



Vitamins and Their Metabolites

For Metabolite Profiling and Quantitation



Vitamins are organic compounds that directly or indirectly participate in organisms' biochemical reactions. These are divided into two classes, based on their solubility in fat (includes A, D, E, and K) and water (includes B and C).

Cambridge Isotope Laboratories, Inc. (CIL) offers unlabeled and stable isotope-labeled vitamins as neat compounds and/or in solution at specified concentrations. These can be used in a wide range of applications, such as metabolism and pathophysiology explorations, as well as disease biomarker evaluation in pre-clinical and clinical MS studies (e.g., vitamin D deficiency). These standards help facilitate accurate and precise quantification of endogenous metabolites in biological matrices.

Water Soluble

Catalog No.	Description	Concentration	Unit Size
CLM-9548	5-Methyltetrahydrofolic acid (glutamic acid- $^{13}\text{C}_5$, 99%) CP 95%	neat	1 mg, 5 mg
CLM-7321-N	5-Methyltetrahydrofolic acid, calcium salt (glutamic acid- $^{13}\text{C}_5$, 98%) CP 95%	neat	1 mg, 5 mg
DLM-9793-N	Pyridoxal phosphate (mix of 5-,3-isomers) (methyl- D_3 , 97%)	neat	1 mg
CLM-7667	Vitamin B ₁ hydrochloride (thiamine hydrochloride) (4,5,4-methyl- $^{13}\text{C}_3$, 99%) CP 97%	neat	5 mg
ULM-10004	Vitamin B ₁ hydrochloride (thiamine hydrochloride) (unlabeled)	neat	1 mg, 5 mg, 10 mg
DLM-8741	Vitamin B ₁ pyrophosphate chloride (thiamine pyrophosphate chloride) (pyrimidyl-methyl- D_3 , 98%)	neat	1 mg
V-053	Vitamin B ₁ pyrophosphate (thiamine pyrophosphate) (unlabeled)	1 mg/mL in methanol:water (1:1)	1 mL
CNLM-8851	Vitamin B ₂ (riboflavin) ($^{13}\text{C}_4$, 99%; $^{15}\text{N}_2$, 98%) CP 97%	neat	1 mg, 5 mg, 10 mg
ULM-9123	Vitamin B ₂ (riboflavin) (unlabeled) CP 97%	neat	1 mg, 5 mg, 10 mg
CNLM-10744	Vitamin B ₂ phosphate (riboflavin phosphate) ($^{13}\text{C}_4$, 99%; $^{15}\text{N}_2$, 98%) CP 90%	neat	1 mg
CLM-9925	Vitamin B ₃ (nicotinamide) ($^{13}\text{C}_6$, 99%)	neat	1 mg, 5 mg
DLM-6883	Vitamin B ₃ (nicotinamide) (D_4 , 98%)	neat	0.1 g, 0.5 g
CNLM-9757	Vitamin B ₃ (nicotinamide) (2,6-carbonyl- $^{13}\text{C}_3$, 99%; ring-1- ^{15}N , 98%)	neat	1 mg
CLM-9954	Vitamin B ₃ (nicotinic acid) ($^{13}\text{C}_6$, 99%)	neat	1 mg, 5 mg
DLM-4578	Vitamin B ₃ (nicotinic acid) (D_4 , 98%)	neat	5 mg, 1 g
DLM-2872	Vitamin B ₃ , ethyl ester (nicotinic acid, ethyl ester) (2,4,5,6- D_4 , 98%)	neat	5 g
CNLM-9512	Vitamin B ₃ (nicotinic acid) (2,6-carboxyl- $^{13}\text{C}_3$, 99%; ^{15}N , 98%) CP 97%	neat	1 mg
CNLM-7694	Vitamin B ₅ , calcium salt·H ₂ O (calcium pantothenate·H ₂ O) (β -alanyl- $^{13}\text{C}_3$, 99%; ^{15}N , 98%)	neat	10 mg
ULM-10003	Vitamin B ₅ , calcium salt·H ₂ O (calcium pantothenate·H ₂ O) (unlabeled)	neat	1 mg, 5 mg, 10 mg

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Vitamins and Their Metabolites (continued)

Catalog No.	Description	Concentration	Unit Size
DLM-9069	Vitamin B ₆ (pyridoxal) (methyl-D ₃ , 98%)	neat	1 mg, 5 mg, 10 mg
ULM-9118	Vitamin B ₆ (pyridoxal-HCl) (unlabeled)	neat	1 mg, 5 mg, 10 mg
DLM-9119	Vitamin B ₆ (pyridoxamine-2HCl) (methyl-D ₃ , 98%)	neat	1 mg, 5 mg, 10 mg
ULM-9120	Vitamin B ₆ (pyridoxamine-2HCl) (unlabeled)	neat	1 mg, 5 mg, 10 mg
CLM-7563	Vitamin B ₆ (pyridoxine-HCl) (4,5-bis(hydroxymethyl)- ¹³ C ₄ , 99%)	neat	10 mg
DLM-8754	Vitamin B ₆ (pyridoxine-HCl) (5-hydroxymethyl-D ₂ , 98%)	neat	1 mg, 5 mg
DLM-9121	Vitamin B ₆ (pyridoxine-HCl) (methyl-D ₃ , 98%) CP 96%	neat	1 mg, 5 mg, 10 mg
ULM-9122	Vitamin B ₆ (pyridoxine-HCl) (unlabeled) CP 96%	neat	1 mg, 5 mg, 10 mg
DLM-8806	Vitamin B ₇ (biotin) (ring-6,6-D ₂ , 98%) CP 97%	neat	5 mg, 10 mg, 20 mg
DLM-9751	Vitamin B ₇ (biotin) (3',3',4',4'-D ₄ , 98%) CP 95%	neat	1 mg
ULM-9129	Vitamin B ₇ (biotin) (unlabeled)	neat	1 mg, 5 mg
CLM-7861-N	Vitamin B ₉ (folic acid) (glutamic acid- ¹³ C ₅ , 99%) CP 95%	neat	1 mg, 5 mg
CLM-7861	Vitamin B ₉ (folic acid) (glutamic acid- ¹³ C ₅ , 95%) (contains ~10% H ₂ O)	neat	Please inquire
CNLM-9564	Vitamin B ₉ (folic acid) (glutamic acid- ¹³ C ₅ , 99%; ¹⁵ N, 98%) CP 95%	neat	1 mg, 5 mg
CLM-9770-E	Vitamin B ₁₂ (cyanocobalamin) (¹³ C ₇ , 99%) CP 95%	1 µg/mL in methanol	1 mL
ULM-10005-E	Vitamin B ₁₂ (cyanocobalamin) (unlabeled)	1 µg/mL in methanol	1 mL
CLM-3085	Vitamin C (L-ascorbic acid) (1- ¹³ C, 99%)	neat	50 mg, 100 mg, 250 mg, 500 mg
CLM-10991	Vitamin C (L-ascorbic acid) (1,2- ¹³ C ₂ , 99%)	neat	Please inquire
CLM-7283	Vitamin C (L-ascorbic acid) (U- ¹³ C ₆ , 98%)	neat	50 mg, 100 mg
V-038	Vitamin C (L-ascorbic acid) (unlabeled)	1 mg/mL in acetonitrile:water (1:1)	1 mL

Fat Soluble

Catalog No.	Description	Concentration	Unit Size
CLM-6126	β-Carotene (10,10',11,11'- ¹³ C ₄ , 99%)	neat	Please inquire
CLM-9641	β-Carotene (12,12',13,13',14,14',15,15',20,20'- ¹³ C ₁₀ , 99%) CP 97%	neat	Please inquire
DLM-3829	β-Carotene (19,19,19,19',19',19'-D ₆ , 98%)	neat	Please inquire
DLM-2439	β-Carotene (10,10',19,19,19',19',19'-D ₈ , 97%)	neat	Please inquire
ULM-9106-C	1,25-Dihydroxyvitamin D ₂ (unlabeled) CP 95%	100 µg/mL in ethanol	1 mL
ULM-9106-B	1,25-Dihydroxyvitamin D ₂ (unlabeled) CP 95%	50 µg/mL in ethanol	1 mL
ULM-9106	1,25-Dihydroxyvitamin D ₂ (unlabeled) CP 95%	neat	0.1 mg, 1 mg
DLM-9107-C	1,25-Dihydroxyvitamin D ₃ (6,19,19-D ₃ , 97%) CP 95%	100 µg/mL in ethanol	1 mL
DLM-9107-B	1,25-Dihydroxyvitamin D ₃ (6,19,19-D ₃ , 97%) CP 95%	50 µg/mL in ethanol	1 mL
DLM-9107	1,25-Dihydroxyvitamin D ₃ (6,19,19-D ₃ , 97%) CP 95%	neat	1 mg
ULM-9108-C	1,25-Dihydroxyvitamin D ₃ (unlabeled) CP 95%	100 µg/mL in ethanol	1 mL
ULM-9108-B	1,25-Dihydroxyvitamin D ₃ (unlabeled) CP 95%	50 µg/mL in ethanol	1 mL
ULM-9108	1,25-Dihydroxyvitamin D ₃ (unlabeled) CP 95%	neat	0.5 mg, 1 mg
ULM-9109-C	24,25-Dihydroxyvitamin D ₂ (unlabeled)	100 µg/mL in ethanol	1 mL
ULM-9109	24,25-Dihydroxyvitamin D ₂ (unlabeled)	neat	1 mg
DLM-9404-C	24R,25-Dihydroxyvitamin D ₃ (26,26,26,27,27,27-D ₆ , 98%) CP 97%	100 µg/mL in ethanol	1 mL
DLM-9404	24R,25-Dihydroxyvitamin D ₃ (26,26,26,27,27,27-D ₆ , 98%) CP 97%	neat	1 mg
ULM-10610-C	24R,25-Dihydroxyvitamin D ₃ (unlabeled) CP 97%	100 µg/mL in ethanol	1 mL
ULM-10610	24R,25-Dihydroxyvitamin D ₃ (unlabeled) CP 97%	neat	1 mg
ULM-9110-C	3- <i>epi</i> -25-Hydroxyvitamin D ₂ (unlabeled)	100 µg/mL in ethanol	1 mL
ULM-9110-B	3- <i>epi</i> -25-Hydroxyvitamin D ₂ (unlabeled)	50 µg/mL in ethanol	1 mL
ULM-9110	3- <i>epi</i> -25-Hydroxyvitamin D ₂ (unlabeled)	neat	1 mg
DLM-9114-C	25-Hydroxyvitamin D ₂ (6,19,19-D ₃ , 97%)	100 µg/mL in ethanol	1 mL
DLM-9114-B	25-Hydroxyvitamin D ₂ (6,19,19-D ₃ , 97%)	50 µg/mL in ethanol	1 mL
DLM-9114-A	25-Hydroxyvitamin D ₂ (6,19,19-D ₃ , 97%)	5 µg/mL in ethanol	1 mL
DLM-9114	25-Hydroxyvitamin D ₂ (6,19,19-D ₃ , 97%)	neat	1 mg
DLM-10219	25-Hydroxyvitamin D ₂ (26,26,26,27,27,27-D ₆ , 96%) CP 95%	neat	Please inquire

Chemical purity (CP) is 98% or greater, unless otherwise specified. MPT (microbiological and pyrogen tested) may be available; please inquire.
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Catalog No.	Description	Concentration	Unit Size
ULM-9115-C	25-Hydroxyvitamin D2 (unlabeled)	100 µg/mL in ethanol	1 mL
ULM-9115-B	25-Hydroxyvitamin D2 (unlabeled)	50 µg/mL in ethanol	1 mL
ULM-9115-A	25-Hydroxyvitamin D2 (unlabeled)	5 µg/mL in ethanol	1 mL
ULM-9115	25-Hydroxyvitamin D2 (unlabeled)	neat	1 mg
DLM-10611-C	25-Hydroxyvitamin D2 sulfate, sodium salt (6,19,19-D ₃ , 97%) CP 97%	100 µg/mL in ethanol	1 mL
ULM-10612-C	25-Hydroxyvitamin D2 sulfate, sodium salt (unlabeled) CP 97%	100 µg/mL in ethanol	1 mL
CLM-10266-C	3- <i>epi</i> -25-Hydroxyvitamin D3 (23,24,25,26,27- ¹³ C ₅ , 99%) CP 96%	100 µg/mL in ethanol	1 mL
DLM-9111-C	3- <i>epi</i> -25-Hydroxyvitamin D3 (6,19,19-D ₃ , 98%)	100 µg/mL in ethanol	1 mL
DLM-9111-B	3- <i>epi</i> -25-Hydroxyvitamin D3 (6,19,19-D ₃ , 98%)	50 µg/mL in ethanol	1 mL
DLM-9111	3- <i>epi</i> -25-Hydroxyvitamin D3 (6,19,19-D ₃ , 98%)	neat	1 mg
DLM-10912	3- <i>epi</i> -25-Hydroxyvitamin D3 (26,26,26,27,27,27-D ₆ , 96%) CP 95%	neat	Please inquire
ULM-9112-C	3- <i>epi</i> -25-Hydroxyvitamin D3 (unlabeled)	100 µg/mL in ethanol	1 mL
ULM-9112-B	3- <i>epi</i> -25-Hydroxyvitamin D3 (unlabeled)	50 µg/mL in ethanol	1 mL
ULM-9112	3- <i>epi</i> -25-Hydroxyvitamin D3 (unlabeled)	neat	1 mg
CLM-10025-C	25-Hydroxyvitamin D3 (23,24,25,26,27- ¹³ C ₅ , 99%) CP 95%	100 µg/mL in ethanol	1 mL
CLM-10025	25-Hydroxyvitamin D3 (23,24,25,26,27- ¹³ C ₅ , 99%) CP 95%	neat	1 mg
DLM-9116	25-Hydroxyvitamin D3 (6,19,19-D ₃ , 97%)	neat	1 mg, 5 mg
DLM-9116-C	25-Hydroxyvitamin D3 (6,19,19-D ₃ , 97%)	100 µg/mL in ethanol	1 mL
DLM-9116-B	25-Hydroxyvitamin D3 (6,19,19-D ₃ , 97%)	50 µg/mL in ethanol	1 mL
DLM-9116-A	25-Hydroxyvitamin D3 (6,19,19-D ₃ , 97%)	5 µg/mL in ethanol	1 mL
ULM-9117-C	25-Hydroxyvitamin D3 (unlabeled)	100 µg/mL in ethanol	1 mL
ULM-9117-B	25-Hydroxyvitamin D3 (unlabeled)	50 µg/mL in ethanol	1 mL
ULM-9117-A	25-Hydroxyvitamin D3 (unlabeled)	5 µg/mL in ethanol	1 mL
ULM-9117	25-Hydroxyvitamin D3 (unlabeled)	neat	5 mg
DLM-7708-C	25-Hydroxyvitamin D3 monohydrate (26,26,26,27,27,27-D ₆ , 98%) CP 97%	100 µg/mL in ethanol	1 mL
DLM-7708-B	25-Hydroxyvitamin D3 monohydrate (26,26,26,27,27,27-D ₆ , 98%) CP 97%	50 µg/mL in ethanol	1 mL
DLM-7708	25-Hydroxyvitamin D3 monohydrate (26,26,26,27,27,27-D ₆ , 98%) CP 97%	neat	1 mg
CLM-320	Vitamin A (retinal) (10- ¹³ C, 99%)	neat	Please inquire
CLM-325	Vitamin A (retinal) (11- ¹³ C, 99%)	neat	Please inquire
CLM-326	Vitamin A (retinal) (14- ¹³ C, 99%)	neat	Please inquire
CLM-327	Vitamin A (retinal) (15- ¹³ C, 98%)	neat	Please inquire
CLM-331	Vitamin A (retinoic acid) (10- ¹³ C, 99%)	neat	Please inquire
CLM-328	Vitamin A (retinoic acid) (11- ¹³ C, 98%)	neat	Please inquire
CLM-329	Vitamin A (retinoic acid) (14- ¹³ C, 99%)	neat	Please inquire
CLM-330	Vitamin A (retinoic acid) (15- ¹³ C, 99%)	neat	Please inquire
CLM-4343	Vitamin A (retinoic acid) (10,11,14,15- ¹³ C ₄ , 99%)	neat	Please inquire
DLM-7720	Vitamin A (retinoic acid) (19,19,19,20,20,20-D ₆ , 96%)	neat	Please inquire
CLM-10259	Vitamin A (retinol) (12,13,14,20- ¹³ C ₄ , 99%)	neat	Please inquire
DLM-9305	Vitamin A (retinol) (10,19,19,19-D ₄ , 96%)	neat	1 mg
DLM-8113	Vitamin A (retinol) (19,19,19,20,20,20-D ₆ , 97%)	neat	1 mg
DLM-9306	Vitamin A (retinol) (10,14,19,19,19,20,20,20-D ₈ , 90%) CP 96%	neat	Please inquire
CLM-8870	Vitamin A acetate (retinol acetate) (12,13,14,20- ¹³ C ₄ , 99%)	neat	Please inquire
CLM-4831	Vitamin A acetate (retinol acetate) (8,9,10,12,13,14,19,20- ¹³ C ₈ , 99%)	neat	Please inquire
CLM-7277	Vitamin A acetate (retinol acetate) (8,9,10,11,12,13,14,15,19,20- ¹³ C ₁₀ , 99%)	neat	Please inquire
DLM-2244	Vitamin A acetate (retinol acetate) (10,19,19,19-D ₄ , 96%) (3-4% <i>cis</i>)	neat	Please inquire
DLM-3828	Vitamin A acetate (retinol acetate) (19,19,19,20,20,20-D ₆ , 96%) (3-4% <i>cis</i>)	neat	Please inquire
DLM-4203	Vitamin A acetate (retinol acetate) (10,14,19,19,19,20,20,20-D ₈ , 90%) (3-4% <i>cis</i>)	neat	Please inquire
CLM-10772	Vitamin A aldehyde (retinal aldehyde) (12,13,14,20- ¹³ C ₄ , 96%)	neat	Please inquire
DLM-7719	Vitamin A aldehyde (retinal aldehyde) (19,19,19,20,20,20-D ₆ , 96%)	neat	Please inquire

Chemical purity (CP) is 98% or greater, unless otherwise specified. MPT (microbiological and pyrogen tested) may be available; please inquire.

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Vitamins and Their Metabolites (continued)

Catalog No.	Description	Concentration	Unit Size
DLM-4902	Vitamin A palmitate (retinyl palmitate) (10,19,19,19-D ₄ , 96%) (all <i>trans</i> , <4% <i>cis</i> , 50 ppm butylated hydroxytoluene or BHT)	neat	1 mg
DLM-8985-D	Vitamin D ₂ (ergocalciferol) (6,19,19-D ₃ , 97%)	1000 µg/mL in ethanol	1 mL
DLM-8985-C	Vitamin D ₂ (ergocalciferol) (6,19,19-D ₃ , 97%)	100 µg/mL in ethanol	1 mL
DLM-8985	Vitamin D ₂ (ergocalciferol) (6,19,19-D ₃ , 97%)	neat	1 mg
ULM-9124-D	Vitamin D ₂ (ergocalciferol) (unlabeled)	1000 µg/mL in ethanol	1 mL
ULM-9124-C	Vitamin D ₂ (ergocalciferol) (unlabeled)	100 µg/mL in ethanol	1 mL
ULM-9124	Vitamin D ₂ (ergocalciferol) (unlabeled)	neat	1 mg, 5 mg, 10 mg
DLM-10478-C	Vitamin D ₂ sulfate, sodium salt (ergocalciferol) (6,19,19-D ₃ , 98%) CP 97%	100 µg/mL in ethanol	1 mL
ULM-10477	Vitamin D ₂ sulfate, sodium salt (ergocalciferol) (unlabeled) CP 97%	100 µg/mL in ethanol	1 mL
CLM-7850	Vitamin D ₃ (cholecalciferol) (23,24- ¹³ C ₂ , 99%) CP 90%	neat	Please inquire
CLM-10470-D	Vitamin D ₃ (cholecalciferol) (23,24,25,26,26- ¹³ C ₅ , 98%) CP 97%	1000 µg/mL in ethanol	1 mL
CLM-10470-C	Vitamin D ₃ (cholecalciferol) (23,24,25,26,26- ¹³ C ₅ , 98%) CP 97%	100 µg/mL in ethanol	1 mL
DLM-8853-D	Vitamin D ₃ (cholecalciferol) (6,19,19-D ₃ , 97%) CP 97%	1000 µg/mL in ethanol	1 mL
DLM-8853-C	Vitamin D ₃ (cholecalciferol) (6,19,19-D ₃ , 97%) CP 97%	100 µg/mL in ethanol	1 mL
DLM-10749-D	Vitamin D ₃ (cholecalciferol) (26,26,26,27,27,27-D ₆ , 98%) CP 95%	1 mg/mL in ethanol	1 mL
DLM-10749-C	Vitamin D ₃ (cholecalciferol) (26,26,26,27,27,27-D ₆ , 98%) CP 95%	100 µg/mL in ethanol	1 mL
ULM-9125-D	Vitamin D ₃ (cholecalciferol) (unlabeled)	1000 µg/mL in ethanol	1 mL
ULM-9125-C	Vitamin D ₃ (cholecalciferol) (unlabeled)	100 µg/mL in ethanol	1 mL
ULM-9125	Vitamin D ₃ (cholecalciferol) (unlabeled)	neat	1 mg, 5 mg, 10 mg
DLM-10475-C	Vitamin D ₃ sulfate, sodium salt (cholecalciferol) (6,19,19-D ₃ , 98%) CP 97%	100 µg/mL in ethanol	1 mL
DLM-10476	Vitamin D ₃ sulfate, sodium salt (cholecalciferol) (26,26,26,27,27,27-D ₆ , 98%) CP 97%	100 µg/mL in ethanol	1 mL
ULM-10474-C	Vitamin D ₃ sulfate, sodium salt (cholecalciferol) (unlabeled) CP 97%	100 µg/mL in ethanol	1 mL
CLM-10274	Vitamin E (DL-Rac-2-tocopherol) (trimethylphenyl- ¹³ C ₃ , 99%) CP 96%	neat	1 mg
CLM-10273	Vitamin E (α-tocopherol) (trimethylphenyl- ¹³ C ₃ , 99%) CP 96%	neat	1 mg
CLM-10275	Vitamin E (α-tocopherol) (phenyl- ¹³ C ₆ , 99%) CP 96%	neat	1 mg
CLM-10276	Vitamin E (α-tocopherol) (trimethylphenyl- ¹³ C ₉ , 99%) CP 96%	neat	1 mg
DLM-9126	Vitamin E (α-tocopherol) (5-methyl-D ₃ , 7-methyl-D ₃ , 98%)	neat	2 mg, 5 mg, 10 mg
CDLM-11053-1.2	Vitamin E (α-tocopherol) (dimethyl- ¹³ C ₂ , 99%; dimethyl-D ₆ , 98%)	100 µg/mL in methanol	1.2 mL
ULM-9127	Vitamin E (α-tocopherol) (unlabeled) CP 96%	neat	1 mg, 5 mg, 10 mg
DLM-8847	Vitamin E acetate (tocopherol acetate) (acetyl-D ₃ , 98%)	neat	Please inquire
CDLM-11054-1.2	Vitamin E acetate (tocopherol acetate) (dimethyl- ¹³ C ₂ , acetyl- ¹³ C ₂ , 99%; dimethyl-D ₆ , 98%)	100 µg/mL in methanol	1.2 mL
CLM-9566	Vitamin K ₁ (phylloquinone) (4α,5,6,7,8,8α- ¹³ C ₆ , 99%)	neat	1 mg
DLM-7702	Vitamin K ₁ (phylloquinone) (ring-D ₄ , 98%)	neat	1 mg
DLM-9130	Vitamin K ₁ (phylloquinone) (D ₇ , 99%) CP 97%	neat	1 mg, 5 mg, 10 mg
ULM-9131	Vitamin K ₁ (phylloquinone) (unlabeled) CP 97%	neat	1 mg, 5 mg, 10 mg
CLM-10376	Vitamin K ₂ (menaquinone MK-4) (4',5,6,7,8,8'- ¹³ C ₆ , 99%) CP 95%	neat	1 mg
DLM-10379	Vitamin K ₂ (menaquinone MK-4) (5,6,7,8-D ₄ , 2-methyl-D ₃ , 98%) CP 95%	neat	1 mg
CLM-10377	Vitamin K ₂ (menaquinone MK-7) (4',5,6,7,8,8'- ¹³ C ₆ , 99%) CP 95%	neat	1 mg
DLM-10380	Vitamin K ₂ (menaquinone MK-7) (5,6,7,8-D ₄ , 2-methyl-D ₃ , 98%) CP 95%	neat	1 mg
CLM-10378	Vitamin K ₂ (menaquinone MK-9) (4',5,6,7,8,8'- ¹³ C ₆ , 99%) CP 95%	neat	1 mg
DLM-10381	Vitamin K ₂ (menaquinone MK-9) (5,6,7,8-D ₄ , 2-methyl-D ₃ , 98%) CP 95%	neat	1 mg
DLM-10382	Vitamin K ₂ 2,3-epoxide (menaquinone-4 2,3-epoxide) (5,6,7,8-D ₄ , 2-methyl-D ₃ , 98%) CP 95%	neat	1 mg
ULM-10383	Vitamin K ₂ 2,3-epoxide (menaquinone-4 2,3-epoxide) (unlabeled) CP 95%	neat	1 mg
DLM-9132	Vitamin K ₃ (menadione) (D ₈ , 98%) CP 97%	neat	10 mg, 50 mg
ULM-9133	Vitamin K ₃ (menadione) (unlabeled) CP 97%	neat	1 mg, 5 mg, 10 mg

Chemical purity (CP) is 98% or greater, unless otherwise specified. MPT (microbiological and pyrogen tested) may be available; please inquire.
For research use only. Not for use in diagnostic procedures.

Example References

Lopez-Teros, V.; Ford, J.L.; Green, M.H.; et al. **2020**. The “super-child” approach is applied to estimate retinol kinetics and vitamin A total body stores in Mexican preschoolers. *J Nutr*, pii: nxaa048. doi: 10.1093/jn/nxaa048. In press.

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Research Use of Products

CIL manufactures highly pure research biochemicals that are produced for research applications. As a service to our customers, some of these materials have been tested for the presence of *S. aureus*, *P. aeruginosa*, *E. coli*, *Salmonella sp.*, aerobic bacteria, yeast, and mold, as well as the presence of endotoxin in the bulk material by taking a random sample of the bulk product. Subsequent aliquots are not retested. Presence of endotoxin is assessed by determining endotoxin content following established protocols and standardized limulus amebocyte lysate (LAL) reagents. Any materials listed in our catalog or website that are designated as “MPT” in the item product number (e.g., DLM-349-MPT) contain these tests as part of release specifications.

If a product does not have an “MPT” designation, CIL may be able to provide microbiological testing on the product. Depending on the compound and the quantity ordered, an additional fee may apply for the testing. Please note that microbiological-tested products are not guaranteed to be sterile and pyrogen-free when received by the customer, and microbiological testing does not imply suitability for any desired use. If the product must be sterile and pyrogen-free for a desired application, CIL recommends that the product be packaged or formulated into its ultimate dose form by the customer or appropriate local facility. The product should always be tested by a qualified pharmacy/facility prior to actual use.

CIL research products are labeled “For research use only. Not for use in diagnostic procedures.” Persons intending to use CIL products in applications involving humans are responsible for complying with all applicable laws and regulations, including, but not limited to the US FDA, other local regulatory authorities, and institutional review boards concerning their specific application or desired use.

It may be necessary to obtain approval for using these research products in humans from the US FDA or the comparable governmental agency in the country of use. CIL will provide supporting information, such as lot-specific analytical data and test method protocols, to assist medical research groups in obtaining approval for the desired use. An Enhanced Data Package (EDP) is also available (see next page for an overview of the technical package contents).

CIL will allocate a specific lot of a product to customers who are starting long-term projects requiring large amounts of material. Benefits from this type of arrangement include experimental consistency arising from use of only one lot, no delay in shipments, and guaranteed stock. Please note that some CIL products have a specific shelf life and cannot be held indefinitely. If interested, please contact your sales manager for further details.

Because of increasing regulatory requirements, CIL manufactures different grades of materials to help researchers with those requirements. Listed below are the grades of materials that CIL currently manufactures:

Catalog No.	Description
CLM-XXX-PK	Research grade
CLM-XXX-MPT-PK	Microbiologically and Pyrogen Tested
CLM-XXX-CTM	Manufactured following ICH Q7, Section XIX
CLM-XXX-GMP	Good Manufacturing Practices grade

➤ **For more information on controls in manufacturing and testing of the different grades, go to: [Search](#) → [Literature](#) → [Product Quality Designations from the isotope.com home page](#).**



Image is for illustrative purposes only and may not be representative of actual product(s).

Enhanced Data Package (EDP)

CIL offers the option of an Enhanced Data Package (EDP). This technical data package is available for most MPT products. It includes all of the data currently included with the MPT products, as well as the additional information listed below. You have the option of purchasing this package at the time of order or at a later date.

Please note that if you choose to purchase at a later date, some of the information listed below may not be available. Also, the EDP may not be available for all lots. In some cases, only a partial EDP may be available. Please confirm availability and content prior to order.

EDP Contents

- Product description: structural formula, stereochemical description, molecular formula.
- Product physical properties: melting point, pH, optical rotation (mix of literature or measured values).
- Outline of the synthesis route (including details of solvents used).
- Data used to confirm structure and chemical purity.
- Additional testing data: products with an EDP have been tested to the specifications/monograph similar to those detailed in the USP or EP, but not using compendia methods.
- Impurities: available data on impurities detected and identified together with the method of detection and the cutoff applied.
- Residual solvents: measured residual solvents from the final synthetic step and purification.
- Certificates of Analysis of raw materials, where appropriate.
- Informal stability data: estimated and measured.
 - This will be either actual shelf life data, if it can be obtained from CIL history or by analysis of in-stock batches, or
 - If no data is available, CIL will commit to assaying the batch provided after six months and one year. Data will be provided after one year, unless the batch fails assay after six months. This option will not be available if the Enhanced Data Package is ordered at a later date.

Please visit isotope.com for a complete list of isotope-labeled compounds.



Research products are distributed and sold worldwide via our extensive network.

CIL's distributor listing is available at isotope.com.

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