

Attractive

MagniSolv™, deuterated solvents
from Merck



MagniSolv™, deuterated solvents for NMR (Nuclear Magnetic Resonance spectroscopy)

MagniSolv™ deuterated solvents are required wherever chemical research is carried out and are indispensable for the most important method in the structural analysis of organic molecules – the NMR spectroscopy. NMR is a non-destructive, information-rich analytical technique helping researchers understand molecular structure and dynamics. A NMR experiment provides connectivity information – which atoms are attached to each other in a molecule, the spatial orientation and the motions of the molecule in its natural environment. Such structural information is especially critical in proteomics/genomics and drug discovery applications where scientists desire a deeper understanding of protein target molecules and their spatial relationships with synthetic drug candidates.

A wide range of MagniSolv™ deuterated solvents with extremely low residual water, excellent chemical purity, and the highest isotopic enrichment available can satisfy the most demanding requirements of researchers. Depending on application and sensitivity of the NMR spectrometer Merck offers MagniSolv™ solvents with deuteration degrees between 98 % and 99.96 %. In case of all the water soluble deuterated standard products, water content is specified according to both Karl Fischer and NMR. This is a unique benefit for our customers and underpins the position of Merck as a supplier of chemicals of the highest quality and reliability.

Merck provides a wide range of different packaging types (bottles, practical ampoules and septum bottles) and packaging sizes. Concerning the septum bottles we have the broadest range of deuterated products in this customer friendly packaging material. Here Merck's vast experience in the optimization of packaging is a unique benefit that we can fully utilize. We are also prepared to offer bulk quantities of MagniSolv™ deuterated compounds. This also applies to special package sizes and other grades.





The history of NMR spectroscopy

The first successful nuclear magnetic resonance (NMR) experiment was made in 1946 independently by two scientists in the United States. Felix Bloch, working at Stanford University, and Edward Purcell, from Harvard University, found that when certain nuclei were placed in a magnetic field they absorbed energy in the radio frequency range of the electromagnetic spectrum, and re-emitted this energy when the nuclei transferred to their original state. The strength of the magnetic field and the radio frequency matched each other as earlier demonstrated by Sir Joseph Larmor (Irish physicist 1857–1942) and is known as the Larmor relationship (i.e., the angular frequency of precession of the nuclear spins being proportional to the strength of the magnetic field).

This phenomenon was termed NMR as follows: “Nuclear” as only the nuclei of certain atoms reacted in that way; “Magnetic” as a magnetic field was required; “Resonance” because of the direct frequency dependence of the magnetic and radio frequency fields.

With this discovery NMR spectroscopy was born and soon became an important analytical method in the study of the composition of chemical compounds. For this discovery Bloch and Purcell were awarded the Nobel Prize for Physics in 1952.

Interestingly, Dr. Isidor Rabi, an American physicist who was awarded the Nobel Prize for Physics in 1944 for his invention of the atomic and molecular beam magnetic resonance method of observing atomic spectra, came across the NMR experiment in the late 1930's but considered it to be an artifact of his apparatus and disregarded its importance.

Your Benefits

- Reliable results in the NMR-spectra by
 - excellent chemical purity and highest isotopic enrichment
 - reliable deuteration degrees
 - determination of water content in two ways (Karl Fischer and NMR)
- Easy and safe handling with septum bottles and glass ampoules
- Flexibility: broad packaging variety

Further Information please find in our lab tool “NMR chemical shifts” (W.284109)

Ordering information

MagniSolv™ deuterated solvents A-D

Product	Deuteration degree [%]	H ₂ O+D ₂ O (KF) [%]	H ₂ O (NMR) [%]	Density at 20 °C [g/ml]	Quantity / Packaging	Content [g]	Ord. No.		
A	Acetic acid-D1 99.5 % D	> 99.5	-	-	1.06	25 ml GL	26.50	8.15035.0025	
	Acetic acid-D4 99.5 %	> 99.5	< 0.05	-	1.12	10 x 0.75 ml GA	8.40	8.15036.0009	
						10 ml GA	11.20	8.15036.0010	
	Acetone-D6 99.9 % D	> 99.9	< 0.03	< 0.02	0.87	10 x 0.5 ml GA	4.35	1.00021.0005	
						10 x 0.75 ml GA	6.53	1.00021.0009	
						10 ml SB	8.70	1.00021.0010	
						25 ml GL	21.75	1.00021.0025	
						100 ml GL	87.00	1.00021.0100	
	Acetone-D6 99.96 % D	> 99.96	< 0.03	< 0.02	0.87	10 x 0.75 ml GA	6.53	1.11969.0009	
	Acetonitrile-D3 99 % D	> 99	< 0.10	< 0.05	0.84	10 ml SB	8.40	1.02904.0010	
	Acetonitrile-D3 99.8 % D	> 99.8	< 0.10	< 0.05	0.84	10 ml SB	8.40	1.00220.0010	
	Acetonitrile-D3 99.96 % D	> 99.96	< 0.02	< 0.01	0.84	1 ml GA	0.84	1.13753.0001	
						10 x 0.75 ml GA	6.30	1.13753.0009	
	Acetophenone-D8 98 % D	> 98	-	-	1.10	10 ml GA	11.00	8.15006.0010	
	Ammonia-D3 26 wt % in D ₂ O	> 99.5	-	-	1.06	10 ml GA	10.60	8.15008.0010	
						25 ml GL	26.50	8.15008.0025	
B	Benzene-D6 99.6 % D	> 99.6	-	< 0.02	0.95	10 x 0.75 ml GA	7.13	1.01789.0009	
						10 ml SB	9.50	1.01789.0010	
						100 ml GL	95.00	1.01789.0100	
	Benzene-D6 99.96 % D	> 99.96	-	-	0.95	10 x 0.75 ml GA	7.13	1.01766.0009	
						10 ml GA	9.50	1.01766.0010	
	Bromobenzene-D5 99.5 % D	> 99.5	-	< 0.02	1.54	10 ml GA	15.40	8.15021.0010	
	tert-Butanol (ol-D) 99 % D	> 99	-	-	0.80	25 ml GL	20.00	8.15014.0025	
	C	Chloroform 99.5 % D; 1 vol. % TMS stabilized with silver	> 99.5	-	< 0.02	1.50	25 ml GL	37.50	1.13359.0025
							100 ml GL	150.00	1.13359.0100
		Chloroform-D1 99.8 % D; not stabilized	> 99.8	-	< 0.01	1.50	25 ml GL	37.50	1.02450.0025
100 ml GL							150.00	1.02450.0100	
500 ml GL							750.00	1.02450.0500	
Chloroform-D1 99.8 % D; stabilized with silver		> 99.8	-	< 0.01	1.50	25 ml GL	37.50	1.03420.0025	
						100 ml GL	150.00	1.03420.0100	
						500 ml GL	750.00	1.03420.0500	
Chloroform 99.8 % D; 0.03 % TMS stabilized with silver		> 99.8	-	< 0.01	1.50	25 ml GL	37.50	1.03296.0025	
						100 ml GL	150.00	1.03296.0100	
						500 ml GL	750.00	1.03296.0500	
Chloroform-D1 99.96 % D; 25 ml stabilized with silver 100 ml stabilized with silver		> 99.96	-	< 0.005	1.50	10 x 0.75 ml GA	11.25	1.02446.0009	
						10 ml GA	15.00	1.02446.0010	
						25 ml GL	37.50	1.02446.0025	
	100 ml GL					150.00	1.02446.0100		
Cumene (Isopropylbenzene)-D12 99 % D	> 99	-	-	0.95	1 ml GA	0.87	8.15023.0001		
Cyclohexane-D12 99.5 % D	> 99.5	< 0.05	< 0.03	0.89	10 x 0.5 ml GA	4.45	8.15024.0005		
					10 x 0.75 ml GA	6.68	8.15024.0009		
					5 ml GA	4.45	8.15024.0006		
D	n-Decane-D22 99 % D	> 99	-	-	0.85	1 ml GA	0.85	8.15027.0001	
	Deuterium chloride 20 wt % in D ₂ O 99.5 % D	> 99.5	-	-	1.19	25 ml GL	29.75	8.15016.0025	
						50 ml GL	59.50	8.15016.0050	
Deuterium chloride 20 wt % in D ₂ O 99.95 % D	> 99.95	-	-	1.19	10 ml GA	11.90	8.15017.0010		

GA = glass ampoule | SB = septum bottle | GL = glass bottle

Ordering information

MagniSolv™ deuterated solvents D-L

Product	Deuteration degree [%]	H ₂ O+D ₂ O (KF) [%]	H ₂ O (NMR) [%]	Density at 20 °C [g/ml]	Quantity / Packaging	Content [g]	Ord. No.
D Deuterium chloride 38 wt % in D ₂ O 99.5 % D	> 99.5	–	–	1.26	10 ml GA	12.60	8.15018.0010
					50 ml GL	63.00	8.15018.0050
Deuterium oxide 99.9 % D	> 99.9	–	–	1.11	10 x 0.75 ml GA	8.33	1.13366.0009
					10 ml SB	11.10	1.13366.0010
					25 ml GL	27.75	1.13366.0025
					100 ml GL	111.00	1.13366.0100
					500 ml GL	555.00	1.13366.0500
Deuterium oxide 99.96 % D	> 99.96	–	–	1.11	10 x 0.5 ml GA	5.55	1.03428.0005
					10 x 0.75 ml GA	8.33	1.03428.0009
					10 ml SB	11.10	1.03428.0010
					100 ml GL	111.00	1.03428.0100
1.2-Dichlorobenzene-D4 99 % D	> 99	–	< 0.03	1.34	5 ml GA	6.70	8.15029.0005
Dichloromethane-D2 99.8 % D	> 99.8	–	< 0.01	1.36	10 x 0.75 ml GA	10.20	1.13720.0009
					10 ml GA	13.60	1.13720.0010
Dichloromethane-D2 99.96 % D	> 99.96	–	< 0.005	1.36	10 x 0.5 ml GA	6.80	1.04200.0005
					10 x 0.75 ml GA	10.20	1.04200.0009
					10 ml GA	13.60	1.04200.0010
Diethylether-D10 99 % D	> 99	–	–	0.78	1 ml GA	1.00	8.15031.0001
Dimethylacetamide-D9 99 % D	> 99	–	–	1.03	1 ml GA	1.03	8.15032.0001
Dimethylformamide-D7 99.5 % D	> 99.5	< 0.05	< 0.03	1.05	1 ml GA	1.05	1.11656.0001
					10 x 0.75 ml GA	7.88	1.11656.0009
Dimethylsulfate-D6 99.5 % D	> 99.5	–	–	1.40	5 ml GA	7.00	8.15034.0005
Dimethylsulfoxide-D6 99.8 % D	> 99.8	< 0.03	< 0.02	1.19	10 x 0.5 ml GA	5.95	1.03424.0005
					10 x 0.75 ml GA	8.93	1.03424.0009
					10 ml SB	11.90	1.03424.0010
					10 ml GA	11.90	1.03424.0011
					25 ml GL	29.75	1.03424.0025
Dimethylsulfoxide-D6 99.9 % D; 0.1 vol. % TMS	> 99.9	< 0.03	< 0.02	1.19	50 ml SB	59.5	1.03424.0050
					100 ml GL	119.00	1.03424.0100
					25 ml GL	29.75	1.03587.0025
Dimethylsulfoxide-D6 99.8 % D; 0.03 vol. % TMS	> 99.8	–	–	1.19	100 ml GL	119.00	1.03587.0100
					50 ml SB	59.5	1.03591.0050
Dimethylsulfoxide-D6 99.96 % D	> 99.96	< 0.02	< 0.01	1.19	10 x 0.5 ml GA	5.95	1.03562.0005
					10 x 0.75 ml GA	8.93	1.03562.0009
					10 ml GA	11.90	1.03562.0010
					25 ml GL	29.75	1.03562.0025
					5 ml GA	5.95	1.03592.0005
Dimethylsulfoxide-D6 99.96 % D; 0.03 vol. % TMS	> 99.96	< 0.02	< 0.01	1.19	25 ml GL	29.75	1.03592.0025
E Ethanol-D6 99 % D	> 99	< 0.10	< 0.05	0.90	1 ml GA	0.90	1.03450.0001
Ethanol (ol-D) abs. 99.5 % D	> 99.5	–	–	0.80	50 ml GL	40.00	8.15037.0050
F Formic acid-D2 97 wt % in D ₂ O	> 99.5	–	–	1.27	10 ml GA	12.70	1.13365.0010
H Hexafluoro-2-propanol-D2 99.5 % D	> 99.5	–	–	1.65	1 ml GA	1.65	8.15041.0001
					5 ml GA	8.25	8.15041.0005
n-Hexane-D14 99 % D	> 99	–	–	0.77	1 ml GA	0.77	8.15043.0001
L Lithiumaluminiumdeuterid 98 %	> 98	–	–	–	5 g GL	5.00	8.15048.0005

GA = glass ampoule | SB = septum bottle | GL = glass bottle



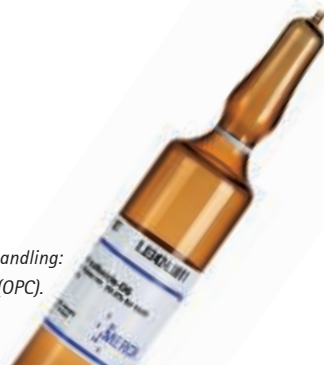
Ordering information

MagniSolv™ deuterated solvents M-X

	Product	Deuteration degree [%]	H ₂ O+D ₂ O (KF) [%]	H ₂ O (NMR) [%]	Density at 20 °C [g/ml]	Quantity / Packaging	Content [g]	Ord. No.
M	Methylcyclohexane-D14 99.5 % D	> 99.5	-	-	0.88	5 ml GA	4.40	8.15053.0005
	Methanol (ol-D) 99.5 % D	> 99.5	-	-	0.81	50 ml GL	40.50	8.15051.0050
						100 ml GL	81.00	8.15051.0100
	Methanol-D4 99.8 % D	> 99.8	< 0.03	-	0.89	1 ml GA	0.89	1.06028.0001
						10 x 0.5 ml GA	4.45	1.06028.0005
						10 x 0.75 ml GA	6.68	1.06028.0009
						10 ml SB	8.90	1.06028.0010
						25 ml GL	22.25	1.06028.0025
						100 ml GL	89.00	1.06028.0100
	Methanol-D4 99.95 % D	> 99.95	< 0.02	-	0.89	10 x 0.5 ml GA	4.45	1.06025.0005
10 x 0.75 ml GA						6.68	1.06025.0009	
Methanol-D3 99.5 % D	> 99.5	-	-	0.87	1 ml GA	0.87	8.15052.0001	
					5 ml GA	4.35	8.15052.0005	
N	Naphthalene-D8 98 % D	> 98	-	-		1 g GL	1.00	8.15000.0001
	Nitrobenzene-D5 99.5 % D	> 99.5	-	-	1.25	10 ml GA	12.53	8.15001.0010
	Nitromethane-D3 99 % D	> 99	< 0.10	< 0.05	1.18	2 x 0.75 ml GA	1.77	1.02914.0002
O	n-Octane-D18 99 % D	> 99	-	-	0.82	1 g GA	0.82	8.15002.0001
P	Phenol-D6 98 % D	> 98	-	-	-	5 g GL	5.00	8.15003.0005
	Phosphoric acid-D3 85 wt % in D ₂ O 99 % D	> 99	-	-	1.74	10 ml GA	17.40	8.15058.0010
	2-Propanol (ol-D) 98 % D	> 98	-	-	0.79	25 ml GL	19.75	8.15044.0025
	2-Propanol-D8 99.5 % D	> 99.5	-	-	0.89	5 ml GA	4.45	8.15045.0005
	Pyridine-D5 99.8 % D	> 99.8	< 0.03	< 0.02	1.05	10 x 0.75 ml GA	7.88	1.07475.0009
						10 ml SB	10.50	1.07475.0010
	S	Sodium deuterium oxide 30 wt % in D ₂ O 99.5 % D	> 99.5	-	-	1.46	25 ml GL	36.50
Sulfuric acid-D2 96-98 wt % in D ₂ O		> 99.5	-	-	1.88	25 ml GL	47.00	8.15060.0025
						50 ml GL	94.00	8.15060.0050
Styrene-D8 98 % D		> 99	-	-	0.98	1 ml GA	0.98	8.15061.0001
	10 ml GA					9.80	8.15061.0010	
T	Tetrachloroethane-D2 99.5 % D	> 99.5	-	< 0.02	1.62	10 x 0.75 ml GA	12.15	1.03495.0009
						25 ml GL	40.50	1.03495.0025
	Tetramethylsilane	> 99.7	-	-	0.64	100 ml GL	64.00	1.08183.0100
	TMS-Propionic acid-D4-Na 98 % D	> 98	-	-	-	1 g GL	1.00	1.08652.0001
	Tetrahydrofuran-D8 99.5 % D	> 99.5	< 0.05	< 0.03	0.99	1 ml GA	0.99	1.13364.0001
						10 x 0.75 ml GA	7.43	1.13364.0009
						10 ml SB	9.90	1.13364.0010
	Toluene-D8 99.5 % D	> 99.5	-	< 0.02	0.94	10 ml SB	9.40	1.13368.0010
Trifluoroacetic acid-D1 99.5 % D	> 99.5	< 0.05	< 0.03	1.50	10 ml GA	15.00	1.13363.0010	
X	o-Xylene-D10 99.5 % D	> 99.5	-	-	0.95	10 ml GA	9.50	8.15004.0010
	p-Xylene-D10 99.5 % D	> 99.5	-	-	0.95	10 ml GA	9.50	8.15005.0010

GA = glass ampoule | SB = septum bottle | GL = glass bottle

Easy and safe handling:
Safety by one point cut (OPC).



NMR Nuclear magnetic resonance

MagniSolv™ deuterated solvents

Whatever you require! Merck's deuterated solvents!

We provide a wide range of products in different packaging types and -sizes.



Merck KGaA
64271 Darmstadt, Germany
Fax: +49 (0) 6151-726080
E-mail: solvents@merck.de
www.merck-chemicals.de
solvents.merck.de

We provide information and advice to our customers to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

W.284110 06/10 2nd revised edition of 1st issue (07/05)

