

## Product Information

### Guanosine 5'-[ $\beta,\gamma$ -imido]triphosphate trisodium salt hydrate

Catalog Number **G0635**  
Storage Temperature  $-70\text{ }^{\circ}\text{C}$

CAS RN 148892-91-5

Synonyms: GMP-PNP, Gpp(NH)p,  
Guanosine 5'-( $\beta,\gamma$ -imido)-triphosphate,  
 $\beta,\gamma$ -Imidoguanosine 5'-triphosphate,  
5'-Guanylyl-imidodiphosphate

#### Product Description

Guanosine 5'-[ $\beta,\gamma$ -imido]triphosphate (GMP-PNP) is a synthetically prepared analog of Guanosine 5'-Triphosphate (GTP), where an NH group rather than an O forms the  $\beta,\gamma$  bridge. This linkage with the NH group in the triphosphate moiety is non-hydrolyzable. This modification makes GMP-PNP an effective substrate for guanylate cyclase, which cleaves the  $\alpha,\beta$  linkage in the triphosphate group. Guanylate cyclase, which is normally membrane-bound, may then be assayed and characterized in the presence of ubiquitous membrane phosphohydrolases.<sup>1-3</sup>

GMP-PNP is a competitive inhibitor of the ribosome-dependent GTPase, inhibiting the translocation step in protein synthesis.<sup>4,5</sup> GMP-PNP has also been used to form stabilized complexes with the  $\alpha$ -subunit of the signal receptor particle (SRP), in translocation of proteins through the membrane.<sup>6</sup>

#### Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

#### Preparation Instructions

The solubility of this product is routinely tested at 50 mg/mL in water, yielding a clear, colorless solution. 100 mM stock solutions of GMP-PNP can be prepared in 50 mM Tris-HCl, pH 7.5.<sup>7</sup>

#### Storage/Stability

Stock solutions, e.g. 10 mg/mL, should be aliquoted and stored at  $-70\text{ }^{\circ}\text{C}$ . These should be stable for up to 3 months, with  $\sim 5\%$  hydrolysis after 6 months.<sup>1</sup> In addition to being temperature-sensitive, GMP-PNP is very unstable in acidic conditions. Solutions at low pH will rapidly hydrolyze.

Solutions prepared in 20 mM Tris, pH 7.8, and stored at  $-35\text{ }^{\circ}\text{C}$  with repeated thawing and freezing, have been reported to exhibit  $<3\%$  hydrolysis after several months.<sup>4</sup> A separate report indicates that 5 mM stock solutions (pH not identified) can be prepared weekly and stored at  $-20\text{ }^{\circ}\text{C}$ .<sup>9</sup> One general guideline is to prepare solutions in 50–100 mM buffer in the range of pH 7.0–8.5, i.e. never having a pH  $<7$ .

#### References

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