

MERCK

# Reliable Research Must-Haves

Lab Reagents for everyday use



The life science  
business of Merck  
operates as  
MilliporeSigma in  
the U.S. and Canada.

**Sigma-Aldrich®**  
Lab & Production Materials

# we'll keep YOUR WORK FLOWING

Solvents and salts are used in labs every day, but it's sometimes difficult to determine the right quality grade for your application.

This comprehensive guide explains the differences between the grades and outlines common applications for each specification – to make your decisions easier, and your work smoother.

From all major reagent grades to custom and bulk sizes, Merck supports you with all your lab essentials. Our top-quality, easy-to-use products are designed to integrate intuitively into your workflow, and produced to ensure reliable research every day. Explore an unparalleled portfolio for your breakthrough ideas.



# Table of contents

Lab Reagents for everyday use



**Core Solvents**  
Every grade your lab needs

page **4**



**Specialty Solvents**  
Anhydrous, Biotech & NMR

page **6**



**Salts, Acids & Bases**  
Every grade your lab needs

page **8**



**Innovative Solutions**  
Redi-Dri™ free-flowing salts

page **9**



**Greener Alternative Solvents**  
Safer for you and the planet

page **10**



**Scalable Options**  
Wide choice of pack sizes  
from bench to bulk

page **11**



# core solvents

Every grade your lab needs

## Grade Definitions & Common Applications

### Puriss p.a.

Applications: Specialized or Sensitive Chemical Synthesis & Catalysis, Reaction Monitoring, Metal-Sensitive Reactions, Highly Sensitive Purification

These high-quality solvents offer specifications that match or exceed existing regulations and undergo stringent metals testing. They are the optimal choice for demanding regulated applications that require quality documentation, and for impurity-sensitive reactions or extractions.

### ACS Grade

Applications: Routine Chemical Synthesis, Drying & Purification, Critical Labware Cleaning

ACS solvents meet or exceed the high standards of the American Chemical Society (ACS), with test specifications that are specialized to every compound. Ideal for most research needs, these high-quality solvents deliver replicable, publishable results.

### ReagentPlus® Grade

Applications: Trial Synthesis, Initial Extraction, General Chemical Synthesis, Purification, Cleaning

With a guaranteed purity  $\geq 98.5\%$ , ReagentPlus® solvents are ideal for trial synthesis, preparation, experiments that need fewer specifications, or applications that require innovative solutions not yet defined by ACS (e.g. our emerging green solvent line). They are primarily defined by assay specifications, and offer suitable quality for general lab use.

### Reagent Grade

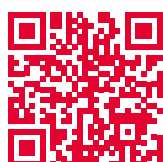
Applications: General Chemical Synthesis, Purification & Cleaning

Defined by assay profile and offering  $\geq 95\%$  purity, Reagent Grade solvents are the perfect choice for very general lab applications, such as cleaning.

## Essential Core Solvents (selection)

Product Description	Cat. No.
<b>ACS / Puriss Grade</b>	
Acetone, <b>ACS reagent</b> , ≥99.5%	<b>179124</b>
Acetonitrile, <b>ACS reagent</b> , ≥99.5%	<b>360457</b>
<i>tert</i> -Butyl methyl ether, <b>ACS reagent</b> , ≥99.0%	<b>443808</b>
Dichloromethane, contains 40-150 ppm amylene as stabilizer, <b>ACS reagent</b> , ≥99.5%	<b>D65100</b>
Diethyl ether, anhydrous, <b>ACS reagent</b> , ≥99.0%, contains BHT as inhibitor	<b>673811</b>
<i>N,N</i> -Dimethylformamide, <b>ACS reagent</b> , ≥99.8%	<b>319937</b>
Dimethyl sulfoxide, <b>puriss. p.a.</b> , <b>ACS reagent</b> , ≥99.9% (GC)	<b>41640</b>
1,4-Dioxane, <b>ACS reagent</b> , ≥99.0%	<b>360481</b>
Ethyl alcohol, Pure, 200 proof, <b>ACS reagent</b> , ≥99.5%	<b>459844</b>
Methanol, <b>ACS reagent</b> , ≥99.8%	<b>179337</b>
1-Propanol, <b>ACS reagent</b> , ≥99.5%	<b>402893</b>
Toluene, <b>ACS reagent</b> , ≥99.5%	<b>179418</b>

Product Description	Cat. No.
<b>ReagentPlus® / Reagent Grade</b>	
<i>N,N</i> -Dimethylacetamide, <b>ReagentPlus®</b> , 99%	<b>D137510</b>
Dimethyl sulfoxide, <b>ReagentPlus®</b> , ≥99.5%	<b>D5879</b>
Ethyl alcohol, Pure, 200 proof, meets USP testing specifications	<b>493546</b>
Ethyl alcohol, denatured, <b>reagent grade</b>	<b>187380</b>
Formamide, <b>ReagentPlus®</b> , ≥99.0% (GC)	<b>F7503</b>
1-Hexanol, <b>reagent grade</b> , 98%	<b>H13303</b>
Isopropyl acetate, ≥99.6%	<b>537462</b>
Methanol, Absolute - Acetone free	<b>M1775</b>
Pentane, <b>reagent grade</b> , 98%	<b>158941</b>
Tetrahydrofuran, <b>ReagentPlus®</b> , ≥99.0%, contains 250 ppm BHT as inhibitor	<b>178810</b>



**Discover More**

Visit our Solvent Center –  
including over 120 ACS Grade Solvents

[SigmaAldrich.com/solvents](https://sigmaaldrich.com/solvents)







# specialty solvents

Anhydrous, Biotech & NMR

## Anhydrous solvents

Applications: Chemical Synthesis,  
Water-Sensitive Reaction

Our high-purity anhydrous solvents are known for their extremely low water levels, and specifically produced for moisture-sensitive chemistry and biotech applications.

Product Description	Cat. No.
Acetonitrile, anhydrous, 99.8%	271004
Dichloromethane, anhydrous, ≥99.8%, contains 40-150 ppm amylene as stabilizer	270997
N,N-Dimethylformamide, anhydrous, 99.8%	227056
Dimethyl sulfoxide, anhydrous, ≥99.9%	276855
Ethyl alcohol, Pure, 200 proof, anhydrous, ≥99.5%	459836
2-Propanol, anhydrous, 99.5%	278475
Pyridine, anhydrous, 99.8%	270970
Tetrahydrofuran, anhydrous, ≥99.9%, inhibitor-free	401757
Tetrahydrofuran, anhydrous, contains 250 ppm BHT as inhibitor, ≥99.9%	186562
Toluene, anhydrous, 99.8%	244511



Learn more on  
[SigmaAldrich.com/anhydrous](https://SigmaAldrich.com/anhydrous)



## Sure/Seal™

Choose from the largest range of high-quality anhydrous solvents with exceptionally low water levels. Rest assured that each product is perfectly protected with our innovative, moisture-inhibiting Sure/Seal™ system.

We use three different types of materials to ensure complete compatibility with contents, and easier handling for you. Sure/Seal™ bottles come in several sizes, ranging from 100 mL to 2 L.

## Innovative plug style

- Maximum surface area contact (liner to bottle) to exclude moisture and oxygen
- More than 50% thicker than competing brands to ensure low water content for entire shelf life

## Outstanding elastomer and crimp cap design

- Air-tight system to protect product quality
- Excellent resealing properties
- Secondary resin layer ensures resistance to chemicals
- Outperforms competitors' seals in moisture prevention
- Three unique plug-style liners to suit a wide range of solvents and solutions

## Highest quality anhydrous solvents

- Always maintains exceptionally low water content
- More than 90 products in different categories, including common air and/or moisture-sensitive, volatiles, and strong odors
- Various size offerings, from 100 mL to 2 L (Larger size of oneway container also available in North America)



## Biotech solvents

**Applications: Protein synthesis, extraction, and purification**

Our biotech solvents are characterized by low water content, minimal residues, and clean UV spectra. They can be used for RNA extraction for genetic testing or research, eg, PCR.

Product Description	Cat. No.
Acetonitrile, biotech. grade, $\geq 99.93\%$	<b>494445</b>
Chloroform, contains 100-200 ppm amylenes as stabilizer, $\geq 99.5\%$	<b>C2432</b>
N,N-Diisopropylethylamine, 99.5%, biotech. grade	<b>496219</b>
N,N-Dimethylformamide, biotech. grade, $\geq 99.9\%$	<b>494488</b>
Ethyl alcohol, Pure, 200 proof, for molecular biology	<b>E7023</b>
Heptane, biotech. grade, $\geq 99\%$	<b>494526</b>
1-Methyl-2-pyrrolidinone, biotech. grade, $\geq 99.7\%$	<b>494496</b>
Trifluoroacetic acid, $\geq 99\%$ , for protein sequencing	<b>299537</b>
OmniPur Water, WFI Quality, Sterile Purified Water, Cell Culture Tested	<b>486505</b>

## NMR solvents

**Application: Nuclear Magnetic Resonance (NMR)**

We offer a wide range of high-quality NMR solvents to ensure the reliability of your analytical work.

Product Description	Cat. No.
Acetonitrile-d <sub>3</sub> , $\geq 99.8$ atom % D	<b>151807</b>
Benzene-d <sub>6</sub> , 99.6 atom % D	<b>151815</b>
Chloroform-d, 99.8 atom % D	<b>151823</b>
Chloroform-d, 99.8 atom % D, contains 0.03 % (v/v) TMS	<b>225789</b>
Deuterium oxide, 99.9 atom % D	<b>151882</b>
Deuterium oxide, 99.8 atom % D	<b>617385</b>
Dichloromethane-d <sub>2</sub> , 99.9 atom % D	<b>444324</b>
N,N-Dimethylformamide-d <sub>7</sub> , $\geq 99.5$ atom % D	<b>189979</b>
Dimethyl sulfoxide-d <sub>6</sub> , 99.9 atom % D	<b>151874</b>
Dimethyl sulfoxide-d <sub>6</sub> , 99.5 atom % D	<b>175943</b>
Dimethyl sulfoxide-d <sub>6</sub> , 99.9 atom % D, contains 0.03 % (v/v) TMS	<b>296147</b>
Methanol-d <sub>4</sub> , $\geq 99.8$ atom % D	<b>151947</b>



Learn more on  
[SigmaAldrich.com/biotech-solvents](https://SigmaAldrich.com/biotech-solvents)



Learn more on  
[SigmaAldrich.com/nmr](https://SigmaAldrich.com/nmr)



# salts, Acids & Bases

Every grade your lab needs

## Grade Definitions & Common Applications

### Puriss p.a.

Applications: Sensitive Reactions & Syntheses,  
Metal-Sensitive Applications

These high-quality salts, acids and bases offer specifications that match or exceed existing regulations and undergo stringent metals testing. They are designed for use in demanding regulated applications that require quality documentation.

### ACS Grade

Applications: General Lab Use, Routine Chemical Synthesis Workup,  
Drying & Purification, Academic Teaching Labs

ACS solvents meet or exceed the high standards of the American Chemical Society (ACS), with test specifications that are specialized to every compound. Ideal for most research needs, these high-quality solvents deliver replicable, publishable results.

### ReagentPlus® Grade

Applications: General Chemical Synthesis, Purification, Cleaning

With a guaranteed purity of  $\geq 98.5\%$ , and few other specification requirements, ReagentPlus® inorganic salts, acids and bases are ideal for initial experimental workups, which do not require as many specification controls, or for compounds that will be further purified after the reaction or process is completed.

### Reagent Grade

Applications: General Lab Use, General Chemical Synthesis,  
Purification, Cleaning

Reagent Grade inorganic salts, acids and bases are  $\geq 95\%$  pure assays, thus suitable for general lab applications and tests with low specification controls.



## Essential Inorganics (selection)

Product Description	Cat. No.
<b>ACS / Puriss Grade Salts and Inorganics</b>	
Gold(III) chloride trihydrate, <b>ACS reagent</b> , ≥49.0% Au basis	<b>G4022</b>
Hydrogen peroxide solution, contains inhibitor, 30 wt. % in H <sub>2</sub> O, <b>ACS reagent</b>	<b>216763</b>
Iodine, <b>ACS reagent</b> , ≥99.8%, solid	<b>207772</b>
Potassium phosphate dibasic, <b>ACS reagent</b> , ≥98%	<b>P3786</b>
Silver nitrate, <b>ACS reagent</b> , ≥99.0%	<b>209139</b>
Sodium chloride, <b>ACS reagent</b> , ≥99.0%	<b>S9888</b>
Sodium perchlorate, <b>ACS reagent</b> , ≥98.0%	<b>410241</b>
Sodium phosphate monobasic monohydrate, <b>ACS reagent</b> , ≥98%	<b>S9638</b>
<b>ReagentPlus® / Reagent Grade Acids, Bases and Salts</b>	
Acetic acid, glacial, <b>ReagentPlus®</b> , ≥99%	<b>A6283</b>
Calcium chloride, anhydrous, granular, ≤7.0 mm, ≥93.0%	<b>C1016</b>
Cesium chloride, anhydrous, free-flowing, Redi-Dri™, <b>ReagentPlus®</b> , 99.9%	<b>746487</b>
Iron(III) chloride, <b>reagent grade</b> , 97%	<b>157740</b>
Formic acid, <b>reagent grade</b> , ≥95%	<b>F0507</b>
Lithium bromide, <b>ReagentPlus®</b> , ≥99%	<b>213225</b>
Sodium chloride, <b>ReagentPlus®</b> , ≥99%	<b>S9625</b>
Sodium hydroxide solution, 50% in H <sub>2</sub> O	<b>415413</b>
Sodium hypochlorite solution, <b>reagent grade</b> , available chlorine 4.00-4.99 %	<b>239305</b>
Titanium(IV) chloride, <b>ReagentPlus®</b> , 99.9% trace metals basis	<b>208566</b>
Trifluoroacetic acid, <b>ReagentPlus®</b> , 99%	<b>T6508</b>
<b>Absorbents</b>	
Activated charcoal, DARCO®, -100 mesh particle size, powder	<b>242276</b>
Aluminum oxide, activated, basic, Brockmann I	<b>199443</b>
Celite® 545, filter aid, treated with sodium carbonate, flux calcined	<b>22140</b>
Magnesium sulfate, anhydrous, <b>ReagentPlus®</b> , ≥99.5%	<b>M7506</b>
Molecular sieves, 4 Å, beads, 8-12 mesh	<b>208604</b>
Sand, 50-70 mesh particle size	<b>274739</b>

# Innovative solutions

Redi-Dri™ free-flowing salts



## Reduce waste & effort – Increase safety & savings

Redi-Dri™ is an innovative product line that eliminates clumps in a broad range of common hygroscopic salts and buffers. Our unique packaging process gives you high-quality, free-flowing, ready-to-use materials – without any chemical additives, anti-clumping agents, or hydrophobic compounds.

Product Description	Cat. No.
<b>Redi-Dri™ Salts</b>	
Cesium chloride, anhydrous, free-flowing, Redi-Dri™, <b>ReagentPlus®</b> , 99.9%	<b>746487</b>
Magnesium sulfate, anhydrous, free-flowing, Redi-Dri™, <b>ReagentPlus®</b> , ≥99.5%	<b>746452</b>
Potassium iodide, anhydrous, free-flowing, Redi-Dri™, <b>ACS reagent</b> , ≥99%	<b>746428</b>
Potassium phosphate monobasic, anhydrous, free-flowing, Redi-Dri™, <b>ACS reagent</b> , ≥99%	<b>795488</b>
Sodium chloride, anhydrous, Redi-Dri™, free-flowing, <b>ACS reagent</b> , ≥99%	<b>746398</b>
Zinc chloride, anhydrous, free-flowing, Redi-Dri™, <b>reagent grade</b> , ≥98%	<b>793523</b>



**Discover More**

Over 370 ACS inorganic products available

[SigmaAldrich.com/researchchemicals](https://SigmaAldrich.com/researchchemicals)



Learn more on  
[SigmaAldrich.com/redi-dri](https://SigmaAldrich.com/redi-dri)



# Greener Alternative Solvents

## Safer for you and the planet

With our greener solvent alternatives, you no longer have to choose between sustainability and reliability. They offer the same excellent quality you know from Merck, but they're sustainably produced, so they won't compromise your work or the environment.

All of these solvents are greener, either in the processing of the chemical (**BioRenewable**), or the environmental impact of the solvent during production, use, and disposal (**Greener Substitutes**).

### BioRenewable ●

Our new BioRenewable solvents are derived from waste feedstock to reduce consumption of non-renewable resources. They do not contain many contaminants typically present in their petroleum-based counterparts, but behave identically, so they can be easily used as drop-in replacements. As they do not rely on crude oil, they also offer more stable pricing and availability, making them a reliable, long-term solution in solvent production.

### Greener Substitutes ●

Our Greener Substitutes are replacements for traditional solvents that pose health or environmental risks. They save energy and costs through: cleaner solvent/water separations, less water waste, easier distillation for solvent recovery, and faster reaction times (their higher boiling points and lower volatile organic compounds allow use at higher temperatures).

Product Description		Cat. No.
● ● Acetone, 100% BioRenewable, <b>ACS reagent</b> , ≥99.5%		<b>904082</b>
● ● 1-Butanol, BioRenewable, <b>ACS reagent</b> , ≥99.4%		<b>901351</b>
● ● Cyrene™ BioRenewable		<b>807796</b>
● ● Dimethyl isosorbide, BioRenewable, <b>ReagentPlus®</b> , ≥99%		<b>906832</b>
● ● 2-Methyltetrahydrofuran, BioRenewable, anhydrous, ≥99%, Inhibitor-free		<b>673277</b>
● ● 2-Methyltetrahydrofuran, BioRenewable, <b>ReagentPlus®</b> , ≥99.5%, contains 150-400 ppm BHT as stabilizer		<b>155810</b>
● ● 2-Propanol, BioRenewable, <b>ReagentPlus®</b> , ≥99.5%		<b>909955</b>
● Cyclopentyl methyl ether, inhibitor-free, anhydrous, ≥99.9%		<b>791962</b>
● Cyclopentyl methyl ether, contains 50 ppm BHT as inhibitor, anhydrous, ≥99.9%		<b>675970</b>
● Cyclopentyl methyl ether, contains 50 ppm BHT as inhibitor, <b>ReagentPlus®</b> , ≥99.90%		<b>675989</b>
● Ethyl acetate/Ethanol 3:1 (v/v) solution, (Ethyl acetate solution with 26.2% v/v SDA 35A), for HPLC		<b>745588</b>

● = BioRenewable

● = Greener Substitutes



Learn more on  
[SigmaAldrich.com/greensolvents](https://SigmaAldrich.com/greensolvents)



# scalable options

Wide choice of pack sizes from bench to bulk

Going from research to production? We'll help you get there quickly and confidently with our comprehensive range of innovative chemicals available from bench to bulk volumes. Enjoy expert technical support for your commercialization needs – with enhanced quality, compliance, documentation, and delivery.



## R&D

### Comprehensive portfolio of products and services

- Broad inventory of key starting materials for R&D
- Extensive range
- Expert consultation for product selection
- Extensive web-based resources and same day delivery

## Scale up

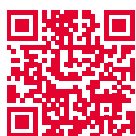
### Smooth transition from R&D to commercialization

- Fit-for-use reagents
- Customization needs:
  - Make to order
  - Pack to order
  - Test to order
- Lot-to-lot consistency, in-house quality testing with comprehensive traceability and safety documentation

## Manufacturing

### Support in supply and use of raw materials for manufacturing

- Risk mitigation and assessment
- Strong global supply chain
- Enhanced quality program including change control notification
- Contract manufacturing and OEM capabilities
- Proven technology transfer and project management to keep your needs on track



Learn more on  
[SigmaAldrich.com/bulk](https://SigmaAldrich.com/bulk)



# Sigma-Aldrich®

Lab & Production Materials

A whole  
**new way** to **shop**  
for your favorite  
products.

Explore  
**www.SigmaAldrich.id**

## Contact Us

PT Merck Chemicals and Life Sciences  
Arkadia Green Park - G building, 9<sup>th</sup> floor  
Jl. TB Simatupang No.Kav. 88, Pasar Minggu  
Jakarta, 12520 - Indonesia



Toll Free: 0800 140 1253



CS.Merck@merckgroup.com



**Let's Stay Connected**



@mercklifescience.id



Merck Life Science  
Indonesia



www.sigmaaldrich.com



Merck Life Science  
Indonesia



© 2020 Merck KGaA, Darmstadt, Germany and its affiliates. All Rights Reserved.  
Merck, the vibrant M, ReagentPlus, Redi-Dri and Sigma-Aldrich are trademarks of Merck KGaA, Darmstadt,  
Germany or its affiliates. All other trademarks are the property of their respective owners.  
Detailed information on trademarks is available via publicly accessible resources.

Lit. No. MK\_BR5766EN Ver. 1.0  
07/2020