



Dimethyl Labeling Reagent Sets

For Quantitative, Qualitative, and Structural Omics



Reductive dimethylation is a powerful chemical-labeling technique in an omics toolbox. This approach targets surface accessible amine groups (e.g., on Lys side chain) through the stepped addition of isotopomers of formaldehyde and cyanoborohydride. Classically, this is performed in a 2-plex or 3-plex reaction (see schematic and workflow example in CIL application note #38), though higher multiplexing capacity may be possible through experimental variations. This derivatization approach provides high selectivity and reactivity that is easily compatible with downstream sample processing by LC-MS/MS. Applications are typically quantitative but could also be extended to qualitative and structural characterization studies in MS omics (e.g., proteomics, metabolomics).

To aid such research applications, Cambridge Isotope Laboratories, Inc. (CIL) is pleased to offer 2-plex and 3-plex dimethyl labeling reagent sets for reductive amination in MS omics. Please inquire for pricing and if alternate substrates or sets are needed.

Dimethyl-2Plex (2-Plex Dimethyl Labeling Reagent Set)

Catalog No.	Description	Abbrev. Compounds (Catalog No.)	Unit Size	Channel
Dimethyl-2Plex Part 1	2-Plex Dimethyl Labeling Reagent Set Part 1	Unlabeled Formaldehyde (ULM-9498)	100 mL	Light (L)
		¹³ C/D ₂ Formaldehyde (CDLM-4599)	1 mL	Heavy (H)
Dimethyl-2Plex Part 2	2-Plex Dimethyl Labeling Reagent Set Part 2	Unlabeled Cyanoborohydride (ULM-9497)	10 g	Light (L)
		D ₃ Cyanoborodeuterride (DLM-7364)	1 g	Heavy (H)

Dimethyl-3Plex (3-Plex Dimethyl Labeling Reagent Set)

Catalog No.	Description	Abbrev. Compounds (Catalog No.)	Unit Size	Channel
Dimethyl-3Plex Part 1	3-Plex Dimethyl Labeling Reagent Set Part 1	Unlabeled Formaldehyde (ULM-9498)	100 mL	Light (L)
		D ₂ Formaldehyde (DLM-805)	20 mL	Medium (M)
		¹³ C/D ₂ Formaldehyde (CDLM-4599)	1 mL	Heavy (H)
Dimethyl-3Plex Part 2	3-Plex Dimethyl Labeling Reagent Set Part 2	Unlabeled Cyanoborohydride (ULM-9497)	10 g	Light (L)
		D ₃ Cyanoborodeuterride (DLM-7364)	1 g	Heavy (H)

Individual reagents are also available. Please visit **isotope.com** for additional information.

Example References

DeMarco, A.G.; Dibble, M.G.; Hall, M.C. **2024**. Inducible degradation-coupled phosphoproteomics identifies PP2A^{RTs1} as a novel eisosome regulator. *Front Cell Dev Biol*, 12, 1451027-1451042.

Liang, S.S.; Shen, P.-T.; Liang, Y.-Q.; et al. **2023**. Assisted reductive amination for quantitation of tryptophan, 5-hydroxytryptophan, and serotonin by ultraperformance liquid chromatography coupled with tandem mass spectrometry. *Molecules*, 6(28), 4580-4589.

Son, A.; Pankow, S.; Bamberger, T.C.; et al. **2023**. Quantitative structural proteomics in living cells by covalent protein painting. *Methods Enzymol*, 679, 33-63.

Nickerson, J.L.; Doucette, A.A. **2022**. Maximizing cumulative trypsin activity with calcium at elevated temperature for enhanced bottom-up proteome analysis. *Biology*, 11(10), 1444-1459.

Bamberger, C.; Diedrich, J.; Martinez-Bartholomé, S.; et al. **2022**. Cancer conformational landscape shapes tumorigenesis. *J Proteome Res*, 21(4), 1017-1028.

Mead, T.J.; Martin, D.R.; Wang, L.W.; et al. **2022**. Proteolysis of fibrillin-2 microfibrils is essential for normal skeletal development. *Elife*, 11, e711142-e711175.

Application Note

Mohammed, S. **2014**. Stable isotope dimethyl labeling. (CIL application note #38)

Chemical purity (CP) is 98% or greater, unless otherwise indicated. For research use only. Not for use in diagnostic procedures.

Cambridge Isotope Laboratories, Inc.

North America: 1.800.322.1174 cilsales@isotope.com | International: +1.978.749.8000 intlsales@isotope.com | fax: 1.978.749.2768 | isotope.com