quality and safety sealed

Sure/Seal™ system for anhydrous solvents

The Life Science business of Merck operates as MilliporeSigma in the U.S. and Canada.

Sigma-Aldrich®
Lab & Production Materials

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

Sure/Seal™ Crimp

Sure/Seal™ Plug

Three unique plug-style liners created for optimal compatibility with various solvents

White liner for Hexane, Toluene, Dichloromethane

Gray liner for 1,4-Dioxane, Methanol, Acetonitrile

Black liner for Tetrahydrofuran, *tert*-Butylamine, *a,a,a*-Trifluorotoluene

Examples of Sure/Seal™ liners before and after 4 punctures using an 18-gauge non-coring needle

Learn more about the benefits of Sure/Seal™ system on: **SigmaAldrich.com/sureseal**

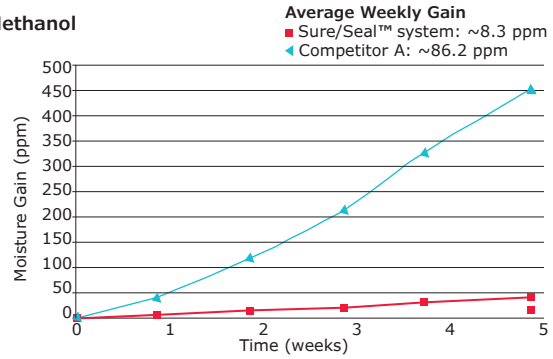
BEST OF THE TESTS

See how Sure/Seal™ system outperformed the competition

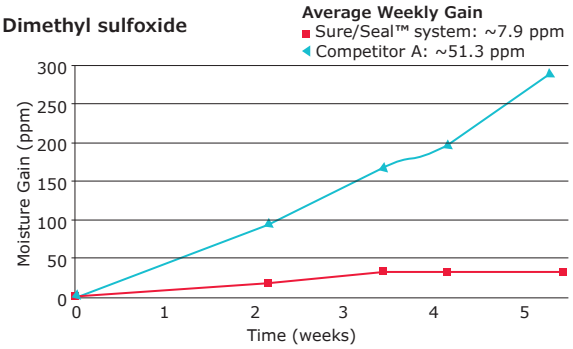
Moisture uptake

A comparative study was conducted to determine the effectiveness of the liners' seal and closure designs. Using a dried 18-gauge needle, triplicate sample sets from 100 mL bottles received four new punctures per liner per week during the five-week test period for a total of 20 punctures per liner. Karl Fischer (KF) titration was performed to measure the rate of moisture uptake.

Methanol



Dimethyl sulfoxide

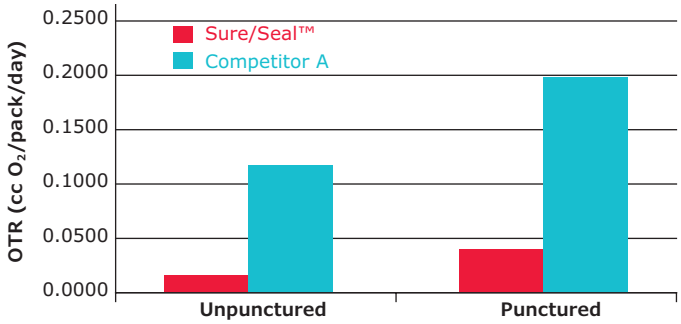


Summary:

Comprehensive testing confirmed that Sure/Seal™ system outperforms competitors' seals by maintaining low water absorption even after multiple punctures. See additional test results on **SigmaAldrich.com/sureseal**

Oxygen transmission rate

Oxygen transmission rate (OTR) is a measurement of the amount of O_2 allowed to permeate into the bottle over a certain period, and demonstrates the cap and liner's ability to maintain an airtight seal over time.



Summary:

OTR evaluation of Sure/Seal™ system versus Competitor A demonstrated that the Sure/Seal™ system allows significantly lower oxygen uptake.

Cat. No.	Product Name	Water Content
271004	Acetonitrile, anhydrous, 99.8%	<0.001%
296295	Anisole, anhydrous, 99.7%	<0.002%
401765	Benzene, anhydrous, 99.8%	<0.001%
305197	Benzyl alcohol, anhydrous, 99.8%	<0.003%
281549	1-Butanol, anhydrous, 99.8%	<0.005%
294810	2-Butanol, anhydrous, 99.5%	<0.005%
471712	tert-Butanol, anhydrous, ≥99.5%	<0.005%
287725	Butyl acetate, anhydrous, ≥99%	<0.005%
589595	tert-Butyl methyl ether, anhydrous, 99.8%	<0.003%
335266	Carbon disulfide, anhydrous, ≥99%	<0.005%
289116	Carbon tetrachloride, anhydrous, ≥99.5%	<0.002%
284513	Chlorobenzene, anhydrous, 99.8%	<0.005%
589587	Chloroform, anhydrous, ≥99%, contains 0.5-1.0% ethanol as stabilizer	<0.001%
372978	Chloroform, anhydrous, contains amylenes as stabilizer, ≥99%	<0.001%
589572	Cyclohexane, anhydrous, 99.5%	<0.001%
675970	Cyclopentyl methyl ether, contains 50 ppm BHT as inhibitor, anhydrous, ≥99.9%	≤0.005%
791962	Cyclopentyl methyl ether, inhibitor-free, anhydrous, ≥99.9%	≤0.005%
294772	Decahydronaphthalene, mixture of cis + trans, anhydrous, ≥99%	<0.002%
457116	Decane, anhydrous, ≥99%	<0.005%
589583	Dibutyl ether, anhydrous, 99.3%	<0.003%
589571	1,2-Dichlorobenzene, anhydrous, 99%	<0.003%
284505	1,2-Dichloroethane, anhydrous, 99.8%	<0.003%
589581	Dichloromethane, anhydrous, ≥99.8%, contains 40-150 ppm amylene as stabilizer	≤0.001%
281662	Diethylene glycol dimethyl ether, anhydrous, 99.5%	<0.005%
589589	Diethyl ether, contains 1 ppm BHT as inhibitor, anhydrous, ≥99.7%	<0.003%
296856	Diisopropyl ether, anhydrous, 99%, contains either BHT or hydroquinone as stabilizer	<0.002%
589574	1,2-Dimethoxyethane, anhydrous, 99.5%, inhibitor-free	<0.003%
589582	N,N-Dimethylacetamide, anhydrous, 99.8%	<0.005%
517127	Dimethyl carbonate, anhydrous, ≥99%	<0.002%
589565	N,N-Dimethylformamide, anhydrous, 99.8%	<0.005%
274380	Dimethyl sulfide, anhydrous, ≥99.0%	<0.003%
589569	Dimethyl sulfoxide, anhydrous, ≥99.9%	<0.005%
589591	1,4-Dioxane, anhydrous, 99.8%	<0.003%
271020	1,3-Dioxolane, anhydrous, contains ~75 ppm BHT as inhibitor, 99.8%	<0.003%
297879	Dodecane, anhydrous, ≥99%	<0.003%
589580	Ethyl acetate, anhydrous, 99.8%	<0.005%

Cat. No.	Product Name	Water Content
459836	Ethyl alcohol, Pure, 200 proof, anhydrous, ≥99.5%	<0.005%
324558	Ethylene glycol, anhydrous, 99.8%	<0.003%
589577	Heptane, anhydrous, 99%	<0.001%
296317	Hexadecane, anhydrous, ≥99%	<0.003%
589590	Hexane, anhydrous, 95%	<0.001%
227064	Hexane, mixture of isomers, anhydrous, ≥99%	<0.001%
471402	1-Hexanol, anhydrous, ≥99%	<0.005%
589596	Methanol, anhydrous, 99.8%	<0.002%
284467	2-Methoxyethanol, anhydrous, 99.8%	<0.005%
589593	Methyl acetate, anhydrous, 99.5%	<0.003%
277258	2-Methylbutane, anhydrous, ≥99%	<0.001%
721123	2-Methyl-2-butanol, anhydrous, ≥99%	≤0.003%
309435	3-Methyl-1-butanol, anhydrous, ≥99%	<0.003%
300306	Methylcyclohexane, anhydrous, ≥99%	<0.002%
291056	Methyl formate, anhydrous, 99%	<0.005%
294829	2-Methyl-1-propanol, anhydrous, 99.5%	<0.003%
589597	1-Methyl-2-pyrrolidinone, anhydrous, 99.5%	<0.005%
673277	2-Methyltetrahydrofuran, anhydrous, ≥99%, Inhibitor-free	≤0.002%
414247	2-Methyltetrahydrofuran, anhydrous, ≥99.0%, contains 250 ppm BHT as stabilizer	<0.002%
296821	Nonane, anhydrous, ≥99%	<0.005%
296988	Octane, anhydrous, ≥99%	<0.002%
297887	1-Octanol, anhydrous, ≥99%	<0.003%
589576	Pentane, anhydrous, ≥99%	<0.001%
589585	1-Propanol, anhydrous, 99.7%	<0.005%
589584	2-Propanol, anhydrous, 99.5%	<0.003%
310328	Propylene carbonate, anhydrous, 99.7%	<0.002%
589579	Pyridine, anhydrous, 99.8%	<0.003%
277649	Reagent Alcohol, anhydrous, ≤0.003% water	≤0.003%
676829	Reagent Alcohol, anhydrous, ≤0.005% water	≤0.005%
371696	Tetrachloroethylene, anhydrous, ≥99%	<0.002%
589568	Tetrahydrofuran, anhydrous, ≥99.9%, inhibitor-free	<0.002%
589570	Tetrahydrofuran, anhydrous, contains 250 ppm BHT as inhibitor, ≥99.9%	<0.002%
589578	Toluene, anhydrous, 99.8%	<0.001%
372145	Trichloroethylene, anhydrous, contains 40 ppm diisopropylamine as stabilizer, ≥99%	<0.002%
304050	Triethyl orthoformate, anhydrous, 98%	<0.003%
547948	α,α,α-Trifluorotoluene, anhydrous, ≥99%	<0.001%
360066	2,2,4-Trimethylpentane, anhydrous, 99.8%	<0.003%
589592	m-Xylene, anhydrous, ≥99%	<0.002%
589588	o-Xylene, anhydrous, 97%	<0.003%
296333	p-Xylene, anhydrous, ≥99%	<0.002%

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