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®

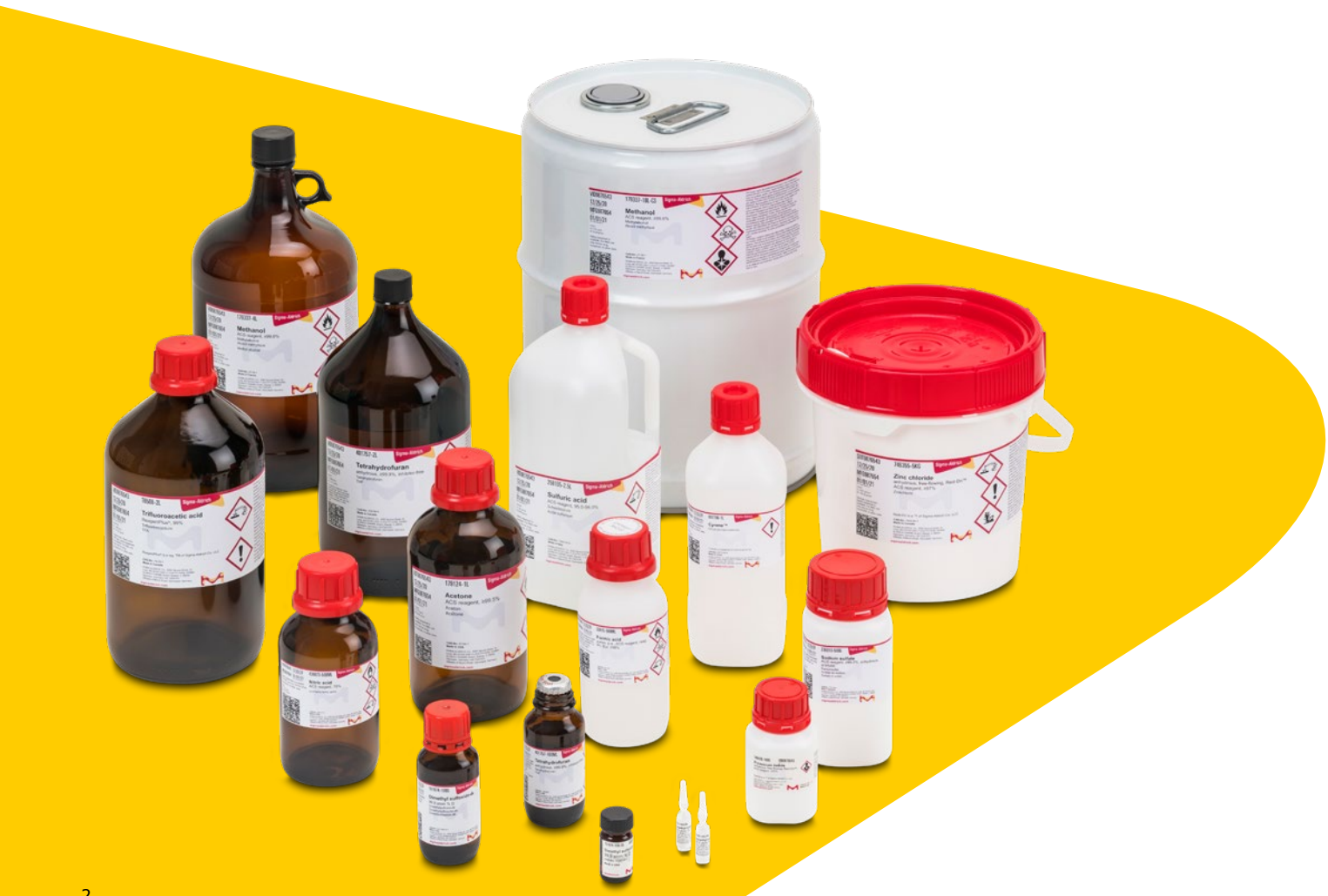
Lab & Production Materials

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.



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core solvents

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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 ≥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 ≥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.
ACS / Puriss Grade	
Acetone, **ACS reagent**, ≥99.5%	**179124**
Acetonitrile, **ACS reagent**, ≥99.5%	**360457**
tert-Butyl methyl ether, **ACS reagent**, ≥99.0%	**443808**
Dichloromethane, contains 40-150 ppm amylene as stabilizer, **ACS reagent**, ≥99.5%	**D65100**
Diethyl ether, anhydrous, **ACS reagent**, ≥99.0%, contains BHT as inhibitor	**673811**
N,N-Dimethylformamide, **ACS reagent**, ≥99.8%	**319937**
Dimethyl sulfoxide, **puriss. p.a.**, **ACS reagent**, ≥99.9% (GC)	**41640**
1,4-Dioxane, **ACS reagent**, ≥99.0%	**360481**
Ethyl alcohol, Pure, 200 proof, ACS reagent, ≥99.5%	**459844**
Methanol, **ACS reagent**, ≥99.8%	**179337**
1-Propanol, **ACS reagent**, ≥99.5%	**402893**
Toluene, **ACS reagent**, ≥99.5%	**179418**

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

Discover More

Visit our Solvent Center – including over 120 ACS Grade Solvents

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

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, ≥99.93%	**494445**
Chloroform, contains 100-200 ppm amylenes as stabilizer, ≥99.5%	**C2432**
N,N-Diisopropylethylamine, 99.5%, biotech. grade	**496219**
N,N-Dimethylformamide, biotech. grade, ≥99.9%	**494488**
Ethyl alcohol, Pure, 200 proof, for molecular biology	**E7023**
Heptane, biotech. grade, ≥99%	**494526**
1-Methyl-2-pyrrolidinone, biotech. grade, ≥99.7%	**494496**
Trifluoroacetic acid, ≥99%, for protein sequencing	**299537**
OmniPur Water, WFI Quality, Sterile Purified Water, Cell Culture Tested	**486505**

Learn more on SigmaAldrich.com/biotech-solvents

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_3, ≥99.8 atom % D	**151807**
Benzene-d_6, 99.6 atom % D	**151815**
Chloroform-d, 99.8 atom % D	**151823**
Chloroform-d, 99.8 atom % D, contains 0.03 % (v/v) TMS	**225789**
Deuterium oxide, 99.9 atom % D	**151882**
Deuterium oxide, 99.8 atom % D	**617385**
Dichloromethane-d_2, 99.9 atom % D	**444324**
N,N-Dimethylformamide-d_7, ≥99.5 atom % D	**189979**
Dimethyl sulfoxide-d_6, 99.9 atom % D	**151874**
Dimethyl sulfoxide-d_6, 99.5 atom % D	**175943**
Dimethyl sulfoxide-d_6, 99.9 atom % D, contains 0.03 % (v/v) TMS	**296147**
Methanol-d_4, ≥99.8 atom % D	**151947**

Learn more on 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 ≥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 ≥95% pure assays, thus suitable for general lab applications and tests with low specification controls.

Essential Inorganics (selection)

Product Description	Cat. No.
ACS / Puriss Grade Salts and Inorganics	
Gold(III) chloride trihydrate, **ACS reagent**, ≥49.0% Au basis	**G4022**
Hydrogen peroxide solution, contains inhibitor, 30 wt. % in H2O, **ACS reagent**	**216763**
Iodine, **ACS reagent**, ≥99.8%, solid	**207772**
Potassium phosphate dibasic, **ACS reagent**, ≥98%	**P3786**
Silver nitrate, **ACS reagent**, ≥99.0%	**209139**
Sodium chloride, **ACS reagent**, ≥99.0%	**S9888**
Sodium perchlorate, **ACS reagent**, ≥98.0%	**410241**
Sodium phosphate monobasic monohydrate, **ACS reagent**, ≥98%	**S9638**
ReagentPlus® / Reagent Grade Acids, Bases and Salts	
Acetic acid, glacial, **ReagentPlus®**, ≥99%	**A6283**
Calcium chloride, anhydrous, granular, ≤7.0 mm, ≥93.0%	**C1016**
Cesium chloride, anhydrous, free-flowing, Redi-Dri™, **ReagentPlus®**, 99.9%	**746487**
Iron(III) chloride, **reagent grade**, 97%	**157740**
Formic acid, **reagent grade**, ≥95%	**F0507**
Lithium bromide, **ReagentPlus®**, ≥99%	**213225**
Sodium chloride, **ReagentPlus®**, ≥99%	**S9625**
Sodium hydroxide solution, 50% in H_2O	**415413**
Sodium hypochlorite solution, **reagent grade**, available chlorine 4.00-4.99 %	**239305**
Titanium(IV) chloride, **ReagentPlus®**, 99.9% trace metals basis	**208566**
Trifluoroacetic acid, **ReagentPlus®**, 99%	**T6508**
Absorbents	
Activated charcoal, DARCO®, -100 mesh particle size, powder	**242276**
Aluminum oxide, activated, basic, Brockmann I	**199443**
Celite® 545, filter aid, treated with sodium carbonate, flux calcined	**22140**
Magnesium sulfate, anhydrous, **ReagentPlus®**, ≥99.5%	**M7506**
Molecular sieves, 4 Å, beads, 8-12 mesh	**208604**
Sand, 50-70 mesh particle size	**274739**

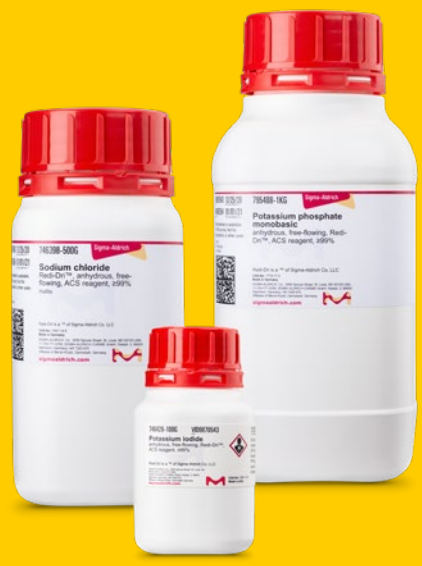
Discover More

Over 370 ACS inorganic products available

SigmaAldrich.com/researchchemicals

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.
Redi-Dri™ Salts	
Cesium chloride, anhydrous, free-flowing, Redi-Dri™, **ReagentPlus®**, 99.9%	**746487**
Magnesium sulfate, anhydrous, free-flowing, Redi-Dri™, **ReagentPlus®**, ≥99.5%	**746452**
Potassium iodide, anhydrous, free-flowing, Redi-Dri™, **ACS reagent**, ≥99%	**746428**
Potassium phosphate monobasic, anhydrous, free-flowing, Redi-Dri™, **ACS reagent**, ≥99%	**795488**
Sodium chloride, anhydrous, Redi-Dri™, free-flowing, **ACS reagent**, ≥99%	**746398**
Zinc chloride, anhydrous, free-flowing, Redi-Dri™, **reagent grade**, ≥98%	**793523**

Learn more on 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, **ACS reagent**, ≥99.5%	**904082**
●	●	1-Butanol, BioRenewable, **ACS reagent**, ≥99.4%	**901351**
●	●	Cyrene™ BioRenewable	**807796**
●	●	Dimethyl isosorbide, BioRenewable, **ReagentPlus®**, ≥99%	**906832**
●	●	2-Methyltetrahydrofuran, BioRenewable, anhydrous, ≥99%, Inhibitor-free	**673277**
●	●	2-Methyltetrahydrofuran, BioRenewable, **ReagentPlus®**, ≥99.5%, contains 150-400 ppm BHT as stabilizer	**155810**
●	●	2-Propanol, BioRenewable, **ReagentPlus®**, ≥99.5%	**909955**
	●	Cyclopentyl methyl ether, inhibitor-free, anhydrous, ≥99.9%	**791962**
	●	Cyclopentyl methyl ether, contains 50 ppm BHT as inhibitor, anhydrous, ≥99.9%	**675970**
	●	Cyclopentyl methyl ether, contains 50 ppm BHT as inhibitor, **ReagentPlus®**, ≥99.90%	**675989**
	●	Ethyl acetate/Ethanol 3:1 (v/v) solution, (Ethyl acetate solution with 26.2% v/v SDA 35A), for HPLC	**745588**

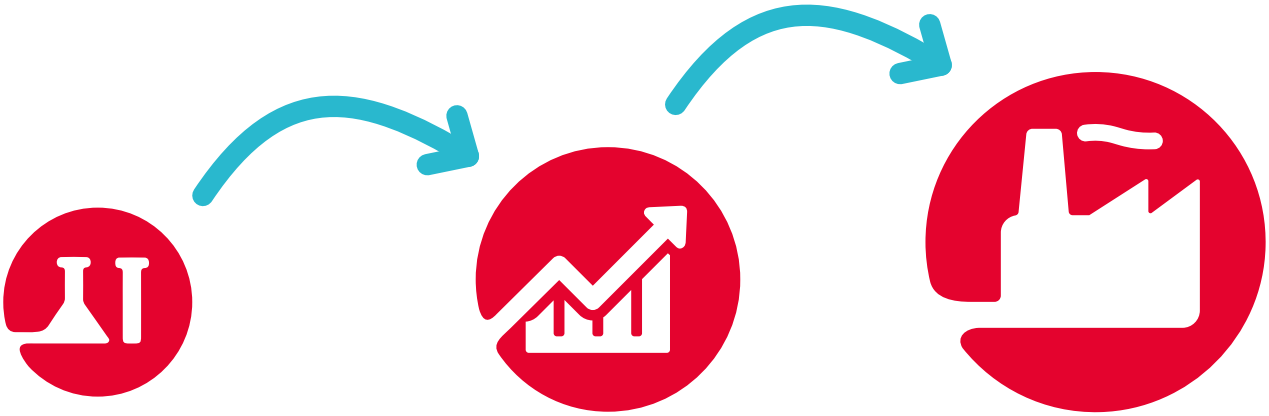
● = BioRenewable ● = Greener Substitutes

Learn more on 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
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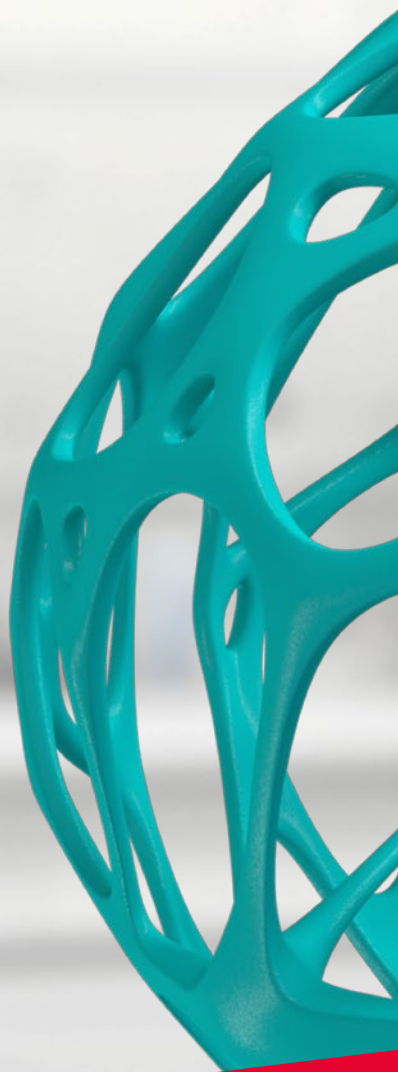

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