357400050 5Kg	85330, 13767
17456	109-63-7	Boron trifluoride etherate, approx. 48% BF3	ACR174560010	ACR174560250	
15181	530-62-1	1,1'-Carbonyldiimidazole, 97%	ACR151810100	ACR151810250	
32756	2446-83-5	Diisopropyl azodicarboxylate, 94%	ACR327561000	ACR327560250	
12064	124-09-4	1,6-Hexanediamine, 99.5+%	ACR120640010	ACR120641000	
16800	25561-30-2	N,O-Bis(trimethylsilyl)trifluoroacetamide, 98+%	ACR168000250	ACR168001000	
41678	30525-89-4	Paraformaldehyde, 96%, extra pure	ACR416785000	ACR416780010	

MPC*	CAS Number	Product Name	Product Code/ Size		Sigma/ Merck
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16888	865-47-4	Potassium tert-butoxide, 98+%, pure	ACR168881000	ACR168885000	
27785	1070-89-9	Sodium bis(trimethylsilyl)amide, pure, 2M solution in THF, AcroSeal	ACR277851000	ACR277858000	
16855	25895-60-7	Sodium cyanoborohydride, 95%	ACR168550100	ACR168550500	
19038	26628-22-8	Sodium azide, 99%, extra pure	ACR190381000	ACR190385000	

Functional reagents - coupling reagents

10587	100-39-0	Benzyl bromide, 98%	ACR105871000	ACR105875000	
11390	538-75-0	N,N'-Dicyclohexylcarbodiimide, 99%	ACR113901000	ACR113900010	
17506	358-23-6	Trifluoromethanesulfonic anhydride, 98+%	ACR175060010	ACR175060500	

Functional reagents - Grignard reagents

38628	745038-86-2	Isopropylmagnesium chloride - Lithium chloride complex, 1.3M solution in THF, AcroSeal	ACR386281000 100mL	ACR386288000 800mL	656984
21285	1068-55-9	Isopropylmagnesium chloride, 2.0M solution in THF, AcroSeal	ACR212851000 100mL	ACR212858000 800mL	230111, 59570
18354	75-16-1	Methylmagnesium bromide, 3M solution in diethyl ether, AcroSeal	ACR183541000 100mL	ACR183548000 800mL	189898, 67742
25256	676-58-4	Methylmagnesium chloride, 3M (22 wt.%) solution in THF, AcroSeal	ACR252561000 100mL	ACR252568000 800mL	189901, 67743
20939	1826-67-1	Vinylmagnesium bromide, 0.7M solution in THF, AcroSeal	ACR209391000 100mL	ACR209398000 800mL	225584, 95008
25259	3536-96-7	Vinylmagnesium chloride, 1.9M (16.5 wt.%) solution in THF, AcroSeal	ACR252591000 100mL	ACR252598000 800mL	476552, 95010

Functional reagents - halogenating agents

21611	38078-09-0	Diethylaminosulfur trifluoride, 95%	ACR216110050 5g	ACR216110250 25g	31942, 235253
16983	75-11-6	Diiodomethane, 99+%, stabilized	ACR169830250 25g	ACR169831000 100g	158429, 66880,
12317	10035-10-6	Hydrobromic acid, pure, ca. 48 wt% solution in water	ACR123170025 2.5L	ACR123170010 1L	295418, 268003
12318	37348-16-6	Hydrogen bromide, pure, 33 wt% solution in glacial acetic acid	ACR123180025	ACR123185000	18735
19656	7553-56-2	Iodine, 99.5%, extra pure, resublimed	ACR196561000 100g	ACR196565000 500g	03551, 266426
10745	128-08-5	N-Bromosuccinimide, 99%	ACR107451000	ACR107455000	B81255
29957	516-12-1	N-Iodosuccinimide, 98%	ACR299570100 10g	ACR299571000 100g	58070, 220051
15089	15219-34-8	Oxalyl bromide, 98%	ACR150890250 25g	ACR150891000 100g	113034, 75758
12961	79-37-8	Oxalyl chloride, 98%	ACR129611000 100g	ACR129610250 25g	71241, 320420
20135	7789-23-3	Potassium fluoride, 99%, extra pure, anhydrous	ACR201350250 25g	ACR201350010 1Kg	307599, P1179

Functional reagents - organolithiums

18127	109-72-8	n-Butyllithium, 1.6M solution in hexanes, AcroSeal	ACR181271000 100mL	ACR181278000 800mL	186171, 20160
21335	109-72-8	n-Butyllithium, 2.5M solution in hexanes, AcroSeal	ACR213351000	ACR213358000	230707
18128	594-19-4	tert-Butyllithium, 1.9M solution in pentane, AcroSeal	ACR396541000 100mL	ACR396548000 800mL	456721, 20190, 186198
26883	4111-54-0	Lithium diisopropylamide, 2M sol. in THF/n-heptane/ethylbenzene, AcroSeal	ACR268831000 100mL	ACR268838000 800mL	361798, 62491
18875	917-54-4	Methylithium, 1.6 M sol. in diethyl ether (\pm 5% w/v), AcroSeal	ACR188751000 100mL	ACR188758000 800mL	67740, 197343

Functional reagents - reagents in solution

38533	18107-18-1	(Trimethylsilyl)diazomethane, 2M solution in hexanes	ACR385330250 25mL	ACR385330050 5mL	362832, 92738
13371	7664-41-7	Ammonia, ca. 7N solution in methanol	ACR133710010	ACR133710025	499145
19890	10294-33-4	Boron tribromide, 1M solution in methylene chloride	ACR198901000 100mL	ACR198900100 10mL	211222, 15692

MPC*	CAS Number	Product Name	Product Code		Sigma/ Merck
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* MPC= Manufacturer Product Code

17668	10294-34-5	Boron trichloride, 1M solution in methylene chloride, AcroSeal	ACR176681000 100mL	ACR176688000 800mL	178934, 15708
40276	373-57-9	Boron trifluoride, 12% (1.5M) in methanol	ACR402765000 500g	ACR402760010 1Kg	264121, 15715, B1127
12318	37348-16-6	Hydrogen bromide, pure, 33 wt% solution in glacial acetic acid	ACR123180010	ACR123180025	18735
36847	7647-01-0	Hydrogen chloride, pure, 2N solution in diethyl ether, AcroSeal	ACR368471000	ACR368478000	455180
13370	7647-01-0	Hydrogen chloride, pure, 5 to 6N solution in 2-propanol	ACR133700010	ACR133700025	
13148	106-96-7	Propargyl bromide, 80 wt.% solution in toluene, stabilized	ACR131480010 1L	ACR131480500 50mL	P51001, 81831

Oxidation reagents

25579	937-14-4	3-Chloroperoxybenzoic acid, 70-75%, balance 3-Chlorobenzoic acid and water	ACR255791000 100g	ACR255790250 25g	273031, 25800
33311	87413-09-0	Dess-Martin periodinane, 15 wt.% solution in dichloromethane	ACR333110500	ACR333110100	
11330	84-58-2	2,3-Dichloro-5,6-dicyano-1,4-benzoquinone, 98%	ACR113300100 10g	ACR113301000 100g	D60400, 35680
20246	7722-84-1	Hydrogen peroxide, for analysis, 35 wt.% solution in water, stabilized	ACR202460010 1L	ACR202465000 500mL	95299, 31642
21925	7681-52-9	Sodium hypochlorite, 13% active chlorine	ACR219255000 500mL	ACR219250025 2.5L	71696, 13440
19838	7790-28-5	Sodium periodate, 99%, for analysis	ACR198381000 100g	ACR198385000 500g	71860, 30323
20770	1313-60-6	Sodium peroxide, 96%	ACR207705000 500g	ACR207701000 100g	71880, 223417

Phosphine ligands

36864	98327-87-8	(±)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98%	ACR368640050 5g	ACR36864010 1g	481084, 17386
37806	161265-03-8	9,9-Dimethyl-4,5-bis(diphenylphosphino)xanthene, 98%	ACR378060010 1g	ACR378060050 5g	37806
35329	16523-54-9	Chlorodicyclohexylphosphine, 97%	ACR353290010 1g	ACR353290050 5g	481408
14042	603-35-0	Triphenylphosphine, 99%	ACR140422500 250g	ACR140420010 1Kg	93090, T84409
36383	51805-45-9	Tris(2-carboxyethyl)phosphine hydrochloride, 98%	ACR363830010 1g	ACR363830100 10g	93284, C4706

Protection and deprotection of functional groups

14949	108-24-7	Acetic anhydride, 99+%, pure	ACR149490010 1L	ACR149490025 2.5L	110043, 45840, 539996, A6404
10575	98-88-4	Benzoyl chloride, 99%, pure	ACR105750010 1L	ACR105750025 2.5L	320153, 12940, 240540
15294	501-53-1	Benzyl chloroformate, 97 wt%, stabilized	ACR152941000 100g	ACR152945000 500g	23160, 119938
11012	75-77-4	Chlorotrimethylsilane, 98%	ACR110121000 100mL	ACR110122500 250mL	C72854, 92361, 386529
11563	77-76-9	2,2-Dimethoxypropane, 98+%	ACR115635000 500mL	ACR115630010 1L	00660, D136808
18977	24424-99-5	Di-tert-butyl dicarbonate, 97%	ACR189771000 100g	ACR189775000 500g	199133, 34660
19467	24424-99-5	Di-tert-butyl dicarbonate, 99%	ACR194670250 25g	ACR194671000 100g	361941, 50431, 199133
17094	28920-43-6	9-Fluorenylmethyl chloroformate, 98%	ACR170940050 5g	ACR170940250 25g	23185, 160512
12058	999-97-3	1,1,1,3,3,3-Hexamethyldisilazane, 98%	ACR120581000 100mL	ACR120585000 500mL	379212, 52620, H4875
13903	98-59-9	p-Toluenesulfonyl chloride, 99+%	ACR139031000 100g	ACR139035000 500g	240877, 89730
20944	27607-77-8	Trimethylsilyl trifluoromethanesulfonate, 99%	ACR209440100 10mL	ACR209440500 50mL	91741, 225649

Reducing Agents

18379	1191-15-7	Diisobutylaluminium hydride, 1M solution in hexane, AcroSeal™	ACR183791000	ACR183794000	
18393	18162-48-6	tert-Butylchlorodimethylsilane, 98%	ACR183930250	ACR183931000	

MPC*	CAS Number	Product Name	Product Code		Sigma/ Merck
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19834	7440-66-6	Zinc, 98+%, dust (stable acc. to UN classification class 4)	ACR198341000	ACR198340010	
19671	10217-52-4	Hydrazine hydrate, 100% (Hydrazine, 64%)	ACR196711000	ACR196715000	225819
27010	11/1/5470	Hydroxylamine hydrochloride, 99+%	ACR270101000 100g	ACR270100010 1Kg	55469, 159417
19781	7439-89-6	Iron, 99%, powder, -70 mesh (<212 micron)	ACR197811000	ACR197815000	44890
41942	5137-46-2	Sodium biphenyl, 20%w/w solution in diethylene glycol diethyl ether, offered as 20 x 15mL	ACR419423000 300mL		14446, 277134
18986	7646-69-7	Sodium hydride, 60% dispersion in mineral oil, in soluble bags	ACR189861000 100g	ACR189860010 1Kg	199230, 71620
33214	7646-69-7	Sodium hydride, 60% dispersion in mineral oil, in soluble bags, in resealable cans	ACR332141000 100g	ACR332145000 500g	452912, 71620
16959	7775-14-6	Sodium hydrosulfite, ca. 85%, tech.	ACR169590250 25g	ACR169590010 1Kg	71699, 157953
20287	7772-98-7	Sodium thiosulfate, 98.5%, extra pure, anhydrous	ACR202875000 500g	ACR202870010 1Kg	72049, 217263, S1648
21292	617-86-7	Triethylsilane, 99%	ACR212920250 25g	ACR212921000 100g	89706, 230197
21492	6485-79-6	Triisopropylsilane, 98%	ACR214920500 50g	ACR214922500 250g	233781, 92095
21573	688-73-3	Tri-n-butyltin hydride, 97%	ACR215730100 10g	ACR215730500 50g	234788, 90915

Reducing Agents - Aluminium hydrides and borohydrides

17706	13292-87-0	Borane-methyl sulfide complex, 94%, AcroSeal	ACR177061000 100mL	ACR177068000 800mL	179825, 15587
17508	14044-65-6	Borane-tetrahydrofuran complex, 1M solution in THF, Stabilized, AcroSeal	ACR175081000 100mL	ACR175088000 800mL	176192, 15594
20108	1191-15-7	Diisobutylaluminium hydride, 1.2M (20 wt%) solution in toluene, AcroSeal	ACR201081000 100mL	ACR201088000 800mL	82068, 192724
19032	16853-85-3	Lithium aluminium hydride, 95%, powder	ACR190320100 10g	ACR190320250 25g	199877, 62420, 531502
18930	16940-66-2	Sodium borohydride, 98+%, powder	ACR189301000 100g	ACR189305000 500g	686018, 71320, 213462
29182	56553-60-7	Sodium triacetoxyborohydride, 97%	ACR291820250	ACR291821000	316393

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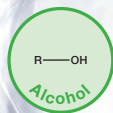
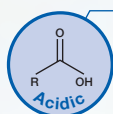
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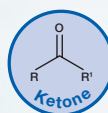
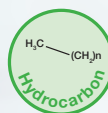
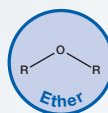
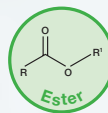
NMR Proton Shifts for Residual Solvent Impurities

Solvent Type

Solvent	Synonyms	Mol Wt	BP °C	Linear Formula	H-Signal	Multi	CDCl ₃	D ₂ O	CD ₃ OD	(CD ₃) ₂ SO	(CD ₃) ₂ CO	CD ₃ CN	C ₆ D ₆
Acetic Acid	Ethanoic acid	60.05	118	CH ₃ COOH	CH ₃	s	2.13	2.08	1.99	1.95	1.96	1.96	1.55
Formic Acid	Methanoic Acid	46.02	101	HCOOH	H	s	8.02	8.22	8.08	8.18	8.11	8.03	–
1-Butanol	<i>n</i> -Butanol / 1-Hydroxybutane / <i>n</i> -Butyl alcohol	74.12	117.6	CH ₃ (CH ₂) ₃ OH	CH ₃	t	0.94	0.91	0.93	0.86	0.90	0.91	–
					CH ₂ (3)	m	1.39	1.35	1.38	1.30	1.31-1.41	1.29-1.39	–
					CH ₂ (2)	m	1.56	1.53	1.51	1.39	1.44-1.52	1.42-1.49	–
2-Butanol	<i>sec</i> -Butanol / 2-Butyl alcohol / 2-Hydroxybutane	74.12	99	CH ₃ CH(OH)CH ₂ CH ₃	CH ₃ (4)	t	0.93	0.84	0.91	0.83	0.89	0.88	–
					CH ₃ (1)	d	1.19	1.11	1.13	1.02	1.09	1.08	–
					CH ₂	m	1.48	1.42	1.44	1.32	1.33-1.47	1.33-1.42	–
<i>tert</i> -Butanol	<i>t</i> -Butyl alcohol / 2-Methyl-2-propanol	74.12	83	(CH ₃) ₃ COH	CH ₃	s	1.28	1.24	1.40	1.11	1.18	1.16	1.05
					CH ₂	m	3.73	3.71	3.63	3.49	3.56-3.66	3.54-3.62	–
					CH	m	3.73	3.71	3.63	3.49	3.56-3.66	3.54-3.62	–
Ethanol	Ethyl alcohol	46.06	78	C ₂ H ₆ O	CH ₃	t	1.25	1.17	1.19	1.06	1.12	1.12	0.96
Ethylene Glycol	Ethane-1,2-diol / 1,2-Dihydroxyethane	62.06	196-198	HOCH ₂ CH ₂ OH	CH	s	3.76	3.65	3.59	3.34	3.28	3.51	3.41
					CH ₂ (3-5)	m	1.24-1.44	1.24-1.39	1.26-1.40	1.19-1.32	1.24-1.39	1.22-1.38	–
					CH ₂ (2)	m	1.52-1.61	1.50-1.59	1.48-1.57	1.36-1.44	1.45-1.55	1.43-1.51	–
1-Hexanol	<i>n</i> -Hexanol / Hexyl alcohol / Caproic alcohol	102.18	156-157	CH ₃ (CH ₂) ₅ OH	CH ₃	t	0.86-0.93	0.88	0.87-0.94	0.86	0.88	0.89	–
					CH ₂ (3-5)	m	1.24-1.44	1.24-1.39	1.26-1.40	1.19-1.32	1.24-1.39	1.22-1.38	–
					CH ₂ (2)	m	1.52-1.61	1.50-1.59	1.48-1.57	1.36-1.44	1.45-1.55	1.43-1.51	–
<i>iso</i> -Amyl alcohol	3-Methyl-1-butanol / <i>iso</i> -Pentyl alcohol	88.15	130	(CH ₃) ₂ CHCH ₂ CH ₂ OH	CH ₃	d	0.92	0.90	0.91	0.85	0.89	0.89	–
					CH ₂ OH	q	1.47	1.44	1.42	1.31	1.39	1.37	–
					CH	m	1.66-1.78	1.61-1.71	1.64-1.77	1.65	1.72	1.67	–
<i>iso</i> -Butanol	<i>iso</i> -Butyl alcohol / 2-Methyl-1-propanol	74.12	108	(CH ₃) ₂ CHCH ₂ OH	CH ₃	d	0.92	0.88	0.90	0.82	0.87	0.86	–
					CH	m	1.77	1.75	1.70	1.60	1.68	1.66	–
					CH ₂	m	3.41	3.38	3.30	3.15	3.26-3.34	3.25	–
Methanol	Methyl alcohol	32.04	64.7	CH ₃ OH	CH ₃	s	3.49	3.34	3.34	3.16	3.31	3.28	3.07
Pentanol	<i>n</i> -Amyl alcohol / Pentyl alcohol	88.15	137-139	CH ₃ (CH ₂) ₄ OH	CH ₃	t	0.91	0.88	0.92	0.86	0.89	0.90	–
					CH ₂ (3-4)	m	1.31	1.31	1.34	1.27	1.27-1.37	1.25-1.38	–
					CH ₂ (2)	m	1.58	1.55	1.53	1.41	1.45-1.55	1.43-1.52	–
1-Propanol	<i>n</i> -Propanol / Propyl alcohol	60.10	97	CH ₃ CH ₂ CH ₂ OH	CH ₃	t	0.93	0.90	0.92	0.87	0.89	0.88	–
					CH ₂ (2)	m	1.60	1.55	1.54	1.45	1.44-1.55	1.43-1.52	–
					CH ₂ (1)	t	3.60	3.56	3.49	3.38	3.44-3.51	3.40-3.47	–
2-Propanol	IPA / Isopropanol / <i>iso</i> -Propyl alcohol	60.10	82	(CH ₃) ₂ CHOH	CH ₃	d	1.20	1.18	1.14	1.04	1.10	1.09	0.95
					CH	m	4.03	4.02	3.92	3.78	3.90	3.67	3.87
Anisole	Methoxybenzene / Methyl phenyl ether	108.14	154	C ₆ H ₅ OCH ₃	CH ₃	s	3.76	3.85	3.77	3.76	3.78	3.77	–
					CH (<i>o/p</i>)	m	6.93	7.06	6.90	6.93	6.88-6.95	6.89-6.98	–
					CH (<i>m</i>)	m	7.29	7.41	7.25	7.29	7.24-7.31	7.27-7.34	–
Benzene		78.11	80.09	C ₆ H ₆		s	7.37	7.44	7.33	7.37	7.36	7.37	7.15
Pyridine		79.10	115-116	C ₅ H ₅ N	CH (2)	m	8.62	8.52	8.53	8.58	8.58	8.57	8.53
					CH (3)	m	7.29	7.45	7.44	7.39	7.35	7.33	6.66
					CH (4)	m	7.68	7.87	7.85	7.79	7.76	7.73	6.98
Toluene	Methylbenzene	92.14	111	C ₆ H ₅ CH ₃	CH ₃	s	2.36	–	2.32	2.30	2.32	2.33	2.11
					CH (<i>o/p</i>)	m	7.17	–	7.16	7.18	7.10-7.20	7.10-7.30	7.02
					CH (<i>m</i>)	m	7.25	–	7.16	7.25	7.10-7.20	7.10-7.30	7.13
<i>p</i> -Xylene	1,4-Dimethylbenzene / <i>p</i> -Xylol	106.17	138	C ₆ H ₄ (CH ₃) ₂	CH ₃	s	2.30	2.30	2.26	2.24	2.26	2.27	–
					CH	s	7.06	7.18	7.02	7.05	–	–	–
Chloroform	Trichloromethane / Formyl trichloride	119.38	61	CHCl ₃	CH	s	7.26	–	7.88	8.32	8.02	7.58	6.15
1,2-Dichloroethane	EDC / Ethylene dichloride / Glycol dichloride	98.96	81-85	ClCH ₂ CH ₂ Cl	CH ₂	s	3.73	–	3.78	3.90	3.87	3.81	2.90
Dichloromethane	DCM / Methylene dichloride	84.93	39-40	CH ₂ Cl ₂	CH ₂	s	5.30	–	5.48	5.76	5.63	5.44	4.27
Acetonitrile	AcCN / Methyl cyanide / Cyanomethane	41.04	81-82	CH ₃ CN	CH ₃	s	2.10	2.06	2.03	2.07	2.05	1.96	1.55
Dimethylformamide	DMF / Formyl dimethylamine	73.09	153	HCON(CH ₃) ₂	CH	s	8.02	7.91	7.98	7.95	7.96	7.92	7.63
					CH ₃	s	2.96	3.00	2.99	2.89	2.94	2.89	2.36
					CH ₃	s	2.88	2.86	2.85	2.73	2.78	2.77	1.86
Dimethyl sulfoxide	DMSO / Methyl sulfoxide / (Methylsulfinyl)methane	78.13	189	(CH ₃) ₂ SO	CH ₃	s	2.62	2.71	2.65	2.54	2.52	2.50	1.68



Solvent	Synonyms	Mol Wt	BP °C	Linear Formula	H-Signal	Multi	CDCl ₃	D ₂ O	CD ₃ OD	(CD ₃) ₂ SO	(CD ₃) ₂ CO	CD ₃ CN	C ₆ D ₆
<i>n</i> -Butyl acetate	1-Butyl acetate	116.16	126-127	CH ₃ CO ₂ (CH ₂) ₃ CH ₃	CH ₃ CH ₂	t	0.94	0.91	0.94	0.89	0.92	0.92	-
					CH ₂	m	1.38	1.37	1.39	1.32	1.32-1.43	1.31-1.42	-
					CH ₂	m	1.61	1.63	1.61	1.54	1.54-1.62	1.54-1.63	-
					CH ₃ CO	s	2.04	2.09	2.01	1.99	1.97	1.97	-
Ethyl acetate	EtOAc / Ethyl ethanoate / Acetoxyethane	88.11	75-78	CH ₃ CO ₂ C ₂ H ₅	CH ₃ CH ₂	t	1.26	1.24	1.24	1.18	1.20	1.20	0.92
					CH ₃ CO	s	2.05	2.07	2.01	1.99	1.97	1.97	1.65
					CH ₂	q	4.12	4.14	4.09	4.03	4.05	4.06	3.89
Ethyl formate	Ethyl methanoate / Formic acid ethyl ester	74.08	54	HCO ₂ C ₂ H ₅	CH ₃	t	1.29	1.29	1.27	1.24	-	-	-
					CH ₂	q	4.22	4.28	4.20	4.17	-	-	-
					CH	s	8.04	8.16	8.06	8.23	-	-	-
<i>iso</i> -Propyl acetate	iPrOAc / 1-Methyl ethyl acetate / 2-Propyl acetate	102.13	88.8	CH ₃ CO ₂ CH(CH ₃) ₂	(CH ₃) ₂ CH	d	1.23	1.25	1.22	1.17	1.19	1.19	-
					CH ₃ CO	s	2.02	2.07	1.99	1.96	1.94	1.94	-
					CH	m	4.99	4.98	4.95	4.86	4.91	4.91	-
Methyl acetate	Methyl ethanoate / Methyl acetic ester	74.08	57.4	CH ₃ CO ₂ CH ₃	CH ₃ CO	s	2.05	2.09	2.02	1.92	1.98	1.99	-
					OCH ₃	s	3.67	3.68	3.64	3.61	3.59	3.60	-
<i>n</i> -Propyl acetate	Acetic acid propyl ester / Propyl ethanoate	102.13	102	CH ₃ CO ₂ CH ₂ CH ₂ CH ₃	CH ₃ CH ₂	t	0.94	0.92	0.94	0.88	0.92	0.92	-
					CH ₂ CH ₃	m	1.65	1.65	1.64	1.57	1.61	1.61	-
					CH ₃ CO	s	2.05	2.09	2.02	2.00	1.98	1.98	-
<i>tert</i> -Butyl methyl ether	MTBE / 2-Methyl-2-methoxy propane	88.15	54-56	(CH ₃) ₃ COCH ₃	CCH ₃	s	1.19	1.22	1.15	1.11	1.19	1.14	1.07
					OCH ₃	s	3.22	3.24	3.20	3.08	3.13	3.13	3.04
					CH ₂	t	1.20	1.17	1.17	1.09	1.11	1.12	1.11
Diethyl ether	Ether / Ethoxyethane	74.12	34.6	(CH ₃ CH ₂) ₂ O	CH ₃	t	1.20	1.17	1.17	1.09	1.11	1.12	1.11
					CH ₂	q	3.48	3.56	3.49	3.38	3.41	3.42	3.26
1,2-Dimethoxyethane	DME / Dimethylglycol	90.12	84-86	CH ₃ OCH ₂ CH ₂ OCH ₃	CH ₃	s	3.40	3.37	3.35	3.24	3.28	3.28	3.24
1,4-Dioxane	Diethylene ether / Diethylene dioxide	88.11	101	C ₄ H ₈ O ₂	CH ₂	s	3.71	3.75	3.66	3.57	3.59	3.60	3.35
					CH ₂	s	3.55	3.60	3.52	3.43	3.46	3.45	3.33
Tetrahydrofuran	THF / Oxolane / Diethylene oxide	72.11	66	C ₄ H ₈ O	CH ₂	m	1.85	1.88	1.87	1.76	1.79	1.80	1.40
					CH ₂ O	m	3.76	3.74	3.71	3.60	3.63	3.64	3.57
Cyclohexane		84.16	81	C ₆ H ₁₂	CH ₂	s	1.43	-	1.45	1.40	1.43	1.44	1.40
<i>n</i> -Heptane	Heptane / Dipropyl methane	100.21	98	CH ₃ (CH ₂) ₅ CH ₃	CH ₃	t	0.89	-	0.90	0.86	0.88	0.89	-
					CH ₂	m	1.28	-	1.31	1.26	1.21-1.35	1.21-1.35	-
<i>n</i> -Hexane		86.18	69	CH ₃ (CH ₂) ₄ CH ₃	CH ₃	t	0.88	-	0.90	0.86	0.88	0.89	0.89
					CH ₂	m	1.26	-	1.29	1.25	1.28	1.28	1.24
Methylcyclohexane	MCH	98.19	101	CH ₃ CH(CH ₂) ₅	CH ₂ CH (ax)	m	0.82-0.93	-	0.82-0.94	0.80-0.90	0.87-0.93	0.88-0.94	-
					CH ₃	d	0.86	-	0.87	0.84	0.84	0.86	-
					CH ₂ (4) (ax)	m	1.06-1.17	-	1.09-1.20	1.04-1.14	1.07-1.17	1.08-1.18	-
					CH ₂ (3) (ax)	m	1.17-1.28	-	1.26	1.14-1.25	1.24	1.25	-
<i>n</i> -Pentane		72.15	36	CH ₃ (CH ₂) ₃ CH ₃	CH ₃	t	0.88	-	0.90	0.86	0.88	0.89	0.87
					CH ₂	m	1.27	-	1.29	1.27	1.27	1.29	1.23
Acetone	2-Propanone / Dimethylketone	58.08	56	CH ₃ COCH ₃	CH ₃	s	2.17	2.22	2.15	2.09	2.08	1.55	
2-Hexanone	MBK / Methyl butyl ketone / Propyl acetone	100.16	127	CH ₃ (CH ₂) ₃ COCH ₃	CH ₃	t	0.91	0.88	0.91	0.85	-	-	-
					CH ₂	m	1.32	1.30	1.32	1.24	-	-	-
					CH ₂	m	1.56	1.53	1.53	1.43	-	-	-
					CH ₂ CO	t	2.42	2.56	2.47	2.41	-	-	-
Isobutyl methyl ketone	MIBK / 4-Methylpentan-2-one / Isopropylacetone	100.16	117.4	(CH ₃) ₂ CHCH ₂ COCH ₃	(CH ₃) ₂ CH	d	0.92	0.90	0.85	0.85	0.88	0.88	-
					CH	m	2.13	2.08	2.00	2.00	2.02-2.11	2.02-2.08	-
					CH ₃ CO	s	2.12	2.21	2.05	2.05	2.06	2.05	-
					CH ₂	d	2.30	2.43	2.28	2.28	2.31	2.29	-
Methyl ethyl ketone	MEK / Ethyl methyl ketone / 2-Butanone	72.11	80	C ₂ H ₅ COCH ₃	CH ₃ CH ₂	t	1.06	1.26	1.01	0.91	0.96	0.96	0.85
					CH ₃ CO	s	2.14	2.19	2.12	2.07	2.07	2.06	1.58
					CH ₂ CH ₃	q	2.46	3.18	2.50	2.43	2.45	2.43	1.81
Triethylamine	TEA / Diethylaminoethane	101.19	90	(C ₂ H ₅) ₃ N	CH ₃	t	1.03	0.99	1.05	0.93	0.96	0.96	0.96
					CH ₂	q	2.53	2.57	2.58	2.43	2.45	2.45	2.40
Formamide	Methanamide / Formic amide	45.04	210	HCONH ₂	CH	s	8.22	8.06	8.04	7.97	-	-	-
Grease	Long chain, linear aliphatic hydrocarbons				CH ₃	m	0.86	-	0.88	-	0.87	0.86	0.92
					CH ₂	br s	1.26	-	1.29	-	1.29	1.27	1.36
Silicone Grease	Poly(dimethylsiloxane)				CH ₃	s	0.07	-	0.10	-	0.13	0.08	0.29
Water		18.02	100	H ₂ O	H ₂ O	s	1.56	-	4.87	3.33	2.84	2.13	-



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Example Product Grades

Grade	Definition
ACS Grade	Products whose specifications are defined in the American Chemical Society Reagent Chemicals book.
Premion®	High purity precious metal compounds and pure elements. The minimum purity (metals basis) for Premion pure elements is 99.99% and Premion compounds is 99.95%. Premion pure elements and their compounds include: Platinum (Pt), Palladium (Pd), Rhodium (Rh), Iridium (Ir), Ruthenium (Ru), Osmium (Os), Silver (Ag) and Gold (Au).
Puratronic®	High purity base metals and salts. Each Puratronic compound has a minimum purity of 99.99% (many exceed 99.999%).
REacton	High purity rare earth metals, alloys and compounds. Recognized as a benchmark for high purity rare earths, the REacton brand encompasses the entire Lanthanide series (excluding promethium) along with scandium and yttrium. REacton rare earths feature extremely low impurity levels. Under the REacton name, we offer a broad range of high purity rare earth materials, including Oxides, Halides, Carbonates, Nitrates, Acetates and more.
Specpure®	Analytical standard solutions. Specpure standards are produced using the highest quality raw materials and ASTM Type 1 deionized water for the greatest calibration accuracy possible. All Specpure standards are shipped with a batch-specific Certificate of Analysis. Specpure atomic absorption standard solution concentrations are accurate to ±1.0% and plasma solutions to ±0.3%.
Ultra Dry	A comprehensive line of ultra dry materials. Ultra dry compounds are manufactured under exacting conditions to ensure that oxygen and water impurities are in the parts per million range. Only high purity starting materials are used in the manufacturing process, which results in overall purities of 99.9% to 99.999%. All ultra dry salts are ampouled under argon, and most are available in -10 mesh beads and powder form.

The Alfa Aesar product range includes over 46,000 products.

A selection of our most essential products from this range can be found in the list below.

MPC*	CAS Number	Product Name	Product Code	Sigma/Merck
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* MPC= Manufacturer Product Code

High Purity Inorganics

010626	25838-59-9	Aluminum nitrate hydrate, Puratronic®, 99.999% (metals basis excluding Hg)	ALF010623.14 25g	ALF010626.36 500g	
042573	1344-28-1	Aluminum oxide, alpha-phase, 99.95% min (metals basis)	ALF042573.22 100g	ALF042573.36 500g	342742
010700	1317-38-0	Copper(II) oxide, Puratronic®, 99.995% (metals basis)	ALF010700.14 25g	ALF010700.22 100g	203130
011856	10025-82-8	Indium(III) chloride, anhydrous, 99.999% (metals basis)	ALF011856.03 1g	ALF011856.09 10g	308293

MPC*	CAS Number	Product Name	Product Code/ Size				Sigma/ Merck
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* MPC= Manufacturer Product Code

044836	12030-24-9	Indium(III) sulfide, 99.995% (metals basis)	ALF044836.04	2g	ALF044836.09	10g	554359
044314	10101-63-0	Lead(II) iodide, ultra dry, 99.999% (metals basis)	ALF044314.06	5g	ALF044314.14	25g	204439
010862	7647-14-5	Sodium chloride, Puratronic®, 99.999% (metals basis)	ALF010862.14	25g	ALF010862.22	100g	
010836	13933-33-0	Tetraammineplatinum(II) chloride monohydrate, Premion®, 99.995% (metals basis)	ALF010836.03	1g	ALF010836.06	5g	

Organometallics

H58012		Allylzinc bromide, 0.5M in THF, packaged under Argon in resealable ChemSeal bottles	ALFH58012.AD	50mL			
H58897	226570-68-9	4-Cyanobutylzinc bromide, 0.5M in THF, packaged under Argon in resealable ChemSeal bottles	ALFH58897.AD	50mL			497894
H58247		Cyclobutylzinc bromide, 0.5M in THF, packaged under Argon in resealable ChemSeal bottles	ALFH58247.AD	50mL			
H58852	7565-57-3	Cyclohexylzinc bromide, 0.5M in THF, packaged under Argon in resealable ChemSeal bottles	ALFH58852.AD	50mL			498033
H58008	126403-68-7	Cyclopropylzinc bromide, 0.5M in THF, packaged under Argon in resealable ChemSeal bottles	ALFH58008.AD	50mL			680982
H58023	131379-39-0	3-(Ethoxycarbonyl)propylzinc bromide, 0.5M in THF, packaged under Argon in resealable ChemSeal bottles	ALFH58023.AD	50mL			498491
H58536	77047-87-1	Isopropylzinc bromide, 0.5M in THF, packaged under Argon in resealable ChemSeal bottles	ALFH58536.AD	50mL			680966
H58659	38111-44-3	Phenylzinc bromide, 0.5M in THF, packaged under Argon in resealable ChemSeal bottles	ALFH58659.AD	50mL			524719
H58544	218777-23-2	2-Pyridylzinc bromide, 0.5M in THF, packaged under Argon in resealable ChemSeal bottles	ALFH58544.AD	50mL			499382

PMCC

011051	26023-84-7	Dihydrogen hexachloroplatinate(IV) hydrate, 99.9% (metals basis)	ALF011051.03	1g	ALF011051.06	5g	
039742	15804-32-7	Gold(III) acetate, 99.9% (metals basis)	ALF039742.02	0.5g	ALF039742.03	1g	
011035	10102-05-3	Palladium(II) nitrate hydrate, 99.8% (metals basis), Pd 39% min	ALF011035.04	2g	ALF011035.09	10g	282782
010526	15170-57-7	Platinum(II) 2,4-pentanedionate, Pt 48.0% min	ALF010526.03	1g	ALF010526.06	5g	

Pure Elements

000905	7726-95-6	Bromine liquid, 99.8%	ALF000905.14	25g	ALF000905.30	250g	
010146	7440-46-2	Cesium, 99.98% (metals basis)	ALF010146.03	1g	ALF010146.06	5g	
040317	7440-57-5	Gold shot, semi-spherical, 6.35mm (0.25in) & down, Premion r, 99.999% (metals basis)	ALF040317.03	1g	ALF040317.05	5g	
010195	7440-57-5	Gold wire, 0.2mm (0.008in) dia, 99.9% (metals basis)	ALF010195.G1	1m	ALF010195.G5	5m	
040328		Gold wire, 14kt, red, 1.63mm (0.064in) dia, Au 58.3% min	ALF040328.BS	10cm	ALF040328.BU	25cm	
010283	7440-06-4	Platinum gauze, 52 mesh woven from 0.1mm (0.004in) dia wire, 99.9% (metals basis)	ALF010283.FF	25x25mm	ALF010283.FI	50x50mm	
013374	7440-06-4	Platinum slug, 6.35mm (0.25in) dia x 12.7mm (0.50in) length, Premion r, 99.99+% (metals basis)	ALF013374.KG	1g			
011435	7440-22-4	Silver wire, 2.0mm (0.08in) dia, annealed, 99.9% (metals basis)	ALF011435.BW	50cm	ALF011435.CB	250cm	
013783	7440-62-2	Vanadium foil, 0.127mm (0.005in) thick, 99.8% (metals basis)	ALF013783.FY		ALF013783.GK		
010441	7440-67-7	Zirconium sponge, 0.8-25.4mm (0.03-1.0in), 99.5%, Zr & Hf	ALF010441.18	50g	ALF010441.A1	1Kg	267651

Solvents

022927	75-05-8	Acetonitrile, HPLC Grade, 99.7+% min	ALF022927.K2	1L	ALF022927.0F	2.5L	34881
022914	67-68-5	Dimethyl sulfoxide, HPLC Grade, 99.9+%	ALF022914.K2	1L	ALF022914.0F	2.5L	34869
033361	64-17-5	Ethanol, Alcohol Reagent, anhydrous, denatured, ACS, 94-96%	ALF033361.AP	500mL	ALF033361.K2	1L	
019393	67-56-1	Methanol, Semiconductor Grade, 99.9% min	ALF019393.AE	100mL	ALF019393.K2	1L	
022909	67-56-1	Methanol, ultrapure, HPLC Grade, 99.8+%	ALF022909.K2	1L	ALF022909.0F	2.5L	646377
043848	71-23-8	1-Propanol, ACS, 99.5+%	ALF043848.AP	500mL	ALF043848.K2	1L 4L	402893
036644	67-63-0	2-Propanol, ACS, 99.5% min	ALF036644.K2	1L			673773
022904	109-99-9	Tetrahydrofuran, UV, HPLC Grade, 99.7+% min, unstab.	ALF022904.K2	1L	ALF022904.0F	2.5L	34865
022934	7732-18-5	Water, ultrapure, HPLC Grade	ALF022934.K2	1L			270733

Our Labels

What's on the label



GHS information











Product specific information



LOT analysis

GHS Pictograms Explained

<p>GHS01 Exploding bombs = Explosive, self reactive; heating may cause fire or explosion.</p> 	<p>GHS02 Flame = Flammable, chemicals can catch fire easily and burst into flames.</p> 	<p>GHS03 Flame over circle = Oxidizing, can react with other materials causing them to burn or explode.</p> 
<p>GHS04 Gas cylinder = Gas under pressure: chemical can explode, rocket or harm health if the cylinder is heated, ruptured or leaking.</p> 	<p>GHS05 Corrosion = Corrosive: may cause skin corrosion/ burns; eye damage; eat away clothing, working surfaces, and or metals.</p> 	<p>GHS06 Skull and crossbones = Toxic: highly poisonous material; can cause immediate and possibly serious health problems.</p> 
<p>GHS07 Exclamation mark = Other Hazard irritant (skin and eye), skin sensitizer, acute toxicity, narcotic effects, respiratory track irritant, harmful if swallowed, toxic if inhaled.</p> 	<p>GHS08 Health hazard = Specific health hazard including–Carcinogenic; Mutagenic; Toxic for Reproduction: may cause asthma or damage to specific organs of the body.</p> 	

Chemical Storage/Handling Recommendations

Chemical Incompatibility

Chemicals should react in the lab, not in the stockroom. The inadvertent mixing of inventory can produce toxic vapour/gas, fire or explosion. Stay safe in the storeroom; adhere to the following prescribed precautions and consult the chemical compatibility tables (below) for caustic combinations. For product specific information, refer to the Safety Data Sheet (SDS) available on our SDS tool to search, view and print SDSs at thermofisher.com.au/sds.

General Guidelines

- Protect eyes and skin: lab safety glasses with side shields, lab coats and closed-toe shoes must be worn for basic personal protection
- Safely space shelves and racks to accommodate the upright removal of the largest chemical container; prevent tipping and dripping with adequate clearance
- Identify and substitute safer chemical alternatives
- Keep hazardous materials away from heat and direct sunlight to prevent the degradation of chemicals and deterioration of storage containers and labels
- Do not store hazardous materials (except cleaners) under sinks
- Avoid chemical stockpiling; procure hazardous materials as needed
- Limit fume hood storage of hazardous materials
- Conduct periodic cleanouts to minimise accumulation of chemicals
- Keep all food (including gum), beverages, tobacco and open cosmetics outside the work area

Acids and Bases

Isolate acids:

- From reactive metals, including sodium, potassium and magnesium
- From sodium cyanide, iron sulfide, calcium carbide and other compounds that can react to produce toxic fumes/gases
- Place combustible organic carboxylic acids (i.e., acetic acid) in a flammable storage locker; store inorganic acids in acid storage cabinets
- Store acids and bases in air-tight containers with snug-fitting caps; avoid loose lids or glass stoppers; use vented caps when necessary to prevent over-pressurisation
- Keep piranha etch and aqua regia in a fume hood at all times
- Use non-aluminum drip trays for aqueous sodium and potassium hydroxide solutions; isolate nitric acid when utilising secondary containment
- Safely transfer containers of acid and base solutions using bottle carriers
- Never pour water into acid; slowly add the acid to the water and stir



Flammable and Combustible Liquids

- The safe storage and handling of chemicals is essential in any volume, but generally you should consider whether the risk of the spread of fire is mitigated by using suitable fire resistant cabinets
- Anyone storing or planning to store highly flammable and/ or flammable liquids should pay particular attention to their local legislation



	Acids, Inorganic	Acids, Oxidizing	Acids, Organic	Alkalis (Bases)	Oxidizers	Poisons, Inorganic	Poisons, Organic	Water-Reactives	Organic Solvents
Acids, inorganic			X	X		X	X	X	X
Acids, oxidizing			X	X		X	X	X	X
Acids, organic	X	X		X	X	X	X	X	
Alkalis (bases)	X	X	X				X	X	X
Oxidizers			X				X	X	X
Poisons, inorganic	X	X	X				X	X	X
Poisons, organic	X	X	X	X	X	X			
Water-reactives	X	X	X	X	X	X			
Organic solvents	X	X		X	X	X			

X indicates incompatibility between two chemical product groups. Incompatible products should not be stored in close proximity.

Chemical Incompatibilities table

Chemical	Store Separately From
Acetic acid	Chromic acid, nitric acid, perchloric acid, peroxides, permanganates and other oxidizers
Acetone	Concentrated nitric and sulfuric acid mixtures, and strong bases
Acetylene	Chlorine, bromine, copper, fluorine, silver, mercury
Alkali metals	Water, carbon tetrachloride or other chlorinated hydrocarbons, carbon dioxide, halogens
Ammonia, anhydrous	Mercury, chlorine, calcium hypochlorite, iodine, bromine, hydrofluoric acid
Ammonium nitrate	Acids, metal powders, flammable liquids, chlorates, nitrites, sulfur, finely divided organic or combustible materials
Aniline	Nitric acid, hydrogen peroxide
Arsenic materials	Any reducing agent
Azides	Acids
Bromine	Ammonia, acetylene, butadiene, butane, methane, propane (or other petroleum gases), hydrogen, sodium carbide, turpentine, benzene, finely divided metals
Calcium oxide	Water
Carbon (activated)	Calcium hypochlorite, all oxidizing agents
Carbon tetrachloride	Sodium
Chlorates	Ammonium salts, acids, metal powders, sulfur, finely divided organic or combustible materials
Chromic acid and chromium trioxide	Acetic acid, naphthalene, camphor, glycerol, glycerin, turpentine, alcohol, flammable liquids in general
Chlorine	Same as Bromine
Chlorine dioxide	Ammonia, methane, phosphine, hydrogen sulfide
Copper	Acetylene, hydrogen peroxide
Cumene hydroperoxide	Acids, organic or inorganic
Cyanides	Acids
Flammable liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens
Hydrocarbons	Fluorine, chlorine, bromine, chromic acid, sodium peroxide
Hydrocyanic acid	Acids
Hydrofluoric acid	Ammonia, aqueous or anhydrous bases and silica
Hydrogen peroxide	Copper, chromium, iron, most metals or their salts, alcohols, acetone, organic materials, aniline, nitromethane, flammable liquids
Hydrogen sulfide	Fuming nitric acid, other acids, oxidizing gases, acetylene, ammonia (aqueous or anhydrous), hydrogen
Hypochlorites	Acids, activated carbon
Iodine	Acetylene, ammonia (aqueous or anhydrous), hydrogen
Mercury	Acetylene, fulminic acid, ammonia
Nitrates	Sulfuric acid
Nitric acid (concentrated)	Acetic acid, aniline, chromic acid, hydrocyanic acid, hydrogen sulfide, flammable liquids, flammable gases, copper, brass, any heavy metals
Nitrites	Acids
Nitroparaffins	Inorganic bases, amines
Oxalic acid	Silver, mercury
Oxygen	Oils, grease, hydrogen; flammable liquids, solids, or gases
Perchloric acid	Acetic anhydride, bismuth and its alloys, alcohol, paper, wood, grease and oils
Peroxides, organic	Acids (organic or mineral), avoid friction, store cold
Phosphorus (white)	Air, oxygen, alkalis, reducing agents
Potassium	Carbon tetrachloride, carbon dioxide, water
Potassium chlorate and perchlorate	Sulfur and other acids, alkali metals, magnesium and calcium
Potassium permanganate	Glycerin, ethylene glycol, benzaldehyde, sulfuric acid
Selenides	Reducing agents
Silver	Acetylene, oxalic acid, tartaric acid, ammonium compounds, fulminic acid
Sodium	Carbon tetrachloride, carbon dioxide, water
Sodium nitrite	Ammonium nitrate and other ammonium salts
Sodium peroxide	Ethyl or methyl alcohol, glacial acetic acid, acetic anhydride, benzaldehyde, carbon disulfide, glycerin, ethylene glycol, ethyl acetate, methyl acetate, furfural
Sulfides	Acids
Sulfuric Acid	Potassium chlorate, potassium perchlorate, potassium permanganate (or compounds with similar light metals: sodium, lithium, etc.)
Tellurides	Reducing agents

(From Manufacturing Chemists' Association, Guide for Safety in the Chemical Laboratory, pp. 215–217, Van Nostrand)

Chemical Resistance and Physical Properties of Plastics

Resin Codes

ECTFE: Ethylene- chlorotrifluoroethylene copolymer	PFA: Perfluoroalkoxy
ETFE: Ethylenetetrafluoroethylene	PMMA: Polymethyl methacrylate
FEP: Fluorinated ethylene propylene	PMP: Polymethylpentene
FLPE: Fluorinated high-density polyethylene	PP: Polypropylene
FLPP: Fluorinated polypropylene	PS: Polystyrene
HDPE: High-density polyethylene	PSF: Polysulfone
LDPE: Low-density polyethylene	PTFE: Polytetrafluoroethylene
NYL: Nylon (polyamide)	PUR: Polyurethane
PPCO: Polypropylene copolymer	PVC: Polyvinyl chloride
PC: Polycarbonate	PVDF: Polyvinylidene fluoride
PETG: Polyethylene terephthalate copolyester	TPE: Thermoplastic elastomer
PK: Polyketone	XLPE: Cross-linked high-density polyethylene

Do not store strong oxidising agents in plastic labware except if made of FEP, PFA or PTFE. Other plastics will become brittle after prolonged exposure.

Do not place plastic labware directly in a flame or on a hotplate unless specified.

Use these charts as a reference only. They are recommendations, not guarantees, of fitness for particular uses. Test materials under actual conditions before using them for your applications.

Chemical Resistance Summary

Classes of substances; temperature 68°F (20°C)	ECTFE/ETFE	FEP/PTFE/PFA	FLPE	HDPE/XLPE	LDPE	NYL	PC	PETG	PK	PMMA	PMP	PP/PPCO	PS	PSF	PUR	PVC	PVDF	TPE‡
Acids, weak or dilute	E	E	E	E	E	F	E	E	E	G	E	E	E	E	G	E	E	E
Acids†, strong or concentrated	G	E	E	E	E	N	N	N	G	N	E	E	F	G	F	E	E	F
Alcohols, aliphatic	E	E	E	E	E	N	G	E	G	N	E	E	E	G	F	E	E	E
Aldehydes	E	E	G	G	G	F	F	N	E	G	G	G	N	F	G	N	E	N
Bases	E	E	F	E	E	F	N	N	G	F	E	E	E	E	N	E	E	E
Esters	E	E	E	G	G	E	N	N	E	N	G	G	N	N	N	N	G	N
Hydrocarbons, aliphatic	E	E	E	G	F	E	F	E	E	G	F	G	N	G	E	E	E	N
Hydrocarbons, aromatic	E	E	E	G	F	E	N	N	E	N	F	F	N	N	N	N	E	N
Hydrocarbons, halogenated	E	E	G	F	N	G	N	N	E	N	N	F	N	N	N	N	N	N
Ketones	G	E	E	G	G	E	N	N	E	N	F	G	N	N	N	N	N	N
Oxidising agents, strong	F	E	F	F	F	N	N	N	G	N	F	F	N	G	N	G	G	N

E = Excellent resistance

No damage after 30 days of constant exposure.

G = Good resistance

Little or no damage after 30 days of constant exposure.

F = Fair resistance

Some effect after 7 days of constant exposure. Depending on the material, the effect may be cracking, crazing, loss of strength or discoloration. Solvents may cause softening, swelling, and permeation losses with PA, PP, PMP, LDPE and HDPE; the solvent effects on these materials are normally reversible.

N = Not recommended

Not recommended for continuous use. Immediate damage may occur. Depending on the material, the effect will be severe cracking, crazing, loss of strength, discoloration, deformation, dissolution or permeation loss.

† For oxidising acids, see table entry "Oxidising agents, strong." ‡ TPE gaskets

Solvent Miscibility

	Acetone	Acetonitrile	Carbon tetrachloride	Chloroform	Cyclohexane	1,2 Dichloroethane	Dichloroethane	Diethyl ether	Dimethylformamide	Dimethylsulfoxide	1,4 Dioxane	Ethanol	Ethyl acetate	Heptane	Hexane	Methanol	Methyl-tert-butyl ether	Pentane	Propan-1-ol	Propan-2-ol	Tetrahydrofuran	Toluene	2, 2, 4, Trimethylpentane	Water		
Acetone																										
Acetonitrile																										
Carbon tetrachloride																										
Chloroform																										
Cyclohexane		●																								
1,2 Dichloroethane																										
Dichloroethane																										
Diethyl ether																										
Dimethylformamide					●																					
Dimethylsulfoxide					●			●																		
1,4 Dioxane																										
Ethanol																										
Ethyl acetate																										
Heptane																										
Hexane		●							●	●																
Methanol		●																								
Methyl-tert-butyl ether					●									●	●											
Pentane		●							●	●							●									
Propan-1-ol																										
Propan-2-ol																										
Tetrahydrofuran																										
Toluene																										
2, 2, 4, Trimethylpentane		●							●	●																
Water			●	●	●	●	●	●	●	●			●	●	●		●	●					●	●		

● indicates that solvents are not miscible

Chemical Resistance of Labware Materials

How to Use This Chart

Use This Chart as a General Guide Only.

Test each chemical before storing in labware.

The first letter of each pair represents the resistance rating at 20°C; the second at 50°C.

E = Excellent resistance

No damage after 30 days of constant exposure.

G = Good resistance

Little or no damage after 30 days of constant exposure.

F = Fair resistance

Some effect after 7 days of constant exposure. Depending on the material, the effect may be cracking, crazing, loss of strength or discoloration. Solvents may cause softening, swelling, and permeation losses with PA, PP, PMP, LDPE and HDPE; the solvent effects on these materials are normally reversible.

N = Not recommended

Not recommended for continuous use. Immediate damage may occur. Depending on the material, the effect will be severe cracking, crazing, loss of strength, discoloration, deformation, dissolution or permeation loss.

Examples

EE = Acetic Acid, 50% - LDPE gives excellent resistance at both 20°C and 50°C.

GF = n-Amyl acetate - PPE/PPCO gives good resistance at 20°C but resistance is reduced to fair at 50°C.

Warning!

Do not store strong oxidising agents in plastic containers except those made of Teflon™ FEP, PFA or PTFE. Other plastics will become brittle after prolonged exposure.

CHEMICAL	LDPE	HDPE	PP/PPCO	PMP	FEP/PTFE/PFA	ECTFE/ETFE	PC	PVC	PSF	PVDF	PS	NYL	Stainless Steel	Glass	Ceramic
Acetaldehyde	GN	GF	GN	GN	EE	GF	FN	GN	NN	EE	NN	EG	EE	EE	EE
Acetamide, sat.	EE	EE	EE	EE	EE	EE	NN	NN	NN	—	EE	EE	EE	EE	EE
Acetic acid, 5%	EE	EE	EE	EE	EE	EE	EG	EE	EE	EE	EG	FN	EE	EE	EE
Acetic acid, 50%	EE	EE	EE	EE	EE	EG	EG	EG	GG	EE	GG	NN	EE	EE	EE
Acetone	NN	NN	EE	EE	EE	GF	NN	NN	NN	NN	NN	EE	EE	EE	EE
Acetonitrile	EE	EE	FN	FN	EE	EE	NN	NN	NN	EE	NN	EE	EG	EE	EE
Acrylonitrile	EE	EE	FN	FN	EE	EG	NN	NN	NN	GF	NN	EG	EG	EE	EE
Adipic acid	EG	EE	EE	EE	EE	EE	EE	EG	GG	—	EE	EF	EG	EE	EE
Alanine	EE	EE	EE	EE	EE	EE	NN	NN	NN	—	EE	EG	—	—	—
Allyl alcohol	EE	EE	EE	EG	EE	EE	GF	GF	GF	—	GF	NN	EE	EG	EG
Aluminum hydroxide	EG	EE	EG	EG	EE	EE	FN	EG	GG	EE	GG	EE	EE	NN	EE
Aluminum salts	EE	EE	EE	EE	EE	EE	EG	EE	EE	EE	GG	NN	GG	EE	EE
Amino acids	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EG	—	—	—
Ammonia	EE	EE	EE	EE	EE	EE	NN	EG	GF	EE	GF	FF	EE	EE	EE
Ammonium acetate, sat.	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EG	EE	EE	EE
Ammonium glycolate	EG	EE	EG	EG	EE	EE	GF	EE	GG	EE	EE	GG	—	—	—
Ammonium hydroxide, 5%	EE	EE	EE	EE	EE	EE	FN	EE	GG	EE	EF	GF	EE	EE	EE
Ammonium hydroxide, 30%	EG	EE	EG	EG	EE	EE	NN	EG	GG	EE	GF	FN	EE	EE	EE
Ammonium oxalate	EG	EE	EG	EG	EE	EE	EE	EE	EE	EE	EE	GF	EE	EE	EE
Ammonium salts	EE	EE	EE	EE	EE	EE	EG	EG	EE	EE	GG	NN	EE	EE	EE
n-Amyl acetate	GF	EG	GF	GF	EE	EE	NN	NN	NN	EE	NN	EE	EE	EE	EG
Amyl chloride	NN	FN	NN	NN	EE	EE	NN	NN	NN	EE	NN	EG	EG	EE	EE
Aniline	EG	EG	GF	GF	EE	GN	FN	NN	NN	EF	NN	GF	EG	EE	EE
Benzaldehyde	EG	EE	EG	EG	EE	EF	FN	NN	FF	EE	NN	EG	GG	EE	EE
Benzene	FN	NN	GF	GF	EE	EG	NN	NN	NN	EE	NN	EE	GG	EE	EE
Benzoic acid, sat.	EE	EE	EG	EG	EE	EE	EG	EG	FF	EE	GG	NN	EG	EE	EE
Benzyl acetate	EG	EE	EG	EG	EE	EG	FN	NN	NN	—	NN	EG	GG	EE	EE
Benzyl alcohol	NN	FN	NN	NN	EE	EE	NN	GF	NN	EE	NN	NN	GG	EE	EE
Bromine	NN	FN	NN	NN	EE	EG	FN	GN	NN	EE	NN	NN	EE	EG	GG
Bromobenzene	NN	FN	NN	NN	EE	GN	NN	NN	NN	EE	NN	EG	GG	GG	GG
Bromoform	NN	NN	NN	NN	EE	GF	NN	NN	NN	EE	NN	FF	GG	EE	EE
Butadiene	NN	FN	NN	NN	EE	EE	NN	FN	NN	EE	NN	FF	GG	EE	EE
n-Butyl acetate	GF	EG	GF	GF	EE	EG	NN	NN	NN	EE	NN	EE	GG	EE	EE
n-Butyl alcohol	EE	EE	EE	EG	EE	EE	GF	GF	GF	EE	EG	NN	EE	EE	EE
sec-Butyl alcohol	EG	EE	EG	EG	EE	EE	GF	GG	GF	EE	GG	NN	EE	EE	EE
tert-Butyl alcohol	EG	EE	EG	EG	EE	EE	GF	EG	GF	EE	EE	NN	EE	EE	EE
Butyric acid	NN	FN	NN	NN	EE	EE	FN	GN	GG	EE	NN	FN	GG	EE	EE
Calcium hydroxide, conc.	EE	EE	EE	EE	EE	EE	NN	EE	GG	EE	GG	NN	GG	NN	EE
Calcium hypochlorite, sat.	EE	EE	EE	EG	EE	EE	FN	GF	EE	EE	GF	NN	EE	EE	EE
Carbazole	EE	EE	EE	EE	EE	EE	NN	NN	NN	—	EE	EE	—	—	—
Carbon disulfide	NN	NN	NN	NN	EE	EF	NN	NN	NN	EE	NN	EG	EE	EE	EE
Carbon tetrachloride	FN	GF	GF	NN	EE	EE	NN	GF	NN	EE	NN	EE	GG	EE	EE
Cedarwood oil	NN	FN	NN	NN	EE	EG	GF	FN	FF	EE	NN	EG	—	—	—
Cellosolve acetate	EG	EE	EG	EG	EE	EG	FN	FN	NN	EG	NN	EE	GG	EE	EE
Chlorine, 10% in air	GN	EF	GN	GN	EE	EE	EG	EE	NN	EE	FN	NN	FF	EE	EE
Chlorine, 10% (moist)	GN	GF	FN	GN	EE	EE	GF	EG	NN	EE	NN	NN	FF	EE	EE
Chloroacetic acid	EE	EE	EG	EG	EE	EE	FN	FN	NN	EE	GN	NN	GG	EE	EE
p-Chloroacetophenone	EE	EE	EE	EE	EE	EE	NN	NN	NN	—	NN	EG	—	—	—
Chloroform	FN	FN	GF	NN	EE	GF	NN	NN	NN	EE	NN	FF	EE	EE	EE
Chromic acid, 10%	EE	EE	EE	EE	EE	EE	GF	EG	NN	EE	EE	NN	GG	EE	EE
Chromic acid, 50%	EE	EE	GF	GF	EE	EE	FN	EF	NN	EG	FF	NN	FF	EE	NN
Cinnamon oil	NN	FN	NN	NN	EE	EG	GF	NN	FF	—	NN	GF	EE	—	—
Citric acid, 10%	EE	EE	EE	EE	EE	EE	EG	GG	EE	EE	EG	NN	GG	EE	EE
Cresol	NN	FN	GF	NN	EE	EG	NN	NN	NN	EE	NN	NN	EE	EE	EE
Cyclohexane	FN	FN	FN	NN	EE	EG	EG	GF	NN	EE	NN	EE	EE	EE	EE
DeCalin	GF	EG	GF	FN	EE	EE	NN	EG	NN	—	NN	EE	—	—	—
o-Dichlorobenzene	FN	FF	FN	FN	EE	EF	NN	NN	NN	EE	NN	EG	GG	EE	EE
p-Dichlorobenzene	FN	GF	GF	GF	EE	EF	NN	NN	NN	EE	NN	EG	GG	EE	EE
Diethyl benzene	NN	FN	NN	NN	EE	EG	FN	NN	NN	—	NN	EE	GG	EE	EE
Diethyl ether	NN	FN	NN	NN	EE	EG	NN	FN	NN	EG	NN	EE	GG	EE	EE
Diethyl ketone	NN	NN	GG	GF	EE	GF	NN	NN	NN	NN	NN	EE	GG	EE	EE
Diethyl malonate	EE	EE	EE	EG	EE	EE	FN	GN	FF	EG	NN	EE	—	—	—
Diethylene glycol	EE	EE	EE	EE	EE	EE	GF	FN	GG	EE	GG	EE	EE	EE	EE
Diethylene glycol ethyl ether	EE	EE	EE	EE	EE	EE	FN	FN	FF	—	NN	EE	EE	EE	EE
Dimethyl formamide	EE	EE	EE	EE	EE	GG	NN	FN	NN	NN	NN	FN	GF	EE	EE
Dimethylsulfoxide	EE	EE	EE	EE	EE	EG	NN	NN	NN	—	EG	EE	EE	EE	EE
1,4-Dioxane	GF	GG	GF	GF	EE	EF	GF	FN	GF	NN	NN	EF	GG	EE	EE
Dipropylene glycol	EE	EE	EE	EE	EE	EE	GF	GF	GG	—	EE	EE	—	—	—
Ether	NN	FN	NN	NN	EE	EG	NN	FN	NN	EG	NN	EE	EE	EE	EE
Ethyl acetate	EE	EE	EE	FN	EE	EE	NN	NN	NN	NN	NN	EE	GG	EE	EE
Ethyl alcohol (absolute)	EG	EE	EG	EG	EE	EE	EG	EG	EG	EE	FN	NN	EE	EE	EE
Ethyl alcohol, 40%	EG	EE	EG	EG	EE	EE	EG	EE	EG	EE	GF	NN	EE	EE	EE
Ethyl benzene	FN	GF	FN	FN	EE	GF	NN	NN	NN	—	NN	EE	GG	—	—
Ethyl benzoate	FF	GG	GF	GF	EE	EG	NN	NN	NN	NN	NN	EE	—	—	—
Ethyl butyrate	GN	GF	GN	FN	EE	EG	NN	NN	NN	NN	NN	EE	EG	—	—
Ethyl chloride, liquid	FN	FF	FN	FN	EE	EE	NN	NN	NN	EE	NN	GF	EE	EE	EE
Ethyl cyanoacetate	EE	EE	EE	EE	EE	EE	FN	FN	FF	NN	GN	GF	—	—	—
Ethyl lactate	EE	EE	EE	EE	EE	EE	FN	FN	FF	NN	FN	EG	—	—	—
Ethylene chloride	GN	GF	FN	NN	EE	EE	NN	NN	NN	EE	NN	EG	GG	EE	EE
Ethylene glycol	EE	EE	EE	EE	EE	EE	GF	EE	EE	EE	EE	EE	GG	EE	EE
Ethylene glycol methyl ether	EE	EE	EE	EE	EE	EE	FN	FN	FF	—	NN	EE	—	—	—
Ethylene oxide	FF	GF	FF	FN	EE	EE	FN	FN	EE	EE	NN	EE	GG	EE	EE
Fluorides	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	GG	EE	—	—	—
Fluorine	FN	GN	FN	FN	EG	EF	GF	EG	NN	—	NN	NN	EG	EE	—
Formaldehyde, 10%	EE	EE	EE	EG	EE	EE	EG	GF	GF	EE	FN	GF	EE	EE	EE

CHEMICAL	LDPE	HDPE	PP/PPCO	PMP	FEP/PTFE/PFA	ECTFE/ETFE	PC	PVC	PSF	PVDF	PS	NYL	Stainless Steel	Glass	Ceramic
Formaldehyde, 40%	EG	EE	EG	EG	EE	EE	EG	GF	GF	EE	NN	GF	EE	EE	EE
Formic acid, 3%	EG	EE	EG	EG	EE	EE	EG	GF	GG	EE	EG	NN	GG	EE	EE
Formic acid, 50%	EG	EE	EG	EG	EE	EE	EG	GF	GG	EE	FF	NN	GG	EE	EE
Formic acid, 98 to 100%	EG	EE	EG	FF	EE	EE	FF	FN	FF	EE	FF	NN	GG	EE	EE
Freon® TF	EG	EG	EG	FN	EE	EG	GF	GF	EG	EE	FN	—	EE	EE	EE
Fuel oil	FN	GF	EG	GF	EE	EE	EG	EE	EE	EE	NN	EE	EE	EE	EE
Gasoline	FN	GG	GF	GF	EE	EE	FF	GN	FF	EE	NN	EE	EE	EE	EE
Glacial acetic acid	EG	EE	EG	EG	EE	EE	NN	EG	FN	EG	NN	NN	EG	EE	EE
Glycerine	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE
n-Heptane	FN	GF	FF	FF	EE	EE	EG	GF	EG	EE	NN	EE	EE	EE	EE
Hexane	NN	GF	GF	FN	EE	EE	FN	GN	EG	EE	NN	EE	EE	EE	EE
Hydrochloric acid, 1 to 5%	EE	EE	EE	EG	EE	EE	EE	EE	EE	EE	EE	NN	NN	EE	EE
Hydrochloric acid, 20%	EE	EE	EE	EG	EE	EE	GF	EG	EE	EE	EE	NN	NN	EE	EE
Hydrochloric acid, 35%	EE	EE	EG	EG	EE	EE	NN	GF	EE	EE	FF	NN	NN	EE	EE
Hydrofluoric acid, 4%	EG	EE	EG	EG	EE	EE	GF	GF	GF	EE	GF	NN	NN	NN	—
Hydrofluoric acid, 48%	EE	EE	EE	EE	EE	EE	NN	GF	FN	EE	NN	NN	NN	NN	NN
Hydrogen peroxide, 3%	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EG	NN	GG	EE	EG
Hydrogen peroxide, 30%	EG	EE	EG	EG	EE	EE	EE	EE	EE	EE	EG	NN	GG	EE	EG
Hydrogen peroxide, 90%	EG	EE	EG	EG	EE	EE	EE	EG	EE	EE	EG	NN	GG	EE	EG
Isobutyl alcohol	EE	EE	EE	EG	EE	EE	EG	EG	EG	EE	GG	NN	EE	EE	EE
Isopropyl acetate	GF	EG	GF	GF	EE	EG	NN	NN	NN	—	NN	EE	GG	EE	EE
Isopropyl alcohol	EE	EE	EE	EE	EE	EE	EE	EG	EE	EE	EG	NN	GG	EE	EE
Isopropyl benzene	FN	GF	FN	NN	EE	EG	NN	NN	NN	—	NN	EG	—	—	—
Kerosene	FN	GG	GF	GF	EE	GF	EE	EE	GF	EE	NN	EE	EE	EE	EE
Lactic acid, 3%	EG	EE	EG	EG	EE	EE	EG	GF	EE	EG	GG	NN	GG	EE	EE
Lactic acid, 85%	EE	EE	EG	EG	EE	EG	EG	GF	EE	GF	GG	NN	GG	EE	EE
Methoxyethyl oleate	EG	EE	EG	EG	EE	EE	FN	NN	NN	—	NN	EG	—	—	—
Methyl alcohol	EE	EE	EE	EE	EE	EE	GF	FF	GF	EE	FN	NN	EE	EE	EE
Methyl ethyl ketone	NN	NN	EG	NN	EE	GF	NN	NN	NN	NN	NN	EE	EE	EE	EE
Methyl isobutyl ketone	NN	NN	GF	FF	EE	GF	NN	NN	NN	GN	NN	EE	GG	EE	EE
Methyl propyl ketone	GF	EG	GF	FF	EE	EG	NN	NN	NN	NN	NN	EE	EE	—	—
Methylene chloride	FN	FN	FN	FN	EE	GG	NN	NN	NN	NN	NN	GF	GG	EE	EE
Mineral oil	GN	EE	EE	EG	EE	EE	EG	EG	EE	EE	EE	EE	EE	EE	EE
Nitric acid, 1 to 10%	EE	EE	EE	EE	EE	EE	EG	EG	EF	EE	GN	NN	EE	EE	EE
Nitric acid, 50%	GN	GN	FN	GN	EE	EE	GF	GF	GF	EG	NN	NN	EG	EG	NN
Nitric acid, 70%	FN	GN	NN	GF	EE	EE	NN	FN	NN	GF	NN	NN	GG	EE	NN
Nitrobenzene	NN	FN	NN	NN	EE	EG	NN	NN	NN	EN	NN	FF	GG	EE	EE
n-Octane	EE	EE	EE	EE	EE	EE	GF	FN	GF	EE	NN	EE	EE	EE	EE
Orange oil	FN	GF	GF	FF	EE	EE	FF	FN	FF	EE	NN	GF	EE	EE	EE
Ozone	EG	EE	EG	EE	EE	EE	EG	EG	EE	EE	FF	EG	EG	—	—
Perchloric acid	GN	GN	GN	GN	GF	EG	NN	GN	NN	EE	GF	NN	FF	EE	EE
Perchloroethylene	NN	NN	NN	NN	EE	EE	NN	NN	NN	EE	NN	EE	EG	EE	EE
Phenol, crystals	GN	GF	GN	FG	EE	EE	NN	FN	FF	EE	NN	NN	GG	EE	EE
Phosphoric acid, 1 to 5%	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	GG	NN	NN	EE	EE
Phosphoric acid, 85%	EE	EE	EG	EG	EE	EE	EG	EG	EE	EE	EG	NN	NN	EE	EE
Pine oil	GN	EG	EG	GF	EE	EG	GF	FN	FF	EE	NN	GF	EE	—	—
Potassium hydroxide, 1%	EE	EE	EE	EE	EE	EE	FN	EE	EE	EE	GG	FF	EG	GF	GF
Potassium hydroxide, conc.	EE	EE	EE	EE	EE	EE	NN	EG	EE	EG	GG	FF	EG	NN	NN
Propane gas	NN	FN	NN	NN	EE	EE	FN	EG	FF	EE	NN	FF	GF	NN	NN
Propylene glycol	EE	EE	EE	EE	EE	EE	GF	FN	GG	—	EE	EE	GG	EE	EE
Propylene oxide	EG	EE	EG	EG	EE	FN	GF	FN	GG	FN	NN	EE	EE	—	—
Resorcinol, sat.	EE	EE	EE	EE	EE	EE	GF	FN	NN	—	GF	NN	—	—	—
Resorcinol, 5%	EE	EE	EE	EE	EE	EF	GF	GN	NN	—	GF	NN	—	—	—
Salicylaldehyde	EG	EE	EG	EG	EE	EN	GF	FN	FF	EG	NN	EG	—	—	—
Salicylic acid, powder	EE	EE	EE	EG	EE	EE	EG	GF	EE	EE	EE	EG	GG	EE	EE
Salicylic acid, sat.	EE	EE	EE	EE	EE	EE	EG	GF	EE	EE	EG	NN	GG	EE	EE
Salt solutions, metallic	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	GG	FF	EG	—	—
Silver acetate	EE	EE	EE	EE	EE	EE	EG	GG	EE	EE	GG	EF	—	—	—
Silver nitrate	EG	EE	EG	EE	EE	EE	EE	EG	EE	EE	GF	NN	GG	EE	EE
Sodium acetate, sat.	EE	EE	EE	EE	EE	EE	EG	GF	EE	EE	GG	FF	GG	EE	EE
Sodium hydroxide, 1%	EE	EE	EE	EE	EE	EE	FN	EE	EE	EE	GG	EE	GG	EE	EE
Sodium hydroxide, 50% to sat.	GG	EE	EE	EE	EE	EE	NN	NN	EG	EE	EE	GF	GG	NN	NN
Sodium hypochlorite, 15%	EE	EE	GF	EE	EE	EE	GF	EE	EE	EE	EE	NN	NN	EE	EG
Stearic acid, crystals	EE	EE	EE	EE	EE	EE	EG	EG	GG	EE	EG	EF	EG	EE	EE
Sulfuric acid, 1 to 6%	EE	EE	EE	EE	EE	EE	EE	EG	EE	EE	EG	NN	FN	EE	EG
Sulfuric acid, 20%	EE	EE	EG	EG	EE	EE	EG	EG	EE	EE	EG	NN	NN	EE	GG
Sulfuric acid, 60%	EG	EE	EG	EG	EE	EE	GF	EG	EE	EE	GN	NN	NN	EE	NN
Sulfuric acid, 98%	GG	GG	FN	GG	EE	EE	NN	GN	NN	EG	NN	NN	NN	EE	NN
Sulfur dioxide, liq., 46 psi	NN	FN	NN	NN	EE	EG	GN	FN	GG	EE	NN	NN	FN	NN	NN
Sulfur dioxide, wet or dry	EE	EE	EE	EE	EE	EE	EG	EG	GG	GE	FN	NN	FN	EE	EE
Sulfur salts	FN	GF	FN	FN	EE	EG	FN	NN	GG	GF	NN	NN	—	—	—
Tartaric acid	EE	EE	EE	EE	EE	EE	EG	EG	EE	EE	GG	EF	FF	EE	EE
Tetrahydrofuran	FN	GF	GF	FF	EE	EE	GF	NN	NN	NN	FN	NN	EE	EE	EE
Thionyl chloride	NN	NN	NN	NN	EE	EE	NN	NN	NN	—	NN	NN	NN	EE	EE
Toluene	FN	GG	GF	FF	EE	EE	FN	NN	NN	EE	NN	EE	EE	EE	EE
Tributyl citrate	GF	EG	GF	GF	EE	EG	NN	FN	FF	EF	NN	EG	—	—	—
Trichloroethane	NN	FN	NN	NN	EG	NN	NN	NN	NN	—	NN	EE	GG	EE	EE
Trichloroethylene	NN	FN	NN	NN	EE	EG	NN	NN	NN	EE	NN	EE	GG	EE	EE
Triethylene glycol	EE	EE	EE	EE	EE	EE	EG	GF	EE	—	EG	EE	—	—	—
Tripropylene glycol	EE	EE	EE	EE	EE	EE	EG	GF	EE	—	EG	EE	—	—	—
Turpentine	FN	GG	GF	FF	EE	EE	FN	GF	NN	EE	NN	EE	EE	EE	EE
Undecyl alcohol	EF	EG	EG	EG	EE	EG	GF	EF	FF	EE	GG	EE	—	—	—
Urea	EE	EE	EE	EG	EE	EE	NN	GN	FF	EE	EG	EE	GG	EE	EE
Vinylidene chloride	NN	FN	NN	NN	EE	GF	NN	NN	NN	EE	NN	NN	GG	—	—
Xylene	GN	GF	FN	FN	EE	EG	NN	NN	NN	EE	NN	EE	GG	EE	EE
Zinc stearate	EE	EE	EE	EE	EE	EE	EE	EG	EE	EE	EE	EE	EE	EE	EE

Effects of Chemicals on Labware

Chemicals may affect the weight, strength, color, dimensions, flexibility and surface appearance of labware.

The basic models of interaction that cause these changes are:

- (1) chemical attack on the polymer chain, with resultant reduction in physical properties, including oxidation; reaction of functional groups in or on the chain; and depolymerization;
- (2) physical change, including absorption of solvents, resulting in softening and swelling of the plastic; permeation of solvent through the plastic; or dissolution in a solvent; and
- (3) stress-cracking from the interaction of a “stress-cracking agent” with molded-in or external stresses.

The reactive combination of compounds of two or more classes may cause a synergistic or undesirable chemical effect. Other factors affecting chemical resistance include: temperature, pressure, internal or external stresses (such as centrifugation), and length of exposure to and concentration of the chemical. As temperature increases, resistance to attack decreases.



Warning!

The plastic resin information in these tables, excluding stainless steel, glass and ceramic, has been provided by Thermo Scientific™ Nalgene™ and is reprinted with their permission. It should be used ONLY as a guide for selecting labware for testing.

Test the labware for 72 hours under expected or proposed conditions of use, BEFORE putting into service. Test with care to avoid injury or property damage.

Thermo Fisher Scientific does not warrant (neither express nor imply) that the information in these tables is accurate or complete.

Physical Constants

Name and symbol	Value and units
Velocity of light, c	2.997902×10^{10} cm/s
Planck constant, h	6.62377×10^{27} erg s/molecule
Avogadro constant, N	6.02380×10^{23} molecule/mol
Faraday constant, F	96,493.1 C/equivalent
Absolute temperature of ice point, T (°C)	273.15 K
Pressure-volume product for 1 mol of gas at 0°C and zero pressure (PV) $P=0$; $T=0^\circ\text{C}$	2271.16 J/mol
Gas constant	
$P=0$	8.31469 J/mol°
$R=(PV) T=0^\circ\text{C}$ T (°C)	1.98726 cal/mol°
Boltzmann constant	1.38031×10^{16} erg/molecule°
$k=R/N$	11.96171 Jcm/mol
Constant relating wave number and energy $Z=Nhc$	2.858917 cal cm/mole
Standard atmosphere, atm	1,013,250 dynes/cm ²
Thermocaloric calorie	4.1840 J (exact)

Common Conversion Factors

Parts per Million	Parts per Billion	Percent
10,000 ppm	10,000,000 ppb	1.0%
1,000 ppm	1,000,000 ppb	.1%
100 ppm	100,000 ppb	.01%
10 ppm	10,000 ppb	.001%
1 ppm	1,000 ppb	.0001%
0.1 ppm	100 ppb	.00001%
0.01 ppm	10 ppb	.000001%

Glossary of Elemental Forms

Below are descriptions of the standard elemental forms as found on alfa.com and our literature.

Form	Description
Bar	A rectangular or cylindrical piece of material
Cubes	Uniform sized, cubic shaped pieces of material
Disc	A cylindrical piece of material with a diameter much larger than the thickness
Felt	Compressed, porous, nonwoven fabric
Fiber	A pure monofilament form of solid material having an extremely high length to diameter ratio
Flake	Powder with a flat, irregular shape
Foil	A thin sheet of pure material, 0.025mm-2mm
Gauze	A wire cloth material consisting of wires of a pure material woven into a grid having consistent openings
Granules	Uniform, amorphous pieces of material
Ingot	A cast, usually rectangular piece of material
Lump	A solid piece of amorphous material, larger than a granule
Mossy	Pieces formed by dropping molten metal into water
Needles	Uniform, elongated pieces of material
Pellets	Somewhat regular shaped pieces of material
Pieces	Solid pieces of material, larger than a granule
Plate	A sheet of fabricated pure material >2mm thick
Powder	Solid material with a very small particle size
Ribbon	A thin width of foil, offered in rolls of varying length
Rod	A uniform strand of a pure material having a diameter ≥ 2.0 mm
Shot	Spherical to semi-spherical pieces of material of varying sizes
Slugs	Short cylindrical pieces of material of varying lengths and diameters
Spheres	Uniform sized, spherical pieces of material
Splatter	Pieces formed by dropping molten metal onto a cooling surface
Sputtering target	A disc of high purity material used as an atomic sputtering source for ion bombardment
Sponge	Pieces with a high surface area resulting from complex surface morphology
Thin foil	A very thin sheet of unsupported pure material 1.1-24.0 micron thick
Tubing	A uniform strand of a pure material having a hollowed core
Turnings	Small concentric shavings machined from a larger form
Ultrathin foil	An extremely thin sheet of pure material, supported or unsupported ≤ 1 micron thick
Wire	A uniform strand of a pure material having a diameter ≤ 2.0 mm
Yarn	A parallel collection of a definite number of fiber strands, usually three to several hundred

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2

1

1 Hydrogen H 1s ¹ 1.0079	2 Helium He 1s ² 4.0026	3 Lithium Li [He]2s ¹ 6.941	4 Beryllium Be [He]2s ² 9.0122	5 Boron B [He]2s ² 2p ¹ 10.811	6 Carbon C [He]2s ² 2p ² 12.0107	7 Nitrogen N [He]2s ² 2p ³ 14.0067	8 Oxygen O [He]2s ² 2p ⁴ 15.9994	9 Fluorine F [He]2s ² 2p ⁵ 18.9984	10 Neon Ne [He]2s ² 2p ⁶ 20.179	11 Sodium Na [Ne]3s ¹ 22.9898	12 Magnesium Mg [Ne]3s ² 24.305	13 Aluminum Al [Ne]3s ² 3p ¹ 26.9815	14 Silicon Si [Ne]3s ² 3p ² 28.0855	15 Phosphorus P [Ne]3s ² 3p ³ 30.9738	16 Sulfur S [Ne]3s ² 3p ⁴ 32.066	17 Chlorine Cl [Ne]3s ² 3p ⁵ 35.453	18 Argon Ar [Ne]3s ² 3p ⁶ 39.948	19 Potassium K [Ar]4s ¹ 39.0983	20 Calcium Ca [Ar]4s ² 40.078	21 Scandium Sc [Ar]3d ¹ 4s ² 44.9559	22 Titanium Ti [Ar]3d ² 4s ² 47.867	23 Vanadium V [Ar]3d ³ 4s ² 50.9415	24 Chromium Cr [Ar]3d ⁵ 4s ¹ 51.996	25 Manganese Mn [Ar]3d ⁵ 4s ² 54.938	26 Iron Fe [Ar]3d ⁶ 4s ² 55.8457	27 Cobalt Co [Ar]3d ⁷ 4s ² 58.9332	28 Nickel Ni [Ar]3d ⁸ 4s ² 58.6934	29 Copper Cu [Ar]3d ¹⁰ 4s ¹ 63.546	30 Zinc Zn [Ar]3d ¹⁰ 4s ² 65.39	31 Gallium Ga [Ar]3d ¹⁰ 4s ¹ 4p ¹ 69.723	32 Germanium Ge [Ar]3d ¹⁰ 4s ² 4p ² 72.631	33 Arsenic As [Ar]3d ¹⁰ 4s ² 4p ³ 74.9216	34 Selenium Se [Ar]3d ¹⁰ 4s ² 4p ⁴ 78.96	35 Bromine Br [Ar]3d ¹⁰ 4s ² 4p ⁵ 79.904	36 Krypton Kr [Ar]3d ¹⁰ 4s ² 4p ⁶ 83.80	37 Rubidium Rb [Kr]5s ¹ 85.4678	38 Strontium Sr [Kr]5s ² 87.62	39 Yttrium Y [Kr]4d ¹ 5s ² 88.9059	40 Zirconium Zr [Kr]4d ² 5s ² 91.224	41 Niobium Nb [Kr]4d ⁴ 5s ¹ 92.9064	42 Molybdenum Mo [Kr]4d ⁵ 5s ¹ 95.94	43 Technetium Tc [Kr]4d ⁵ 5s ² 98.9062	44 Ruthenium Ru [Kr]4d ⁷ 5s ¹ 101.07	45 Rhodium Rh [Kr]4d ⁸ 5s ¹ 102.9055	46 Palladium Pd [Kr]4d ¹⁰ 106.42	47 Silver Ag [Kr]4d ¹⁰ 5s ¹ 107.8682	48 Cadmium Cd [Kr]4d ¹⁰ 5s ² 112.411	49 Indium In [Kr]4d ¹⁰ 5s ² 5p ¹ 114.818	50 Tin Sn [Kr]4d ¹⁰ 5s ² 5p ² 118.710	51 Antimony Sb [Kr]4d ¹⁰ 5s ² 5p ³ 121.760	52 Tellurium Te [Kr]4d ¹⁰ 5s ² 5p ⁴ 127.60	53 Iodine I [Kr]4d ¹⁰ 5s ² 5p ⁵ 126.9045	54 Xenon Xe [Kr]4d ¹⁰ 5s ² 5p ⁶ 131.29	55 Cesium Cs [Xe]6s ¹ 132.905	56 Barium Ba [Xe]6s ² 137.33	57 Lanthanum La [Xe]5d ¹ 6s ² 138.905	58 Cerium Ce [Xe]4f ¹ 5d ¹ 6s ² 140.12	59 Praseodymium Pr [Xe]4f ³ 6s ² 140.9077	60 Neodymium Nd [Xe]4f ⁴ 6s ² 144.24	61 Promethium Pm [Xe]4f ⁵ 6s ² (147)	62 Samarium Sm [Xe]4f ⁶ 6s ² 150.36	63 Europium Eu [Xe]4f ⁷ 6s ² 151.96	64 Gadolinium Gd [Xe]4f ⁷ 5d ¹ 6s ² 157.25	65 Terbium Tb [Xe]4f ⁹ 6s ² 158.9254	66 Dysprosium Dy [Xe]4f ¹⁰ 6s ² 162.50	67 Holmium Ho [Xe]4f ¹¹ 6s ² 164.9304	68 Erbium Er [Xe]4f ¹² 6s ² 167.26	69 Thulium Tm [Xe]4f ¹³ 6s ² 168.9342	70 Ytterbium Yb [Xe]4f ¹⁴ 6s ² 173.04	71 Lutetium Lu [Xe]4f ¹⁴ 5d ¹ 6s ² 174.967	72 Hafnium Hf [Xe]4f ¹⁴ 5d ² 6s ² 178.49	73 Tantalum Ta [Xe]4f ¹⁴ 5d ³ 6s ² 180.9479	74 Tungsten W [Xe]4f ¹⁴ 5d ⁴ 6s ² 183.85	75 Rhenium Re [Xe]4f ¹⁴ 5d ⁵ 6s ² 186.207	76 Osmium Os [Xe]4f ¹⁴ 5d ⁶ 6s ² 190.2	77 Iridium Ir [Xe]4f ¹⁴ 5d ⁷ 6s ² 192.222	78 Platinum Pt [Xe]4f ¹⁴ 5d ⁹ 6s ¹ 195.08	79 Gold Au [Xe]4f ¹⁴ 5d ¹⁰ 6s ¹ 196.9665	80 Mercury Hg [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 200.59	81 Thallium Tl [Xe]4f ¹⁴ 5d ³ 6s ² 6p ¹ 204.383	82 Lead Pb [Xe]4f ¹⁴ 5d ³ 6s ² 6p ² 207.2	83 Bismuth Bi [Xe]4f ¹⁴ 5d ³ 6s ² 6p ³ 208.9804	84 Polonium Po [Xe]4f ¹⁴ 5d ³ 6s ² 6p ⁴ (209)	85 Astatine At [Xe]4f ¹⁴ 5d ³ 6s ² 6p ⁵ (210)	86 Radon Rn [Xe]4f ¹⁴ 5d ³ 6s ² 6p ⁶ (222)	87 Francium Fr [Rn]7s ¹ (223)	88 Radium Ra [Rn]7s ² (226)	89 Actinium Ac [Rn]6d ¹ 7s ² (227)	90 Thorium Th [Rn]6d ² 7s ² 232.0381	91 Protactinium Pa [Rn]6d ³ 7s ² 231.0369	92 Uranium U [Rn]6d ¹ 7s ² 238.0289	93 Neptunium Np [Rn]5f ⁴ 6d ¹ 7s ² 237.0482	94 Plutonium Pu [Rn]5f ⁶ 7s ² (242)	95 Americium Am [Rn]5f ⁷ 7s ² (243)	96 Curium Cm [Rn]5f ⁸ 7s ² (247)	97 Berkelium Bk [Rn]5f ⁹ 7s ² (247)	98 Californium Cf [Rn]5f ¹⁰ 7s ² (251)	99 Einsteinium Es [Rn]5f ¹¹ 7s ² (252)	100 Fermium Fm [Rn]5f ¹² 7s ² (257)	101 Mendelevium Md [Rn]5f ¹³ 7s ² (258)	102 Nobelium No [Rn]5f ¹⁴ 7s ² (259)	103 Lawrencium Lr [Rn]5f ¹⁴ 6d ¹ 7s ² (260)	104 Rutherfordium Rf [Rn]5f ¹⁴ 6d ² 7s ² (261)	105 Dubnium Db [Rn]5f ¹⁴ 6d ³ 7s ² (262)	106 Seaborgium Sg [Rn]5f ¹⁴ 6d ⁴ 7s ² (263)	107 Bohrium Bh [Rn]5f ¹⁴ 6d ⁵ 7s ² (264)	108 Hassium Hs [Rn]5f ¹⁴ 6d ⁶ 7s ² (265)	109 Meitnerium Mt [Rn]5f ¹⁴ 6d ⁷ 7s ² (266)	110 Darmstadtium Ds [Rn]5f ¹⁴ 6d ⁸ 7s ² (268)	111 Roentgenium Rg [Rn]5f ¹⁴ 6d ⁹ 7s ² (271)	112 Copernicium Cn [Rn]5f ¹⁴ 6d ¹⁰ 7s ² (285)	113 Ununtrium Uut [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ¹ (286)	114 Flerovium Fl [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ² (289)	115 Ununpentium Uup [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ³ (289)	116 Livermorium Lv [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ⁴ (293)	117 Ununseptium Uus [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ⁵ (294)	118 Ununoctium Uuo [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ⁶ (294)
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Manufacturing



Custom Synthesis



Customized Packaging



Tailored Specifications



Testing Services



Bulk and Semi-bulk Chemicals



Mixtures and Blends



Reduced waste



Sourcing Support

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Numbers in brackets are mass numbers of the most stable or most common isotope. Atomic weights conform to the Bulletin of the International Union of Pure and Applied Chemistry, volume 56, number 6 1984. Stated to Ar(C) = 12

filling of electrons:

- on level
- on level
- on level
- on level

A – Z index

Product Name	Page no.	Product Name	Page no.
Tris-acetate-EDTA (TAE) solution 50X, DNase RNase and protease free	9	Dihydrogen hexachloroplatinate(IV) hydrate, 99.9%	15
Acetic acid glacial, Certified AR for analysis, meets Ph.Eur., BP, USP	6	Diiodomethane, 99+%, stabilized	13
Acetic anhydride, 99+%, pure	14	Diisobutylaluminium hydride solution	14, 15
Acetone, Certified AR for analysis, meets Ph.Eur.	6	Diisopropyl azodicarboxylate, 94%	12
Acetonitrile	5, 12, 19	2,2-Dimethoxypropane, 98+%	14
Agar	9	4-Dimethylaminopyridine, 99%	10
Agarose	9	9,9-Dimethyl-4,5-bis(diphenylphosphino)xanthene, 98%	14
Allylzinc bromide, 0.5M in THF, ChemSeal	19	Dimethyl sulfoxide	8, 19
Aluminum nitrate hydrate, Puratronic, 99.999%	18	Dimethylformamide	6, 12
Aluminum oxide, alpha-phase, 99.95% min	18	1,4-Dioxane	6, 12
Aluminium oxide, neutral, Brockmann I, for chromatography, 50-200µm, 60A	11	(±)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98%	14
Ammonia solution, 35%, Certified AR for analysis, d=0.88	6	1,1'-Bis(diphenylphosphino)ferrocene-palladium(II)dichloride dichloromethane adduct	11
Ammonia, ca. 7N solution in methanol	13	Di-tert-butyl dicarbonate	14
Ammonium acetate	6	Dithiothreitol, white crystals or powder, for electrophoresis	9
Ammonium chloride	6	Ethanol	6, 8, 19
Ampicillin Sodium Salt, crystalline powder	9	Ethidium bromide, 1% solution, molecular biology	9
Benzoyl chloride, 99%, pure	14	3-(Ethoxycarbonyl)propylzinc bromide, 0.5M in THF, ChemSeal	19
Benzyl bromide, 98%	13	Ethyl acetate	5, 6
Benzyl chloroformate, 97 wt%, stabilized	14	Ethylenediaminetetraacetic acid disodium salt solution 0,1M	7
Borane-methyl sulfide complex, 94%, AcroSeal	15	Ethylenediaminetetraacetic acid disodium Salt Dihydrate	7
Borane-tetrahydrofuran complex, 1M solution in THF, Stabilized, AcroSeal	15	Florisoril, 60-100 mesh, for column chromatography	12
Tris-Borate-EDTA, 10X solution, electrophoresis	9	Formamide	8
Boron tribromide, 1M solution in methylene chloride	13	Formic acid, 98-100%, Certified AR for analysis	6
Boron trichloride, 1M solution in methylene chloride, AcroSeal	13	9-Fluorenylmethyl chloroformate, 98%	14
Boron trifluoride etherate, approx. 48% BF ₃	12	Glycerol, molecular biology	8
Boron trifluoride, 12% (1.5M) in methanol	14	Glycine, white crystals or crystalline powder	9
Bovine serum albumin, fraction V	8	Gold(III) acetate, 99.9%	19
Bromine	13	Gold shot	19
Bromine liquid, 99.8%	19	Gold wire	19
N-Bromosuccinimide, 99%	13	HEPES (Fine White Crystals) for Molecular Biology	8
Buffer solutions for pH measurement	7	Heptane, for HPLC, approx. 99% n-Heptane	5
tert-Butylchlorodimethylsilane, 98%	14	n-Heptane	6
n-Butyllithium solution	13	n-Hexane	6
tert-Butyllithium, 1.9M solution in pentane, AcroSeal	13	Hexadecyltrimethylammonium bromide, 99+%	11
Tri-n-butyltin hydride, 97%	15	1,1,1,3,3,3-Hexamethylidisilazane, 98%	14
Calcium chloride dihydrate, Certified AR for analysis, meets Ph.Eur.	7	1,6-Hexanediamine, 99.5+%	12
Calcium chloride, 96%, extra pure, powder, anhydrous	12	Hexanes	5, 6
1,1'-Carbonyldiimidazole, 97%	12	Hydrazine hydrate, 100% (Hydrazine, 64%)	14
Tris(2-carboxyethyl)phosphine hydrochloride, 98%	14	Hydrobromic acid, pure, ca. 48 wt% solution in water	13
CellPURE PBS 10X, Cell Culture Grade	9	Hydrochloric acid	6
Cesium, 99.98%	19	Hydrochloric acid solution 1M	7
Cesium carbonate, 99.5%, for analysis	11	Hydrogen bromide, pure, 33 wt% solution in glacial acetic acid	13, 14
Cesium chloride, 99+%, for analysis	11	Hydrogen chloride, solution	14
Cesium fluoride, 99%, for analysis	11	Hydrogen hexachloroplatinate(IV) hydrate	11
Chlorodicyclohexylphosphine, 97%	14	Hydrogen peroxide, for analysis, 35 wt.% solution in water, stabilized	14
Chloroform	5, 6, 8	Hydroxylamine hydrochloride, 99+%	15
Chloroform-d, for NMR	12	Indium(III) chloride, anhydrous, 99.999%	18
3-Chloroperoxybenzoic acid, 70-75%, balance 3-Chlorobenzoic acid and water	14	Indium(III) sulfide, 99.995%	19
Chlorotrimethylsilane, 98%	14	Iodine, 99.5%, extra pure, resublimed	13
Copper(II) oxide, Puratronic, 99.995%	18	N-Iodosuccinimide, 98%	13
4-Cyanobutylzinc bromide, 0.5M in THF, ChemSeal	19	Iron, 99%, powder, -70 mesh (<212 micron)	15
Cyanogen bromide, 97%	13	Isohexane, for HPLC, contains <5% n-Hexane	5
Cyclobutylzinc bromide, 0.5M in THF, ChemSeal	19	Isopropanol	5, 6, 8, 12
Cyclohexane	6	Isopropyl-8-D-thiogalactopyranoside, dioxane-free	9
Cyclohexylzinc bromide, 0.5M in THF, ChemSeal	19	Isopropylmagnesium chloride - Lithium chloride complex, 1.3M solution in THF, AcroSeal	13
Cyclopropylzinc bromide, 0.5M in THF, ChemSeal	19	Isopropylmagnesium chloride, 2.0M solution in THF, AcroSeal	13
Dess-Martin periodinane, 15 wt.% solution in dichloromethane	14	Isopropylzinc bromide, 0.5M in THF, ChemSeal	19
Deuterium oxide, for NMR, 99.8 atom % D	12	Kanamycin sulfate	9
Tris(dibenzylideneacetone)dipalladium(0), 97%	11	Kanamycin Sulfate, white powder	9
2,3-Dichloro-5,6-dicyano-1,4-benzoquinone, 98%	14	Karl Fischer Aqualine	7
Dichloromethane	5, 6, 11, 12	LB Agar, Miller	9
N,N'-Dicyclohexylcarbodiimide, 99%	13	LB Broth, Lennox	9
Diethyl ether	6, 12	LB Broth, Miller	9
Diethylaminosulfur trifluoride, 95%	13	Lead(II) iodide, ultra dry, 99.999%	19

Product Name	Page no.
Lithium aluminium hydride, 95%, powder	15
Lithium diisopropylamide, 2M sol. in THF/n-heptane/ethylbenzene, AcroSeal	13
Magnesium sulfate, 97%, pure, anhydrous	12
MES, fine white crystals	9
Methanol	5, 6, 8, 9, 19
Methanol-d4, for NMR	12
4-Methoxy-3-pyridineboronic acid hydrate, 97%	10
Methyl sulfoxide-d6, for NMR	12
Methylithium, 1.6 M sol. in diethyl ether (\pm 5% w/v), AcroSeal	13
Methylmagnesium bromide, 3M solution in diethyl ether, AcroSeal	13
Methylmagnesium chloride, 3M (22 wt.%) solution in THF, AcroSeal	13
Molecular sieves 4A, 8 to 12 mesh	12
MOPS (Fine White Crystals) for Molecular Biology	9
Nitric acid	6
Oxalyl bromide, 98%	13
Oxalyl chloride, 98%	13
Palladium hydroxide on carbon, powder, unreduced, 20% Pd, moisture ca 60%	11
Palladium on activated carbon	11
Palladium on calcium carbonate, poisoned with 3.5% lead, 5% Pd	11
Palladium(II) acetate, 47.5% Pd	11
Palladium(II) nitrate hydrate, 99.8%, Pd 39% min	19
Paraformaldehyde, 96%, extra pure	12
n-Pentane, Certified AR for analysis	6
Petroleum ether 40-60°C	6
Phenol, saturated, liquid, pH 6.6/7.9	9
Phenylboronic acid, 98+%, may contain varying amounts of anhydride	10
Phenylzinc bromide, 0.5M in THF, ChemSeal	19
Phosphate buffered saline, solutions, powdered and tablets	9
Bis(pinacolato)diboron, 98%	10
Platinum on activated carbon	11
Platinum(II) acetylacetonate, 98%	11
Platinum(IV) oxide, 83% Pt	11
Platinum(II) 2,4-pentanedionate, Pt 48.0% min	19
Platinum gauze, 99.9%	19
Platinum slug, 99.99+%	19
Potassium carbonate anhydrous, Certified AR, for analysis, meets Ph.Eur.	7
Potassium chloride	7
Potassium dihydrogen orthophosphate, Certified AR for analysis	7
Potassium fluoride, 99%, extra pure, anhydrous	13
Potassium hexachloroplatinate(IV), ca. 40% Pt	11
Potassium hydroxide solution 1M (1N)	7
Potassium hydroxide, Certified AR for analysis, pellets, meets Ph.Eur., BP	6
Potassium iodide, Certified AR for analysis	7
Potassium nitrate, Certified AR for analysis, meets analytical specification of Ph.Eur., BP	7
Potassium tert-butoxide, 98+%, pure	13
1-Propanol	19
2-Propanol	19
Propargyl bromide, 80 wt.% solution in toluene, stabilized	14
Proteinase K, from Tritirachium album, DNase and RNase free	9
Puromycin Dihydrochloride	9
2-Pyridylzinc bromide, 0.5M in THF, ChemSeal	19
Quinoline-3-boronic acid, 97%	10
Rapamycin	9
Rhodium on alumina, 5% Rh, powder	11
Rhodium(II) acetate dimer, anhydrous, ca 46% Rh	11
Ruthenium(III) chloride hydrate, 35 - 40% Ru	11
Silica gel orange, for drying purposes, non toxic grade, 2-5 mm	12
Silica gel, for chromatography	12
Silica gel, for drying purposes, non-toxic grade, 3-6 mm	12
Silver nitrate solution 0,1M (0,1N)	7
Silver wire, 99.9%	19
SOB Broth (Capsules)	9

Product Name	Page no.
Sodium acetate trihydrate, Certified AR for analysis, crystal	7
Sodium azide, 99%, extra pure	13
Sodium biphenyl, 20%w/w solution in diethylene glycol diethyl ether, offered as 20 x 15mL	15
Sodium bis(trimethylsilyl)amide, pure, 2M solution in THF, AcroSeal	13
Sodium borohydride, 98+%, powder	15
Sodium chloride	7, 9, 19
Sodium cyanoborohydride, 95%	13
Sodium Dodecyl Sulfate (SDS)	9
Sodium hydride, 60% dispersion in mineral oil, in soluble bags	15
Sodium hydrogen carbonate, Certified AR for analysis, meets Ph.Eur.	7
Sodium hydroxide solution 1M (1N)	7
Sodium hydroxide, Certified AR for analysis, pellets, meets Ph.Eur., BP	6
Sodium hydrosulfite, ca. 85%, tech.	15
Sodium hypochlorite, 13% active chlorine	14
Sodium periodate, 99%, for analysis	14
Sodium peroxide, 96%	14
Sodium sulfate anhydrous	7
Sodium thiosulfate solution 0,1M (0,1N)	7
Sodium thiosulfate, 98.5%, extra pure, anhydrous	15
Sodium triacetoxylborohydride, 97%	15
D-Sucrose, molecular biology	9
Sulfuric acid	6
Sulfuric acid solution 0,5M (1N)	7
TEMED, Electrophoresis	9
Tetraammineplatinum(II) chloride monohydrate, 99.995%	19
Tetrabutylammonium hydrogen sulfate, 98%	11
Tetrabutylammonium hydroxide, 1M solution in methanol	11
Tetrabutylammonium hydroxide, 40 wt. % (1.5M) solution in water	11
Tetraheptylammonium bromide, 99%	11
Tetrahydrofuran	5, 6, 12, 19
Tetrakis(triphenylphosphine)palladium(0)	11
4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)aniline, 97%	10
4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)pyridine, 97%	10
Titanium(IV) isopropoxide, 98+%	10
Toluene	6
p-Toluenesulfonyl chloride, 99+%	14
Triethylsilane, 99%	15
Trifluoromethanesulfonic anhydride, 98+%	13
Triisopropylsilane, 98%	15
(Trimethylsilyl)diazomethane, 2M solution in hexanes	13
N,O-Bis(trimethylsilyl)trifluoroacetamide, 98+%	12
Trimethylsilyl trifluoromethanesulfonate, 99%	14
Triphenylphosphine, 99%	14
Bis(triphenylphosphine)palladium(II) chloride, 98%	11
Tris base, white crystals or crystalline powder, molecular biology	9
Tris buffered saline, 10X Solution, pH 7.4, molecular biology	9
Triton X-100 for Electrophoresis	9
Tryptone (Granulated)	9
Tween 20	9
Urea, molecular biology grade, Colorless-to-White Crystals or Crystalline powder	9
Vancomycin	9
Vanadium foil, 99.8%	19
Vinylmagnesium bromide, 0.7M solution in THF, AcroSeal	13
Vinylmagnesium chloride, 1.9M (16.5 wt.%) solution in THF, AcroSeal	13
Water	5, 6, 9, 19
Yeast Extract	9
Zinc, 98+%, dust (stable acc. to UN classification class 4)	14
Zirconium sponge, 99.5%, Zr & Hf	19

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Lab chemicals and reagents	Analytical grade reagents	Laboratory grade reagents	HPLC solvents	LC-MS and UHPLC	Gas chromatography	Buffers	pH indicators	Volumetric solutions	AAS and ICP	Trace metal grade	Laboratory cleaner	Karl Fisher reagents
Ajax Finechem	✓	✓	✓			✓	✓	✓			✓	
LabServ Pronalys	✓	✓				✓		✓				
Fisher Chemical	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Australian Chemical Reagents						✓		✓	✓			
SPEX CertiPrep						✓			✓			
Machery Nagel							✓					
Decon Laboratories											✓	
RBS											✓	

Smart chemical solutions for your research, discovery and analysis

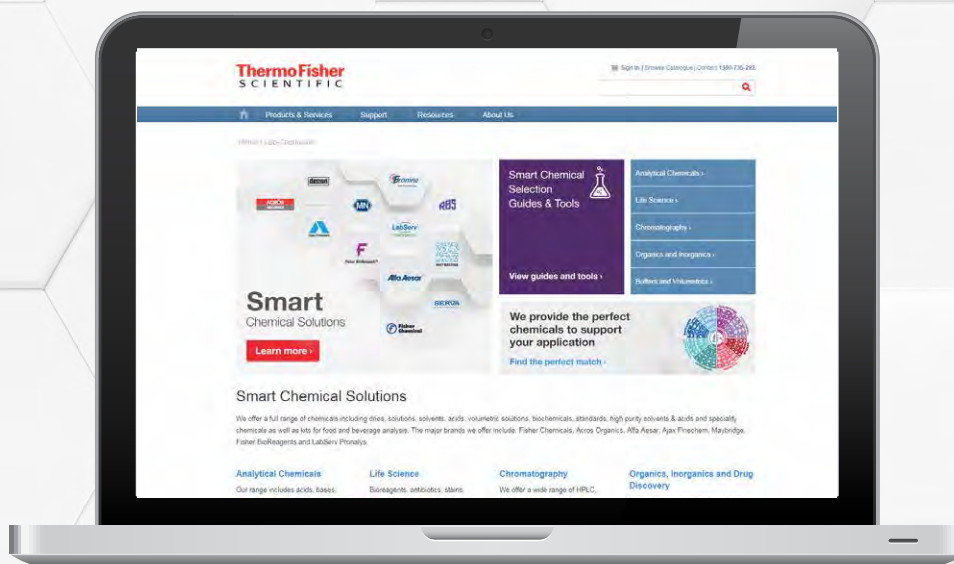
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Chemicals for research and life science	Chemical Categories									
	Organic chemicals	Fine chemicals	Research chemicals	Molecular biology	Protein chemistry and cell biology	High purity metals and materials	Building blocks and screening	Electrophoresis	Detergents	Anatomical pathology and cytology
Acros Organics	✓	✓	✓							
Alfa Aesar		✓	✓			✓				
Fisher BioReagents			✓	✓	✓			✓	✓	
Serva Electrophoresis				✓				✓		
Maybridge							✓			
Tokyo Chemical Industry (TCI)		✓	✓							
Fronine										✓

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