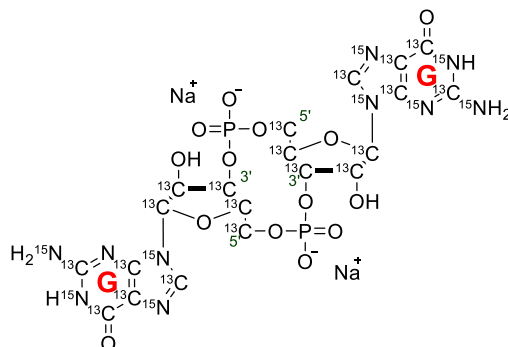


Technical Information about [¹³C₂₀,¹⁵N₁₀]-c-diGMP

Stable isotope version of the bacterial second messenger c-diGMP

Update: May 22, 2019 HGG



Abbreviation:

[¹³C₂₀,¹⁵N₁₀]-c-diGMP

Formula	CAS No.	Molecular Weight	UV	BIOLOG Cat. No.
¹³ C ₂₀ H ₂₄ ¹⁵ N ₁₀ O ₁₄ P ₂ (for free acid)	[pending]	720.4 (for free acid)	λ _{max} 253 nm / ε 23700 / pH 7	C 183

Name: Cyclic diguanosine- [¹³C₂₀,¹⁵N₁₀]- monophosphate ([¹³C₂₀,¹⁵N₁₀]-c-diGMP)

Description: In [¹³C₂₀,¹⁵N₁₀]-c-diGMP two 5'-GMP units are connected to form a cyclic structure. In contrast to the natural c-diGMP structure all carbon atoms are exchanged against the corresponding stable isotope ¹³C. Also, all nitrogen positions are occupied by stable ¹⁵N isotopes.

Properties: [¹³C₂₀,¹⁵N₁₀]-c-diGMP is the stable isotope version of the ubiquitous bacterial second messenger c-diGMP that was found to be involved in a wide variety of physiological processes such as biofilm formation, motility, and virulence in multiple bacteria. Suitable as internal standard in LC-MS applications for c-diGMP.

Specification: Crystallized or lyophilized sodium salt. Please keep in mind that equal amounts of the compound may look different in volume. The compound can even contract to small volume droplets. Normally the product is located in the conical bottom of the tube. Micromolar quantities are determined by UV at λ_{max}.

Purity: Typical analysis is better than 95% (HPLC / UV / 253 nm), with isotope purity of 98%. The product is not sterile and has not been tested for endotoxins.

Solubility: [¹³C₂₀,¹⁵N₁₀]-c-diGMP has excellent solubility in water and aqueous buffers. Please rinse tube walls carefully and preferably use ultrasonic or vortex to achieve total and uniform mixing. When opening the tube please make sure that no substance is lost within the cap.

HPLC Applications: c-diGMP can easily form aggregates in water sometimes leading to complex HPLC elution profiles and [¹³C₂₀,¹⁵N₁₀]-c-diGMP is expected to behave very similarly. Hyodo et al. (2005) reported c-diGMP monomer formation upon addition of NaCl to a final concentration of > 154 mM (0.9%), resulting in highly reproducible HPLC analytics of the compound. **Reference:** Hyodo, M.; Sato, Y.; Hayakawa, Y.; Karaolis, D.K., *Nucleic Acids Symp. Ser. (Oxf.)*, **49**, 117 - 118 (2005): "Chemical Behavior of Bis(3'-5')diguanylic Acid in Aqueous Solutions"

Stability and Storage: [¹³C₂₀,¹⁵N₁₀]-c-diGMP has sufficient stability at room temperature and does not need special care during handling or shipment. Nevertheless, we recommend that the compound should be stored in the freezer, for longer storage periods preferably in freeze-dried form.

Toxicity and Safety: Please keep in mind, that the *in vivo* properties of this compound are not sufficiently characterized up to now. Avoid skin contact or ingestion and allow only trained personnel to handle the product. Our products are designed, developed and sold for research purposes only! They are intended for *in vitro* and nonhuman *in vivo* laboratory applications. Any other use requires approval of health authorities.

Not for drug, household or related uses!

Selected References for [¹³C₂₀,¹⁵N₁₀]-c-diGMP:

Gao, S.; Romdhane, S.B.; Beullens, S.; Kaever, V.; Lambrichts, I.; Fauvart, M.; Michiels, J., *Appl. Microbiol. Biotechnol.*, **98**, 4589 – 4602 (2014): "Genomic analysis of cyclic-di-GMP-related genes in rhizobialtype strains and functional analysis in *Rhizobium etli*"