

Chemical Stockroom Essentials

- Fisher Chemical
- Fisher BioReagents
- Acros Organics

Chemical Storage Guidelines



Chemical Stockroom Handbook

Fisher Chemical* Products Purity Grades

| Grade | Definition | Application | Certificate of Analysis |
|---------------------------------------|--|---|---------------------------------|
| Biotechnology | Solvents and reagents that have been specially purified and assayed for biotechnology applications. | Electrophoresis, molecular biology, sequencing, and peptide and oligonucleotide synthesis | Available on request |
| Certified | Reagent chemicals for which the purity standard is established by Fisher Scientific. Purity is guaranteed to meet published maximum limits of impurities. | General analytical procedures | Available on request |
| Certified ACS | Reagent chemicals that meet or exceed the latest ACS specifications. Actual lot analysis on label. | Analytical applications requiring tight specifications | Available on request |
| Certified ACS Plus | "Acids that, in addition to meeting or exceeding the latest specifications of the ACS, are analyzed for more than 16 metals. Actual lot analysis on label." | Analytical applications with tighter metal specifications | Available on request |
| Electronic | Solvents manufactured to ensure low levels of metal contamination. Meet Semiconductor Equipment and Materials Institute (SEMI) requirements. Actual lot analysis on label. | Electronics and circuit board manufacturing | Available on request |
| Environmental Grade | Solvents for use in HPLC analysis, trace-organic analysis, and environmental testing. Packaged in precleaned glass bottles in M3.5 (Class 100) cleanroom. Shipped with Certificate of Analysis. | HPLC, trace organic analysis, environmental testing | Provided with each shipment |
| GC Resolv* | "Solvents with the highest purity and lot-to-lot consistency. Free of contaminants to the ppb level, including those listed in Contract Laboratory Program Target Compound List. Meet ACS specifications. Chromatogram available on request." | Gas Chromatography (GC) | Provided with each shipment |
| Histology | Solvents and products that are specially prepared for use in the histology laboratory setting. Solvents are filtered for tissue processing applications. | Tissue processing, clinical or histology procedures | Available on request |
| HPLC | Solvents manufactured specifically for use with HPLC instruments. Meet all ACS specifications. Submicron filtered. | HPLC and spectrophotometry procedures | Available on request |
| Laboratory and Technical | "Chemicals of reasonable quality and purity for use in procedures where no official standards are required. " | Manufacturing and general laboratory use | Available on request |
| Optima* | Acids and solvents of extremely high purity. Acids are analyzed for 65 metals by ICP/MS; impurity levels in ppt. Solvent impurity levels in ppm. UV absorbance curves and sample chromatograms available on request. For Optima acids, a typical lot analysis is given in the catalog. Impurity levels in an actual lot may vary from the amount listed. | HPLC, GC, plasma/ICP, spectrophotometry, and pesticide residue analysis | Provided with each shipment |
| Optima LC/MS | Solvents and additives of exceptionally high purity specially designed and use-tested on LC/MS instruments. Solvent impurity levels in ppb. | LC/MS, HPLC, GC and spectrophotometry | Provided with each shipment |
| Pesticide | Solvents for use in analysis of pesticide residue. Meet or exceed ACS standards of purity for pesticide residue analysis. | GC with electron capture detector (ECD), pesticide residue analysis | Available on request |
| Scintanalyzed* | Solvents, fluors, and prepared cocktails for liquid scintillation counting. Includes nonflammable, nontoxic, biodegradable ScintiSafe* cocktails. | Liquid scintillation counting | Available on request |
| Spectranalyzed* | Solvents for use in spectrophotometry. Also meet ACS specifications. Actual lot analysis on label. | Ultraviolet and visible wavelength detectors (UV-Vis) | Available on request |
| TraceMetal | Acids manufactured to achieve low metal contamination measurable in ppm to ppb range. Each lot is analyzed for more than 55 metals by ICP/MS. For TraceMetal acids, a typical lot analysis is given in the catalog. Impurity levels in an actual lot may vary from amounts listed. | Primarily used in digestion of samples prior to instrument (ICP) analysis | Provided with each shipment |
| Ultra Trace Elemental Analysis | Solvents manufactured for use with plasma/ICP instruments. Impurity levels in ppt. Packaged in acid-cleaned polyethylene bottles. | Plasma/ICP, environmental testing, trace metal analysis | Available on request |
| USP/NF/FCC/EP/BP/JP | Reagent chemicals that meet or surpass specifications of the United States Pharmacopeia (USP), the National Formulary (NF), the Food Chemicals Codex (FCC), the European Pharmacopeia (EP), the British Pharmacopeia (BP), and/or the Japanese Pharmacopeia (JP). | Food and drug laboratories, biological testing | 20L or greater; 10kg or greater |

Fisher Chemical* Stockroom Essentials

Quality, purity and certainty ...

- All chemicals are manufactured in Fisher Chemical, FDA licensed, ISO 9001:2008- and cGMP-certified facilities
- Rigorous quality assurance and testing procedures throughout the production process ensure the lot-to-lot consistency required for uniform analysis
- Optima* and HPLC-grade solvents are sealed with FisherLOCK* Tamper Evident Caps, packaged in Safe-Cote* bottles to prevent spills, and arrive in EcoSafPak* containers, a 100% recyclable shipper
- For the complete portfolio of Fisher Chemical products and promotions, please visit www.fishersci.com/chemicals

Fisher Chemical Products

Optima Grade: Ultra-high purity for more reliable analysis and cost savings

| Description | Pack Size | Fisher Scientific Cat. No. | EMD Millipore* Equivalent | Sigma* Equivalent | JT Baker* Equivalent | Macron* Equivalent |
|---|-----------|----------------------------|---------------------------|-------------------|----------------------|--------------------|
| 2-Propanol, Optima, also meets ACS specifications | 4L | A4644 | PX18341 | X | X | V55510 |
| Acetonitrile, Optima, also meets ACS specifications | 4L | A9964 | AX01421 | X | X | H45410 |
| Hexanes, Optima, also meets ACS specifications | 4L | H3034 | HX02961 | X | X | H48710 |
| Methanol, Optima, also meets ACS specifications | 4L | A4544 | MX04881 | X | X | H48810 |
| Methylene Chloride, Optima, also meets ACS specifications | 4L | D1514 | DX08311 | X | 926403 | H48510 |

HPLC Grade Solvents

| Description | Pack Size | Fisher Scientific Cat. No. | EMD Millipore Equivalent | Sigma Equivalent | JT Baker Equivalent | Macron Equivalent |
|---|-----------|----------------------------|--------------------------|------------------|---------------------|-------------------|
| Acetone, HPLC, also meets ACS specifications | 4L | A9494 | AX01151 | 270725 | 900203 | 243510 |
| Acetonitrile, HPLC, also meets ACS specifications | 4L | A9984 | AX01451 | 270717 | 901703 | 285610 |
| Hexanes, HPLC, also meets ACS specifications | 4L | H3024 | HX02901 | X | 930803 | 516710 |
| Methanol, HPLC, also meets ACS specifications | 4L | A4524 | MX04751 | X | 909303 | 304110 |
| Methanol, HPLC, also meets ACS specifications | 4L | A452SK4 | MX0475P1 | X | 909333 | H08010 |
| Water, HPLC grade | 4L | W54 | X | X | X | X |

Histology Grade Solvents: The only products that offer the environmentally friendly F-Style *poly* bottle, which maximizes bench and shelf space

| Description | Pack Size | Fisher Scientific Cat. No. | EMD Millipore Equivalent | Sigma Equivalent | JT Baker Equivalent | Macron Equivalent |
|----------------------------------|-----------|----------------------------|--------------------------|------------------|---------------------|-------------------|
| Acetone, histological | 4L | A16P4 | AX01254 | X | A13409 | X |
| Acetone, histological | 20L | A16S20 | AX01253 | X | A13401 | X |
| Alcohol, Reagent, histological | 4L | A962P4 | AX044114 | X | X | X |
| Ethanol, Anhydrous, histological | 4L | A405P4† | X | X | A47809 | X |
| Methanol, histological | 4L | A433P4 | MX04904 | X | 907603 | X |
| Xylenes, histological | 1 gal. | X3P1GAL | X | X | X | X |

† Products might not be available in all regions. Contact your local sales representative for details.

Fisher Chemical* Products (Contd.)

ACS Grade

| Description | Pack Size | Fisher Scientific Cat. No. | EMD Millipore* Equivalent | Sigma* Equivalent | JT Baker* Equivalent | Macron* Equivalent |
|---|-----------|----------------------------|---------------------------|-------------------|----------------------|--------------------|
| 2-Propanol, certified ACS plus | 4L | A4164 | PX18355 | 190764 | 908403 | 303208 |
| 2-Propanol, certified ACS plus | 500mL | A416500 | PX183513 | 190764 | 908401 | 303204 |
| Acetic Acid, glacial, certified ACS | 500mL | A38500 | AX007313 | 242853 | 950802 | V19314 |
| Acetone, certified ACS | 20L | A1820 | AX01203 | 179124 | 900607 | 244019 |
| Acetone, certified ACS | 4L | A184 | AX01208 | 179124 | 900603 | 244008 |
| Acetone, certified ACS | 500mL | A18500 | AX01206 | 179124 | 900601 | 244004 |
| Chloroform, approx. 0.75% ethanol as preservative, certified ACS | 4L | C2984 | cx10559 | 319988 | 918003 | 444008 |
| Chloroform, approx. 0.75% ethanol as preservative, certified ACS | 500mL | C298500 | cx105513 | 319988 | 918001 | 444004 |
| Ethyl acetate, certified ACS | 4L | E1454 | EX024014 | 319902 | 928003 | 499208 |
| Ethyl acetate, certified ACS | 20L | E14520 | EX02403 | 319902 | 928007 | 499219 |
| Ethyl acetate, HPLC, also meets ACS specifications | 4L | E1954 | EX02451 | 270520 | 928203 | 344210 |
| Ethyl ether, anhydrous, BHT stabilized, certified ACS | 1L | E1381 | EX01906 | X | 924422 | 84812 |
| Ethyl ether, anhydrous, BHT stabilized, certified ACS | 4L | E1384 | EX01903 | 179264 | 924403 | 84810 |
| Hexanes, certified ACS | 20L | H29220 | HX02993 | 178918 | 930907 | 518919 |
| Hexanes, certified ACS | 4L | H2924 | HX02995 | 178918 | 930903 | 518908 |
| Hydrochloric acid, certified ACS plus | 500mL | A144500 | HX060313 | 258148 | 953502 | H61314 |
| Hydrogen peroxide, 30%, certified ACS | 100mL | H325100† | HX06351 | 216763 | X | 524002 |
| Hydrogen peroxide, 30%, certified ACS | 500mL | H325500 | HX06352 | 216763 | 218601 | 524004 |
| Methanol, certified ACS | 4L | A412SK4 | MX0485P4 | X | 907033 | 302410 |
| Methanol, certified ACS | 4L | A412P4 | MX04853 | X | 907005 | X |
| Methanol, certified ACS | 1L | A4121 | MX04858 | 179337 | X | 301606 |
| Methanol, certified ACS | 4L | A4124 | MX04857 | 179337 | 907003 | 301608 |
| Methanol, certified ACS | 500mL | A412500 | MX04856 | 179337 | 907001 | 301604 |
| Methylene chloride, stabilized, certified ACS | 4L | D374 | dx083514 | 443484 | 932403 | 488108 |
| Methylene chloride, stabilized, certified ACS | 20L | D3720 | dx08355 | d65100 | 932407 | 488119 |
| Methylene chloride, stabilized, HPLC, also meets ACS specifications | 4L | D1434 | dx08381 | 270563 | 931503 | 487910 |
| Sodium chloride, crystalline, certified ACS | 3kg | S2713 | SX04203 | 223514 | 362405 | 758106 |
| Sodium chloride, crystalline, certified ACS | 500g | S271500 | SX04201 | 223514 | 362401 | 758112 |
| Sodium hydroxide, pellets, certified ACS | 500g | S318500 | SX059013 | 221465 | 372201 | 770810 |

Certified

| Description | Pack Size | Fisher Scientific Cat. No. | EMD Millipore Equivalent | Sigma Equivalent | JT Baker Equivalent | Macron Equivalent |
|---|-----------|----------------------------|--------------------------|------------------|---------------------|-------------------|
| Buffer solution, pH 7.00, color-coded yellow, certified | 500mL | SB107500 | BX16321 | 223565 | 565601 | 9804 |
| Buffer solution, pH 10.00, color-coded blue, certified | 500mL | SB115500 | BX16411 | 223573 | 565501 | 9904 |
| Buffer solution, pH 4.00, color-coded red, certified | 500mL | SB101500 | BX16281 | 223557 | 565701 | 9704 |

Laboratory Grade

| Description | Pack Size | Fisher Scientific Cat. No. | EMD Millipore Equivalent | Sigma Equivalent | JT Baker Equivalent | Macron Equivalent |
|--|-----------|----------------------------|--------------------------|------------------|---------------------|-------------------|
| Buffer Solution, Total Ionic Strength Adjustment Buffer (TISAB II) | 20L | SB175-20 | X | 89466-500ML | X | X |
| Iodine (Iodine-Iodide) Solution, 0.1 N | 4L | SI86-4 | X | 318981-500ML | X | X |
| Methanol, laboratory | 4L | A4114 | X | X | X | H60310 |
| Perchloric Acid Solution, 0.1 N | 4L | SP339-4 | X | 319228-2L | X | X |
| Potassium Iodide Solution 10% w/v | 20L | SP242-20 | X | X | X | X |

†Products might not be available in all regions. Contact your local sales representative for details.

Fisher BioReagents*: Purity Grades for Every Application

| Material Grade | Definition |
|-------------------------------|--|
| Analytical Grade | Designates reagents suitable for use in analytical procedures. |
| Certified | Reagent chemicals for which the purity standard is established by Fisher Chemical*. Purity is guaranteed to meet published maximum limits of impurities. |
| Certified ACS | Reagent chemicals that meet or exceed the latest ACS specifications. |
| Certified ACS Plus | Acids which meet or exceed the latest ACS specifications, and analyzed for more than 16 metals. |
| 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. |
| HPLC | Solvents manufactured specifically for use with HPLC instruments. Meet all ACS specifications. Submicron filtered. |
| 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. |

Purity Grades for every application



Fisher BioReagents* Stockroom Essentials

Vital Reagents for Life Science

- High-purity products that meet stringent industry specifications and application requirements
- Pre-qualified for dedicated applications; eliminate the need for redundant testing
- Designed for a wide range of molecular biology, protein chemistry, cell biology and microbiology applications

For more product choices and promotions, please visit www.fishersci.com/chemicals.

Fisher BioReagents

Core Bioreagents

| Description | Pack | Storage Condition | Fisher Scientific Cat. No. | Sigma* Equivalent | Invitrogen* Equivalent | Bio-Rad* Equivalent |
|--|--------|-------------------|----------------------------|-------------------|------------------------|---------------------|
| Bovine serum albumin, fraction V, heat shock treated, suitable for immunological studies | 100g | RT | BP1600100 | A3294-100G | 15561-020 | X |
| Dimethyl sulfoxide | 100mL | RT | BP231100 | 34869-100ML | X | X |
| Ethanol, Molecular Biology Grade | 4L | RT | BP2818-4† | E7023-4x4L | X | X |
| Ethylenediamine tetraacetic acid, disodium salt dihydrate, crystalline powder, electrophoresis | 500g | RT | BP120500 | E5134-500G | 15576-028 | X |
| Formamide, molecular biology | 500mL | 4°C | BP227500 | F5786-250ML | 15515-026 | X |
| Formamide, super pure | 100mL | 4°C | BP228100 | F9037-100ML | 15515-026 | X |
| Glycerol, molecular biology | 1L | RT | BP2291 | G7893-1L | 15514-011 | X |
| Glycerol, molecular biology | 4L | RT | BP2294 | G7893-4L | 15514-011 | X |
| Isopropanol, Molecular Biology Grade | 500mL | RT | BP2618-500 | I9516-500ML | X | X |
| JustPURE Ethylenediaminetetraacetic Acid Disodium Salt Dihydrate | 100g | RT | BP2927-100 | E1644-100G | X | X |
| Methanol, peroxide-free, sequencing | 4L | RT | BP11054 | M1770-1L | 0 | 0 |
| PBS Tablets | 100g | RT | BP2944-100 | P4417-100TAB | X | X |
| Phosphate buffered saline, 10X powder concentrate, white granular powder | 2 x 1L | RT | BP6651 | X | X | 31098 |
| Phosphate buffered saline, 10X solution | 1L | RT | BP3991 | 79378-1L | 70011-044 | 161-0780 |
| Phosphate buffered saline, 10X solution | 500mL | RT | BP399500 | 79378-1L | 70011-044 | 161-0780 |
| Sodium chloride (dry basis), >99.5% | 1kg | RT | BP3581 | 71379-1KG | X | X |
| Sodium chloride (dry basis), >99.5% | 2.5kg | RT | BP358212 | 71379-5KG | X | X |
| Sodium dodecyl sulfate, white powder, electrophoresis | 500g | RT | BP166500 | L4509-500G | 15525-017 | 161-0302 |
| Tris base, white crystals or crystalline powder, molecular biology | 1kg | RT | BP1521 | 93362-1KG | 15504-020 | 161-0719 |
| Tris base, white crystals or crystalline powder, molecular biology | 5kg | RT | BP1525 | 93362-1KG | 15504-020 | 161-0719 |
| Tris base, white crystals or crystalline powder, molecular biology | 500g | RT | BP152500 | 93362-250G | 15504-020 | 161-0716 |
| Tris buffered saline, 10X Solution, pH 7.4, molecular biology | 1L | RT | BP24711 | T5912-1L | R017R.0000 | 170-6435 |
| Tween* 20 | 100mL | RT | BP337100 | P5927-100ML | 00-3005 | 170-6531 |
| Tween 20 | 500mL | RT | BP337500 | P5927-500ML | 00-3005 | 170-6531 |
| Water, Molecular Biology Grade | 1L | RT | BP2819-1 | W4502-1L | X | X |
| Water, sterile, DNA grade | 1L | RT | BP24701 | W4502-1L | 10977-015 | 163-2091 |
| Water, sterile, for RNA work, DEPC-treated and nuclease-free, molecular biology | 1L | RT | BP5611 | 95289-1L | 750024 | 700-7253 |
| Water, sterile, nuclease free | 100mL | RT | BP2484100 | 95284-100ML | 750024 | 700-7253 |
| Water, sterile, nuclease free | 50mL | RT | BP248450 | 95284-100ML | 750024 | 700-7253 |

*Products might not be available in all regions. Contact your local sales representative for details.

Fisher BioReagents* (Contd.)

Protein and Nucleic Acid Electrophoresis

| Description | Pack | Storage Condition | Fisher Scientific Cat. No. | Sigma* Equivalent | Invitrogen* Equivalent | Bio-Rad* Equivalent |
|---|-------|-------------------|----------------------------|-------------------|------------------------|---------------------|
| Agarose, broad separation range for DNA/RNA, genetic analysis grade | 100g | RT | BP1356100 | A9539-100G | 15510-019 | 161-3101 |
| Agarose, low-EEO/multi-purpose, molecular biology grade | 100g | RT | BP160100 | A6013-100G | X | 161-3101 |
| Agarose, low-EEO/multi-purpose, molecular biology grade | 500g | RT | BP160500 | A6013-500G | X | 161-3102 |
| Ethidium bromide, 1% solution, molecular biology | 10mL | RT | BP130210 | E1510-10ML | 15585-011 | 161-0433 |
| MES, fine white crystals | 100g | RT | BP300100 | M3671-50G | X | X |
| Methanol, peroxide-free, sequencing | 4L | RT | BP11054 | M1770-1L | X | X |
| Phenol, saturated, liquid, pH 6.6/7.9 | 400mL | 4°C | BP17501400 | P4557-400ML | 15513-047 | X |
| TEMED, Electrophoresis | 20g | RT | BP15020 | T9281-25ML | X | X |
| Tris-Borate-EDTA, 10X solution, electrophoresis | 1L | RT | BP13331 | T4323-1L | 15581-044 | 161-0733 |

Cell and Tissue Culture

| Description | Pack | Storage Condition | Fisher Scientific Cat. No. | Sigma Equivalent | Invitrogen Equivalent | Bio-Rad Equivalent |
|---|-------|-------------------|----------------------------|------------------|-----------------------|--------------------|
| Agar, granulated | 500g | RT | BP1423500 | A1296-500G | 30391-023 | X |
| Ampicillin Sodium Salt, crystalline powder | 25g | 4°C | BP176025 | A0166-5G | 11593-027 | 166-0407EDU |
| CellPURE* PBS 10X, Cell Culture Grade | 4L | RT | BP2940-4 | P5493-4L | X | X |
| D-Sucrose, molecular biology | 1kg | RT | BP2201 | S0389-1KG | 15503-022 | 161-0720 |
| Glycine, white crystals or crystalline powder | 1kg | RT | BP3811 | 50052-1KG | 15527-013 | 161-0718 |
| Glycine, white crystals or crystalline powder | 5kg | RT | BP3815 | 50052-5KG | 15527-013 | 161-0724 |
| Glycine, white crystals or crystalline powder | 500g | RT | BP381500 | 50052-1KG | 15527-013 | 161-0718 |
| Isopropyl-β-D-thiogalactopyranoside, dioxane-free | 1g | 4°C | BP17551 | I6758-1G | I-6621 | X |
| Kanamycin Sulfate, white powder | 5g | RT | BP9065 | K3763-5G | 11815-024 | X |
| LB Agar, Miller (Granulated) | 500g | RT | BP9724-500 | L3147-1KG | X | X |
| LB Agar, Miller (Granulated) | 2kg | RT | BP9724-2 | L3147-1KG | X | X |
| LB Agar, Miller (Granulated) | 500g | RT | BP1425500 | L3147-1KG | X | X |
| LB Broth, Miller (Granulated) | 2kg | RT | BP9723-2 | L1900-1KG | X | X |
| LB Broth, Miller (Granulated) | 500g | RT | BP9723-500 | L1900-1KG | X | X |
| LB Broth, Lennox (Granulated) | 2kg | RT | BP9722-2 | L7658-1KG | X | X |
| LB Broth, Lennox (Granulated) | 500g | RT | BP9722-500 | L7658-1KG | X | X |
| LB Broth, Lennox, (Powder) | 500g | RT | BP1427500 | 28713-500G-F | 22700-025 | X |
| LB Broth, Miller, (Powder) | 500g | RT | BP1426500 | L3522-1KG | 12795-027 | #REF! |
| LB Broth, Miller, (Powder) | 2kg | RT | BP14262 | L3522-1KG | 12795-084 | X |
| Phosphate Buffered Saline, 10X solution | 4L | RT | BP3994 | 79378-1L | 70011-069 | 161-0780 |
| Puromycin Dihydrochloride | 100mg | RT | BP2956-100 | P7255-100MG | X | X |
| Rapamycin | 1mg | RT | BP2963-1 | R0395-1MG | X | X |
| SOB Broth (Capsules) | 500g | RT | BP9737-500 | H8032-500G | X | X |
| Tryptone | 500g | RT | BP1421500 | T7293-1KG | X | X |
| Tryptone (Granulated) | 2kg | RT | BP9726-2 | T2559-1KG | X | X |
| Tryptone (Granulated) | 500g | RT | BP9726-500 | T2559-1KG | X | X |
| Vancomycin | 1g | RT | BP2958-1 | V1764-1G | X | X |
| Water, Microbial Cell Culture Grade | 500mL | RT | BP2820-500 | W3500-500ML | X | X |
| Yeast Extract | 500g | RT | BP1422500 | Y4250-500G | X | 64343 |
| Yeast Extract (Granulated) | 2kg | RT | BP9727-2 | Y1626-1KG | X | X |
| Yeast Extract (Granulated) | 500g | RT | BP9727-500* | Y1626-1KG | X | X |

Immunodetection

| Description | Pack | Storage Condition | Fisher Scientific Cat. No. | Sigma Equivalent | Invitrogen Equivalent | Bio-Rad Equivalent |
|---|------|-------------------|----------------------------|------------------|-----------------------|--------------------|
| Bovine serum albumin, fraction V, cold-ethanol precipitated | 100g | RT | BP1605100 | B4287-25G | 11018-041 | X |

*Products might not be available in all regions. Contact your local sales representative for details.

Acros Organics* Stockroom Essentials

Off-the-Shelf Products Backed by Expertise in Sourcing, Manufacturing and Technology

A leading supplier of fine chemicals, Acros Organics continues to expand its range of products and services to meet today's requirements for organic, medicinal, analytical and biological chemistry.

AcroSeal® Dry Solvents and Organometallic Compounds feature:

- Next-generation, triple-sandwich septum, which reseals even the most aggressive solvent/reagent and enables multiple puncture points
- Quadrant-style cap for a tight seal between septum and bottle

For a full listing of products, please visit www.acros.com.

Acros Organics



AcroSeal

| Solvent | Purity | Quantity | Packaging | Fisher Scientific Cat. No. | Sigma* Equivalent |
|--|------------------|----------|-------------------------|----------------------------|-------------------|
| Acetonitrile, anhydrous | 99.9%, Extra Dry | 1L | Amber Glass | AC610220010 | 271004 |
| Acetonitrile, anhydrous | 99.9%, Extra Dry | 100mL | Amber Glass, Safe-Cote* | AC610961000 | 271004 |
| Chloroform, anhydrous | Extra Dry | 100mL | Amber Glass | AC610281000 | 372978 |
| Dichloromethane, anhydrous | Extra Dry | 1L | Amber Glass | AC610300010† | 270997 |
| Dichloromethane, anhydrous | Extra Dry | 100mL | Amber Glass, Safe-Cote | AC610931000 | 270997 |
| Methanol, anhydrous | 99.8%, Extra Dry | 1L | Amber Glass | AC610400010† | 322415 |
| Methanol, anhydrous | 99.8%, Extra Dry | 100mL | Amber Glass, Safe-Cote | AC610981000 | 322415 |
| Methyl Sulfoxide, anhydrous | 99.7%, Extra Dry | 1L | Amber Glass | AC610420010 | 276855 |
| Methyl Sulfoxide, anhydrous | 99.7%, Extra Dry | 100mL | Amber Glass, Safe-Cote | AC610971000 | 276855 |
| N,N-Dimethylformamide, anhydrous | 99.8%, Extra Dry | 1L | Amber Glass | AC610320010 | 227056 |
| N,N-Dimethylformamide, anhydrous | 99.8%, Extra Dry | 100mL | Amber Glass, Safe-Cote | AC610941000 | 227056 |
| Tetrahydrofuran, anhydrous | 99.9%, Extra Dry | 1L | Amber Glass | AC610450010 | 401757 |
| Tetrahydrofuran, anhydrous | 99.9%, Extra Dry | 100mL | Amber Glass, Safe-Cote | AC610921000 | 401757 |
| Tetrahydrofuran, stabilized, anhydrous | 99.9%, Extra Dry | 1L | Amber Glass | AC610900010 | 186562 |
| Tetrahydrofuran, stabilized, anhydrous | 99.9%, Extra Dry | 100mL | Amber Glass, Safe-Cote | AC610911000† | 186562 |
| Toluene, anhydrous | 99.8%, Extra Dry | 1L | Amber Glass | AC610460010 | 244511 |
| Toluene, anhydrous | 99.8%, Extra Dry | 100mL | Amber Glass, Safe-Cote | AC610951000 | 244511 |

Deuterated Solvents

| Solvent | Purity | Quantity | Packaging | Fisher Scientific Cat. No. | Sigma Equivalent |
|--|---------|-------------|-------------|----------------------------|------------------|
| Chloroform-d, 99.6+ atom % D | For NMR | 100mL | Amber Glass | AC174881000 | 151823 |
| Chloroform-d, 99.8+ atom % D, contains 0.03 v/v% TMS | For NMR | 100mL | Amber Glass | AC209561000 | 225789 |
| Chloroform-d, 99.8 atom % D, contains 1 v/v% TMS | For NMR | 100mL | Amber Glass | AC166261000 | 151831 |
| Chloroform-d, 99.8 atom % D, contains 1 v/v% TMS | For NMR | 50mL | Amber Glass | AC166260500 | 151831 |
| Chloroform-d, 99.8 atom % D | For NMR | 100mL | Amber Glass | AC166251000 | 181823 |
| Chloroform-d, 99.8 atom % D | For NMR | 50mL | Amber Glass | AC166250500 | 151823 |
| Deuterium Oxide, 99.8 atom % D | For NMR | 100mL | Amber Glass | AC166301000 | 617385 |
| Methanol-d4, packaged in 0.75mL ampules, 99.8 atom % D | For NMR | 10 x 0.75mL | .75 Ampules | AC320750075 | 441384 |
| Methyl sulfoxide-d6, 99.5+ atom % D | For NMR | 10g | Amber Glass | AC321290100 | 175943 |
| Methyl Sulfoxide-d6, 99.9+ atom % D | For NMR | 10 x 0.75mL | .75 Ampules | AC320770075 | 441392 |

†Products might not be available in all regions. Contact your local sales representative for details.

Acros Organics* (Contd.)

Ethanol

| Solvent | Quantity | Packaging | Fisher Scientific Cat. No. | Sigma* Equivalent |
|---|----------|-------------|----------------------------|-------------------|
| Ethanol, absolute, 200 proof, ACS reagent | 4L | Amber Glass | AC615090040 [†] | X |
| Ethanol, 190 proof, for spectroscopy ACS | 4L | Amber Glass | AC615110040 [†] | X |
| Ethanol, 190 proof, for spectroscopy ACS | 1L | Amber Glass | AC615110010 [†] | X |
| Ethanol, absolute, 200 proof, ACS reagent | 500mL | Amber Glass | AC615095000 [†] | X |
| Ethanol, absolute, 200 proof, ACS reagent | 1L | Amber Glass | AC615090010 [†] | X |
| Ethanol, absolute, 200 proof, ACS reagent | 2L | Amber Glass | AC615090020 [†] | X |
| Ethanol, anhydrous, 200 proof | 100mL | Amber Glass | AC615101000 [†] | 459836 |
| Ethanol, anhydrous, 200 proof | 2L | Amber Glass | AC615100020 [†] | 459836 |
| Ethanol, denatured, for HPLC | 4L | Amber Glass | AC611050040 | X |

Organometallic and Reactive

| Solvent | Quantity | Packaging | Fisher Scientific Cat. No. | Sigma Equivalent |
|---|----------|------------------------|----------------------------|------------------|
| Boron Trichloride, stab., 1M sol. in methylene chloride | 100mL | Amber Glass, AcroSeal* | AC176681000 | 178934 |
| Diisobutylaluminium Hydride, 1M solution in hexane | 100mL | Amber Glass, AcroSeal | AC183791000 | 190306 |
| Diisobutylaluminium Hydride, 20% wt. solution in toluene, 1.2M | 100mL | Amber Glass, AcroSeal | AC201081000 | 192724 |
| Lithium aluminium Hydride, 1M solution in THF | 100mL | Amber Glass, AcroSeal | AC199491000 | 212776 |
| Lithium Diisopropylamide, 2M solution in THF/n-heptane/ethylbenzene | 100mL | Amber Glass, AcroSeal | AC268831000 | 361798 |
| Lithium Triethylborohydride, 1M solution in THF | 100mL | Amber Glass, AcroSeal | AC176991000 | 179728 |
| Methylolithium, 1.6M solution in diethyl ether (\pm 5% w/v) | 100mL | Amber Glass, AcroSeal | AC188751000 | 197343 |
| n-Butyllithium, 1.6M solution in hexanes | 100mL | Amber Glass, AcroSeal | AC181271000 | 186171 |
| n-Butyllithium, 1.6M solution in hexanes | 800mL | Amber Glass, AcroSeal | AC181278000 | 186171 |
| n-Butyllithium, 2.5M solution in hexanes | 100mL | Amber Glass, AcroSeal | AC213351000 | X |
| n-Butyllithium, 2.5M solution in hexanes | 800mL | Amber Glass, AcroSeal | AC213358000 | X |
| sec-Butyllithium, 1.3M solution in cyclohexane/hexane (92/8) | 100mL | Amber Glass, AcroSeal | AC187541000 | X |
| tert-Butyllithium, 1.6M solution in pentane | 100mL | Amber Glass, AcroSeal | AC181281000 [†] | 186198 |

[†]Products might not be available in all regions. Contact your local sales representative for details.

Fisherbrand* Products Offer Excellent Quality and Value for Your Lab!

When making buying decisions, look for Fisherbrand products for quality, reliability and value. With a portfolio of over 10,000 products in 126 product categories and more than 100 years of experience in serving the scientific community, you can trust Fisher Scientific to have the products you need, when you need them.

Fisherbrand Premium and Recycled Delicate Task Wipers

The Fisherbrand Delicate Task Wipers are a piece of tissue made with 100% virgin fiber used to 'clean without damaging' delicate surfaces, parts and equipment. This three-tier product offering includes: Fisherbrand Premium Plus, Fisherbrand Premium and Fisherbrand Recycled Delicate Task Wipers.

Top-selling Fisherbrand Wipers Cat. Nos.:

- 07-301-003
- 07-301-004
- 07-301-005



Fisherbrand Glassware

The Fisherbrand Reusable Glassware portfolio includes beakers, graduated cylinders, volumetric flasks, Erlenmeyer flasks, boiling flasks, filter flasks, funnels, media bottles and test tubes! All products meet ASTM* specifications and come in a variety of sizes to support daily use in every laboratory.

Several top-selling Fisherbrand Glassware Cat. Nos. including:

- **FB100-250** (Beaker)
- **FB201-250** (Round bottom flask)



Also available from **Fisherbrand**:

- Balances, Hotplates, Pipets, Scoops, Spatulas, Vials, Weigh dishes and more!
- Visit www.fishersci.com/fisherbrand for a complete listing of our Fisherbrand product offering

Chemical Storage/Handling Recommendations

Chemical Incompatibility

Chemicals should react in the lab, not in the stockroom. The inadvertent mixing of inventory can produce toxic vapor/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 Material Safety Data Sheet (MSDS) provided with purchase.

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 minimize 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-pressurization
- 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 utilizing 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

- Store flammable and combustible liquids away from oxidizers and heat producers
- House flammable and combustible liquids in excess of 10 gallons (per room) in approved flammable storage cabinets (under the hood or stand-alone); limit liquids in secondary containers (i.e., squeeze bottles) to 10 gallons or less
- Adhere to OSHA regulations for safe storage: 60 gallons of Class I and/or Class II liquids or 120 gallons of Class III liquids per cabinet; Class I liquids cannot be stored in a basement or pit without an approved ventilation system
- Use only approved and well-labeled refrigerators and freezers for storing flammable liquids; never store lunch with science

Incompatibilities by Hazard Class

| | 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 | | | |

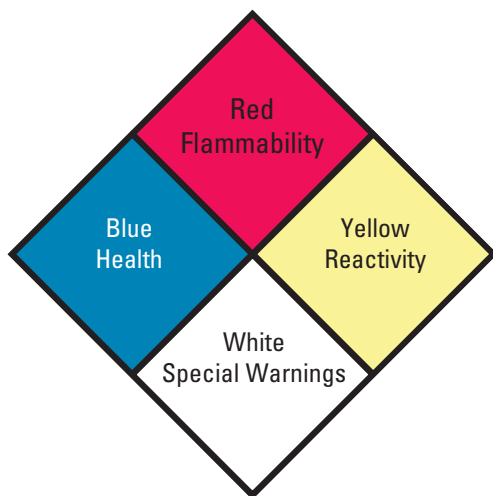
X indicates incompatibility between two chemical product groups. Incompatible products should not be stored in close proximity.

Chemical Incompatibilities

| 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 | Sulfuric 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)

Hazards Ahead — Take Care



NFPA Hazard Code Ratings

The National Fire Protection Association has developed a numerical rating system that reflects the health, flammability, self-reactivity and other hazards of materials, including reaction with water, as specified in NFPA 704, Standard System for the Identification of the Hazards of Materials for Emergency Response.

Potential hazards are evaluated based on the degree of hazard, and the numerical rating is placed inside the universal NFPA symbol.

(Included on all Fisher Chemical* labels)

HEALTH

Health Hazards

- 4** Very short exposure to material can cause death or major residual injury even if prompt medical treatment is given.
- 3** Short exposure to material can cause serious temporary or residual injury even if prompt medical treatment is given.
- 2** Intense or continued exposure to material can cause temporary incapacitation or possibly residual injury unless prompt medical treatment is given.
- 1** Exposure to material will cause irritation but only minor residual injury, even if no treatment is given.
- 0** Exposure to materials under fire conditions will offer no hazard beyond that of ordinary combustible materials.

REACTIVITY

Reactivity

- 4** Material is readily capable of detonation, explosive decomposition or instability at normal temperatures and pressures.
- 3** Material is capable of detonation or explosive reaction but requires a strong initiating source; or which must be heated under confinement before initiation; or may react explosively with water.
- 2** Material is normally unstable and readily undergoes violent chemical change but does not detonate. Also may react violently with water or may form potentially explosive mixtures with water.
- 1** Material is normally stable but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.
- 0** Material is normally stable even under fire exposure conditions, and is not reactive with water.

FLAMMABILITY

Flammability

- 4** Material will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or will burn readily when dispersed in air.
- 3** A liquid or solid that can be ignited under almost all ambient temperature conditions.
- 2** Material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.
- 1** Material that must be preheated before ignition can occur.
- 0** Material that will not burn.

SPECIAL WARNINGS

Special Warnings

- OX** Oxidizing material
- W** Material is hazardous when in contact with moisture or water.

Examples:



1,1,1-Trichloroethane



Isopropyl ether



Calcium



Benzene



Acetic acid, glacial



Picric acid, wet,
with not less than
10% water

What's On the Label? Safety Guidelines!

1 Caution! May cause eye, skin, and respiratory tract irritation. **FIRST AID: EYES:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. **SKIN:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. **INGESTION:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. **INHALATION:** Remove from exposure and more to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. **IMPORTANT!** Do not use this product until Material Safety Data Sheet has been read and understood.

Avoid contact with skin and eyes.
éviter le contact avec la peau et les yeux.
Berührung mit den Augen und der Haut vermeiden.
Aanraking met de ogen en de huid vermijden.
Evitare il contatto con gli occhi e con la pelle.

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All Plastics Are Not Created Equal

Differentiating between glass and plastic for chemical storage is fairly intuitive; selecting the most compatible plastic, well, that's another story. Labware is constructed from a variety of polymers — polyethylene (low and high density), polypropylene, PVC, etc. — possessing unique and varying degrees of resistance to the laundry list of chemicals. To maintain the structural integrity of the chemical containers and ensure safe handling, please consult the chemical resistance tables before transferring materials.

Chemical Resistance and Physical Properties of Plastics

Resin Codes

| | |
|---|---|
| ECTFE: Ethylene- chlorotrifluoroethylene copolymer | PFA: Perfluoroalkoxy |
| ETFE: Ethenetetrafluoroethylene | 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 oxidizing 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/LDPE | NYL | PC | PETG | PK | PMMA | PMP | PP/PPCO | PS | PSF | PUR | PVC | PVDF | TPE [‡] |
|---|------------|--------------|------|-----------|-----|----|------|----|------|-----|---------|----|-----|-----|-----|------|------------------|
| Acids, weak or dilute | 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 | N | N | N | G | N | E | E | F | G | F | E | E | F |
| Alcohols, aliphatic | E | E | E | E | N | G | E | G | N | E | E | E | G | F | E | E | E |
| Aldehydes | E | E | G | G | F | F | N | E | G | G | G | N | F | G | N | E | N |
| Bases | E | E | F | E | E | F | 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 | G | N |
| Hydrocarbons, aliphatic | E | E | E | G | F | E | F | 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 | E | N |
| Hydrocarbons, halogenated | E | E | G | F | N | G | N | N | E | 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 |
| Oxidizing agents, strong | F | E | F | F | F | N | N | G | N | F | F | N | G | N | G | G | N |

[†] For oxidizing acids, see table entry "Oxidizing agents, strong." [‡] TPE gaskets

E — No damage after 30 days of constant exposure.

G — Little or no damage after 30 days of constant exposure.

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

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

New Poly Packaging for Fisher Chemical* TraceMetal Grade Acids and Bases

Selected TraceMetal Grade Acids and Bases are now available in *poly* bottles. Constructed with a new, high-density polyethylene — made from a proprietary resin — the innovative bottles provide up to 80% less metallic extractables (vs. glass).

Packaging Advantages

- *Poly* bottles are lighter, easier to handle and less likely to break during transport
- FisherLOCK[®] tamper-evident cap safeguards chemicals; drip lip feature prevents spills when pouring
- 100% recyclable package reduces waste and all-*poly* bottle facilitates disposal (no PVC coating to be removed)
- *Poly* bottles occupy less space than glass bottles and enable better storage space utilization in the lab



A508-P500 and A508-P212

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 — **No damage** after 30 days of constant exposure.

G — **Little or no damage** after 30 days of constant exposure.

F — **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** 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.

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!

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

| CHEMICAL | MATERIALS | | | | | | | | | | | | | | | |
|-------------------------------|-----------|------|---------|-----|--------------|-------------|----|-----|-----|------|----|-----|-----------------|-------|---------|----|
| | LDPE | HDPE | PP/PPCO | PMP | FEP/PTFE/PFA | ECTFE/PETFE | PC | PVC | PSF | PVDF | PS | NYL | Stainless Steel | Glass | Ceramic | |
| Acetaldehyde | GN | GF | GN | GN | EE | GF | FN | GN | NN | NN | EE | NN | EG | EE | EE | EE |
| Acetamide, sat. | EE | EE | EE | EE | EE | EE | NN | NN | NN | — | EE | EE | EE | EE | EE | EE |
| Acetic acid, 5% | EE | EE | EE | EE | EE | EE | EG | EG | EE | EE | EG | FN | EE | EE | EE | EE |
| Acetic acid, 50% | EE | EE | EE | EE | EE | EE | EG | EG | GG | EE | GG | NN | EE | EE | EE | EE |
| Acetone | NN | NN | EE | EE | EE | GF | NN | NN | NN | NN | NN | EE | EG | EE | EE | EE |
| Acetonitrile | EE | EE | FN | FN | EE | EE | NN | NN | NN | EE | NN | EE | EG | EE | EE | EE |
| Acrylonitrile | EE | EE | FN | FN | EE | EG | NN | NN | NN | GF | NN | EG | EG | EE | EE | EE |
| Adipic acid | EG | EE | EE | EE | EE | EE | EE | EG | GG | — | EE | EF | EG | EE | 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 | EG |
| Aluminum hydroxide | EG | EE | EG | EG | EE | EE | FN | EG | GG | EE | GG | EE | EE | NN | EE | EE |
| Aluminum salts | EE | EE | EE | EE | EE | EE | EG | EE | EE | EE | GG | NN | GG | EE | 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 | EE |
| Ammonium acetate, sat. | EE | EE | EE | EE | EE | EE | EE | EE | EE | EE | EE | EG | 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 | EE |
| Ammonium hydroxide, 30% | EG | EE | EG | EG | EE | EE | NN | EG | GG | EE | GF | FN | EE | EE | EE | EE |
| Ammonium oxalate | EG | EE | EG | EG | EE | EE | EE | EE | EE | EE | EE | GF | EE | EE | EE | EE |
| Ammonium salts | EE | EE | EE | EE | EE | EE | EG | EG | EE | EE | GG | NN | EE | EE | EE | EE |
| n-Amyl acetate | GF | EG | GF | GF | EE | EE | NN | NN | NN | EE | NN | EE | EE | EE | EE | EE |
| Amyl chloride | NN | FN | NN | NN | EE | EE | NN | NN | NN | EE | NN | EG | EG | EE | EE | EE |
| Aniline | EG | EG | GF | GF | EE | GN | FN | NN | NN | EF | NN | GF | EG | EE | EE | EE |
| Benzaldehyde | EG | EE | EG | EG | EE | EF | FN | NN | FF | EE | NN | EG | GG | EE | EE | EE |
| Benzene | FN | NN | GF | GF | EE | EG | NN | NN | NN | EE | NN | EE | GG | EE | EE | EE |
| Benzoic acid, sat. | EE | EE | EG | EG | EE | EE | EG | EG | FF | EE | GG | NN | EG | EE | EE | EE |
| Benzyl acetate | EG | EE | EG | EG | EE | EG | FN | NN | NN | — | NN | EG | GG | EE | EE | EE |
| Benzyl alcohol | NN | FN | NN | NN | EE | EE | NN | GF | NN | EE | NN | NN | GG | EE | EE | EE |
| Bromine | NN | FN | NN | NN | EE | EG | FN | GN | NN | EE | NN | NN | EE | EG | GG | GG |
| Bromobenzene | NN | FN | NN | NN | EE | GN | NN | NN | NN | EE | NN | EG | GG | GG | GG | GG |
| Bromoform | NN | NN | NN | NN | EE | GF | NN | NN | NN | EE | NN | FF | GG | EE | EE | EE |
| Butadiene | NN | FN | NN | NN | EE | EE | NN | FN | NN | EE | NN | FF | GG | EE | EE | EE |
| n-Butyl acetate | GF | EG | GF | GF | EE | EG | NN | NN | NN | EE | NN | EE | GG | EE | EE | EE |
| n-Butyl alcohol | EE | EE | EE | EG | EE | EE | GF | GF | GF | EE | EG | NN | EE | EE | EE | EE |
| sec-Butyl alcohol | EG | EE | EG | EG | EE | EE | GF | GG | GF | EE | GG | NN | EE | EE | EE | EE |
| tert-Butyl alcohol | EG | EE | EG | EG | EE | EE | GF | EG | GF | EE | EE | NN | EE | EE | EE | EE |
| Butyric acid | NN | FN | NN | NN | EE | EE | FN | GN | GG | EE | NN | FN | GG | EE | EE | EE |
| Calcium hydroxide, conc. | EE | EE | EE | EE | EE | EE | NN | EE | GG | EE | GG | NN | GG | NN | EE | EE |
| Calcium hypochlorite, sat. | EE | EE | EE | EG | EE | EE | FN | GF | EE | EE | GF | NN | EE | EE | EE | EE |
| Carbazole | EE | EE | EE | EE | EE | EE | EE | NN | NN | — | EE | EE | — | — | — | — |
| Carbon disulfide | NN | NN | NN | NN | EE | EF | NN | NN | NN | EE | NN | EG | EE | EE | EE | EE |
| Carbon tetrachloride | FN | GF | GF | NN | EE | EE | NN | GF | NN | EE | NN | EE | GG | EE | 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 | EE |
| Chlorine, 10% in air | GN | EF | GN | GN | EE | EE | EG | EE | NN | EE | FN | NN | FF | EE | EE | EE |
| Chlorine, 10% (moist) | GN | GF | FN | GN | EE | EE | GF | EG | NN | EE | NN | NN | FF | EE | EE | EE |
| Chloroacetic acid | EE | EE | EG | EG | EE | EE | FN | FN | NN | — | GN | NN | GG | EE | 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 | EE |
| Chromic acid, 10% | EE | EE | EE | EE | EE | EE | GF | EG | NN | EE | EE | NN | GG | EE | EE | EE |
| Chromic acid, 50% | EE | EE | GF | GF | EE | EE | FN | EF | NN | EG | FF | NN | FF | EE | NN | 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 | EE |
| Cresol | NN | FN | GF | NN | EE | EG | NN | NN | NN | EE | NN | NN | EE | EE | EE | EE |
| Cyclohexane | FN | FN | FN | NN | EE | EG | EG | GF | NN | EE | NN | EE | 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 | EE |
| p-Dichlorobenzene | FN | GF | GF | GF | EE | EF | NN | NN | NN | EE | NN | EG | GG | EE | EE | EE |
| Diethyl benzene | NN | FN | NN | NN | EE | EG | FN | NN | NN | — | NN | EE | GG | EE | EE | EE |
| Diethyl ether | NN | FN | NN | NN | EE | EG | NN | FN | NN | EE | NN | EE | GG | EE | EE | EE |
| Diethyl ketone | NN | NN | GG | GF | EE | GF | NN | NN | NN | NN | NN | EE | GG | EE | 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 | EE |
| Diethylene glycol ethyl ether | EE | EE | EE | EE | EE | EE | FN | FN | FF | — | NN | EE | EE | EE | EE | EE |
| Dimethyl formamide | EE | EE | EE | EE | EE | GG | NN | FN | NN | NN | NN | GF | EE | EE | EE | EE |
| Dimethylsulfoxide | EE | EE | EE | EE | EE | EG | NN | NN | NN | — | EG | EE | EE | EE | EE | EE |
| 1,4-Dioxane | GF | GG | GF | GF | EE | EF | GF | FN | GF | NN | NN | EF | GG | EE | 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 | EE |
| Ethyl acetate | EE | EE | EE | FN | EE | EE | NN | NN | NN | NN | NN | EE | GG | EE | EE | EE |
| Ethyl alcohol (absolute) | EG | EE | EG | EG | EE | EE | EG | EG | EG | EE | FN | NN | EE | EE | EE | EE |
| Ethyl alcohol, 40% | EG | EE | EG | EG | EE | EE | EG | EE | EE | EE | GF | NN | EE | 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 | 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 | EE |
| Ethylene glycol | EE | EE | EE | EE | EE | EE | GF | EE | EE | EE | EE | EE | GG | EE | 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 | 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 | EE |

Chemical Resistance of Labware Materials (contd.)

| 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 | EF | EE | EE | EF | 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 | EG | 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 | EG | EE | 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 | NN | 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 | E- | 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 | EF | 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 | NN | FN | NN | GF | 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 | NN | 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 | EG | EE | 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 | GE | GE |
| Sodium hydroxide, 50% to sat. | GG | EE | EE | EE | EE | EE | NN | NN | EG | EG | EE | GF | GF | 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 | — | — | — | — |
| Tartaric acid | EE | EE | EE | EE | EE | EE | EG | EG | EE | EE | GG | EF | FF | EE | EE |
| Tetrahydrofuran | FN | GF | GF | FF | EE | GF | NN | NN | NN | FN | NN | EE | 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 | — | EE | 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 |

Warning!

The plastic resin information in these tables (does not include SS, glass or 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.

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

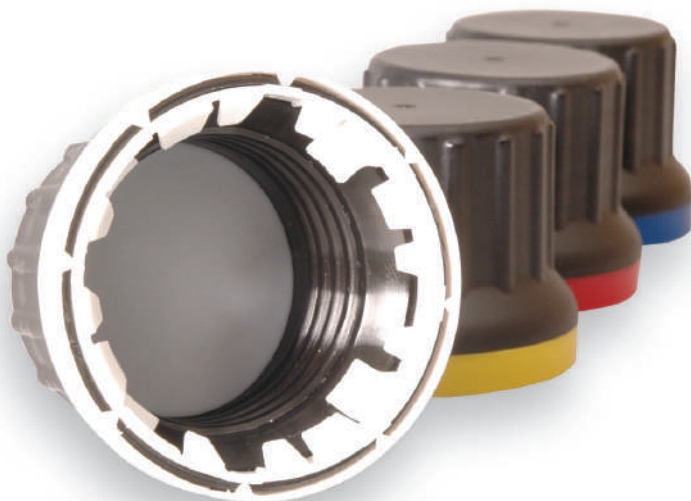
Fisher Chemical* Solvent Safety Packaging Features

Lock in Quality and Safety

Fisher Chemical products are now packaged with the innovative, new FisherLOCK* Cap, designed to help maintain the highest standards in product quality and chemical safety practices.

With an exclusive color-coded design (patent pending), the FisherLOCK Cap is engineered to lock to the transfer bead of the bottle when it is applied during manufacturing to a filled bottle of laboratory chemicals. The cap design includes an interior ring, visible from various angles, that offers resistance until it separates from the cap when the bottle is first opened.

The presence and location of that ring imparts tamper evidence to the configuration — without the drawbacks and complications of a plastic seal over the cap. The FisherLOCK Cap is easy to use, and supports product quality, reliability of use, and safety in use of the chemical products you purchase.



Exclusive color-coded design provides storage guidelines

Red (R): Flammable. Store in area segregated for flammable reagents.

Blue (B): Health hazard. Toxic if inhaled, ingested or absorbed through skin. Store in secure area.

Yellow (Y): Reactive and oxidizing reagents. May react violently with air, water or other substances. Store away from flammable and combustible materials.

White (W): Corrosive. May harm skin, eyes, mucous membrane. Store away from red-, yellow- and blue-coded reagents.

Gray (G): Presents no more than moderate hazard in any of the categories above. For general chemical storage.



EXCEPTION: Reagent incompatible with other reagents of the same color bar. Store separately.

The FisherLOCK Cap LOCKS in quality, safety, reliability and convenience:

QUALITY

- Provides a tight, tamper-evident, secure seal to ensure chemical contents arrive fresh and unopened
- Eliminates polyethylene glycol contamination that is possible with a plastic overseal

SAFETY

- Caps are designed to resist back-off during transport, reducing risk of leakage
- Color-coded rings indicate storage requirements and hazard categories, and enhance proper recognition, handling and storage — even before the bottle is removed from the case

RELIABILITY

- Rigorously tested for chemical compatibility
- Bottle threads are unchanged, allowing attachment of the opened bottle to standard equipment

CONVENIENCE

- Cap design facilitates correct initial torque application during manufacturing, thus eliminating caps that may be hard to open
- Larger ridges on the exterior of the cap make it easier to open
- Caps readily reseal after initial opening

For Safety's Sake: Fisher Chemical* Products in the Safe-Cote* Bottle

These Fisher Chemical products are protected by Safe-Cote PVC bottles that provide the purity of glass and most of the benefits of plastic for storing and dispensing chemicals. If they break, glass fragments and liquids are more likely to remain trapped.

- Innovative safety bottle with FisherLOCK* tamper evident cap
- Convenient storing and dispensing
- Packaged in the 100% recyclable Styrofoam*-free EcoSafPak*



| Description | Purity Grade | Size | Cat. No. |
|-------------------------|--------------------|-------|-----------|
| 1-Butanol | HPLC/ACS | 1L | A383SK1 |
| 1-Butanol | HPLC/ACS | 4L | A383SK4 |
| 2-Propanol | Certified ACS Plus | 4L | A416SK4 |
| 2-Propanol | HPLC/ACS | 1L | A451SK1 |
| 2-Propanol | HPLC/ACS | 4L | A451SK4 |
| 2-Propanol | Optima | 4L | A464SK4 |
| Acetic Acid | Certified ACS | 2.5L | A38S1212 |
| Acetic Acid | Certified ACS | 2.5L | A38S212' |
| Acetic Acid | Certified ACS | 500mL | A28S500' |
| Acetone | Certified ACS | 4L | A18SK4 |
| Acetone | HPLC | 1L | BP2404SK1 |
| Acetone | HPLC | 1L | A949SK1 |
| Acetone | HPLC | 4L | BP2404SK4 |
| Acetone | HPLC/ACS | 4L | A949SK4 |
| Acetone | Optima/ACS | 4L | A929SK4 |
| Acetonitrile | HPLC/ACS | 1L | BP2405SK1 |
| Acetonitrile | HPLC/ACS | 1L | A998SK1 |
| Acetonitrile | HPLC | 4L | BP2405SK4 |
| Acetonitrile | HPLC/ACS | 4L | A998SK4 |
| Acetonitrile | Optima/ACS | 4L | A996SK4 |
| Ammon. Hydrox. | Certified ACS Plus | 2.5L | A669S212 |
| Ammon. Hydrox. | Certified ACS Plus | 500mL | A669S500 |
| Chloroform | HPLC/ACS | 4L | C606SK4 |
| Chloroform | Certified ACS Plus | 4L | C298SK4 |
| Chloroform | HPLC/ACS | 1L | C606SK1 |
| Chloroform | Spectranalyzed | 4L | C574SK4 |
| Chloroform with Pentene | HPLC/ACS | 1L | C607SK1 |
| Chloroform with Pentene | HPLC/ACS | 4L | C607SK4 |
| Cyclohexane | HPLC/ACS | 1L | C620SK1 |
| Cyclohexane | HPLC/ACS | 4L | C620SK4 |
| Ethyl Acetate | HPLC/ACS | 1L | E195SK1 |
| Ethyl Acetate | HPLC/ACS | 4L | E195SK4 |
| Ethyl Acetate | Certified ACS Plus | 4L | E145SK4 |
| Ethyl Acetate | Optima | 4L | E196SK4 |
| Ethyl Alcohol Denatur | Denatured | 4L | A407SK4' |
| Heptane | HPLC | 1L | H350SK1 |
| Heptane | HPLC | 4L | H350SK4 |
| Hexane | HPLC | 1L | H302SK1 |
| Hexane | HPLC | 4L | H302SK4 |
| Hexane | Optima/ACS | 4L | H303SK4 |
| Hexanes | Certified ACS Plus | 4L | H292SK4 |

| Description | Purity Grade | Size | Cat. No. |
|----------------------------------|--------------------|-------|------------|
| Hydrochloric Acid | Certified ACS Plus | 2.5L | A144S212 |
| Hydrochloric Acid | Certified ACS Plus | 2.5L | A144S1212' |
| Hydrochloric Acid | Certified ACS Plus | 500mL | A144S500 |
| Isooctane | HPLC/ACS | 1L | O296SK1 |
| Isooctane | HPLC/ACS | 4L | O296SK4 |
| Methanol | Certified ACS Plus | 4L | A412SK4 |
| Methanol | HPLC/ACS | 1L | A452SK1 |
| Methanol | HPLC/ACS | 4L | A452SK4 |
| Methanol | Optima/ACS | 4L | A454SK4 |
| Methanol | Scintanalyzed/ACS | 4L | A408SK4 |
| Methchloride | HPLC | 1L | D150SK1 |
| Methchloride | HPLC | 4L | D150SK4 |
| Methylene Chloride | HPLC/ACS | 1L | D143SK1 |
| Methylene Chloride | Certified ACS Plus | 4L | D37SK4 |
| Methylene Chloride | HPLC/ACS | 4L | D143SK4 |
| Methylene Chloride | Optima | 4L | D151SK4 |
| Methylene Chloride W/Cyclohexene | HPLC/ACS | 4L | D138SK4 |
| N-Butyl Chloride | HPLC | 4L | B429SK4 |
| N-Hexane95%L | Optima/ACS | 4L | H306SK4 |
| Nitric Acid | Certified ACS Plus | 2.5L | A200S212 |
| Nitric Acid | Certified ACS Plus | 2.5L | A200S1212 |
| Nitric Acid | Certified ACS Plus | 500mL | A200S500' |
| O-Phospho Acid | ACS | | A242SK212 |
| Pentane | HPLC | 1L | P399SK1 |
| Pentane | HPLC | 4L | P399SK4 |
| Petroleum Ether | Certified ACS | 4L | E139SK1 |
| Petroleum Ether | Optima/ACS | 4L | E139SK4' |
| Sulfuric Acid | Certified ACS Plus | 2.5L | A300S212 |
| Sulfuric Acid | Certified ACS Plus | 2.5L | A300S1212 |
| Sulfuric Acid | Certified ACS Plus | 500mL | A300S500 |
| Tetrahydrofuran | Certified | 4L | T397SK4 |
| Tetrahydrofuran | HPLC/ACS | 1L | T425SK1 |
| Tetrahydrofuran | HPLC/ACS | 4L | T425SK4 |
| Tetrahydrofuran | Optima/ACS | 4L | T427SK4 |
| Toluene | Certified ACS | 4L | T324SK4 |
| Toluene | HPLC/ACS | 1L | T290SK1 |
| Toluene | HPLC/ACS | 4L | T290SK4 |
| Toluene | Optima | 4L | T291SK4 |
| Toluene | Scintanalyzed/ACS | 4L | T313SK4 |
| Water | HPLC | 1L | W5SK1 |
| Water | HPLC | 4L | W5SK4 |
| Water | Optima | 4L | W7SK4 |
| Xylenes | Certified ACS | 4L | X5SK4 |

*Products might not be available in all regions. Contact your local sales representative for details.

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