

¹³C Enriched Substrates for Hyperpolarization

Catalog No. Description

CLM-245	Acetone (2- ¹³ C, 99%)
CLM-116	L-Alanine (1- ¹³ C, 99%)
CLM-113	Acetic acid (1,2- ¹³ C ₂ , 99%)
CLM-317	Acetic acid (1- ¹³ C, 99%)
CLM-318	Acetic acid (2- ¹³ C, 99%)
CLM-1189*	D-Mannitol (1- ¹³ C, 98%)
CLM-4761	DMSO (¹³ C ₂ , 99%)
CLM-7350	Ethyl pyruvate (1- ¹³ C, 99%)
CLM-1527	Fructose (2- ¹³ C, 99%)
CLM-4454	Fumaric acid (1,4- ¹³ C ₂ , 99%)
CDLM-8473	Fumaric acid (1,4- ¹³ C ₂ , 99%; 2,3-D ₂ , 98%)
CDLM-6062	Fumaric acid (1- ¹³ C, 99%; 2,3-D ₂ , 98%)
CLM-420	D-Glucose (1- ¹³ C, 98-99%)
CDLM-3813*	D-Glucose (¹³ C ₆ , 99%; D ₇ , 97%+)
CLM-2717	D-Glucose (1- ¹³ C, 99%; 6- ¹³ C, 97%+)
CLM-674*	L-Glutamic acid (1- ¹³ C, 99%)
CLM-1166	L-Glutamine (5- ¹³ C, 99%)
CLM-2093	α-Ketoisocaproate, sodium salt (1- ¹³ C, 99%)
CLM-646	Propionic acid (1- ¹³ C, 99%)
CLM-647	Propionic acid (¹³ C ₃ , 99%)
CLM-8077	Pyruvic acid (1- ¹³ C, 99%)

Catalog No. Description

CLM-8849	Pyruvic acid (2- ¹³ C, 99%)
CLM-156*	Sodium acetate (1- ¹³ C, 99%)
CLM-381*	Sodium acetate (2- ¹³ C, 99%)
CLM-440*	Sodium acetate (1,2- ¹³ C ₂ , 99%)
CLM-441*	Sodium bicarbonate (¹³ C, 99%)
CLM-1256*	Sodium butyrate (1- ¹³ C, 99%)
CLM-1577*	Sodium L-lactate (1- ¹³ C, 99%)
CLM-1578*	Sodium L-lactate (3- ¹³ C, 98%)
CLM-1579	Sodium L-lactate (¹³ C ₃ , 98%)
CLM-1506	Sodium propionate (2- ¹³ C, 99%)
CLM-1865*	Sodium propionate (¹³ C ₃ , 99%)
CLM-3042	Sodium propionate (2,3- ¹³ C ₂ , 99%)
CLM-771*	Sodium propionate (1- ¹³ C, 99%)
CLM-1082*	Sodium pyruvate (1- ¹³ C, 99%)
CLM-1575*	Sodium pyruvate (3- ¹³ C, 99%)
CLM-1580	Sodium pyruvate (2- ¹³ C, 99%)
CLM-3507	Sodium pyruvate (1,2- ¹³ C ₂ , 99%)
CLM-1084	Succinic acid (1,4- ¹³ C ₂ , 99%)
CLM-8493	Succinic acid (1- ¹³ C, 99%)
CLM-311	Urea (¹³ C, 99%)

*Microbiological and pyrogen tested (MPT) grade available. MPT-grade products are research-grade products that are tested in the bulk form for *S. aureus*, *P. aeruginosa*, *E. coli*, *Salmonella*, aerobic bacteria, yeast and mold and for bacterial endotoxins. Package sizes typically include 1.0 and 2.0 g.

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Pyruvic Acid (1-¹³C)

We supplies pyruvic acid (1-¹³C) to research groups world-wide that are either developing and/or applying dissolution DNP techniques to study metabolism. To satisfy the need for the ever-increasing amounts of pyruvic acid (1-¹³C) being used in investigations, CIL has developed a robust, synthetic process that is readily scalable. This process has recently been optimized so that CIL is now able to offer product with high chemical purity and exceptional lot-to-lot consistency.

Research Grade

Catalog No. **CLM-8077**

QC Testing for Research-Grade Pyruvic Acid (1-¹³C)*

QC Test	Result*
¹³ C NMR for Identification	Conforms
¹ H NMR for Chemical Purity	Pass
GC/MS for Isotopic Enrichment	99.1%
HPLC for Chemical Purity	98.0%
Karl Fischer Titration for Total Water Content	3383 ppm
Titration for Chemical Purity	99.8%

*Results for Lot PR-24550 are shown. Actual results may vary.

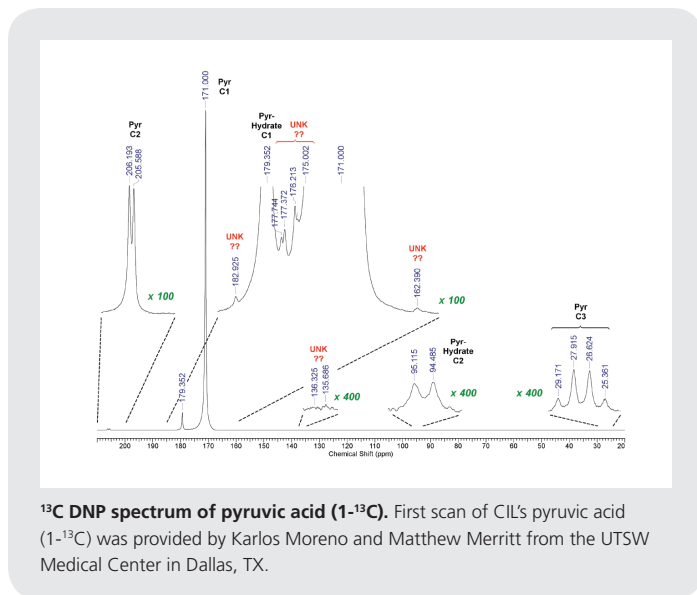
cGMP Grade

Catalog No. **CLM-8077-CTM**

Product Specifications for CTM-Grade Material**

Tests	Method	Acceptance Criteria
Identification	¹³ C NMR	Conforms
Identification	¹ H NMR	Conforms
Identification	IR	Conforms
Appearance	Visual inspection	Colorless to yellow, clear, viscous liquid
Isotopic Enrichment	GC/MS	>98%
Residual Solvents	HS-GC	Acetone: <5000 µg/g Acetonitrile: <200 µg/g
HPLC for Related Impurities	HPLC	AH113462/E: <3.00% Area
HPLC for Related Impurities Total Unidentified Impurities	HPLC	<2.00% area
Water Content	IR	<4.5% (w/w)
Assay	HPLC	89.0-103.5%
Bacterial endotoxin	USP <85>	<25 EU/mL
Total Aerobic Microbial Count (TAMC)	USP <61>	<10 CFU/mL

**Products prepared under the CTM classification may conform to materials suitable for Phase 1 Clinical Trials as described in Section 19 of the ICH Guidance Q7A, "cGMP Guidance for Active Pharmaceutical Ingredients (APIs)."



¹³C DNP spectrum of pyruvic acid (1-¹³C). First scan of CIL's pyruvic acid (1-¹³C) was provided by Karlos Moreno and Matthew Merritt from the UTSW Medical Center in Dallas, TX.

To request a quotation or place an order, please contact our sales team

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