

## Native *Bacillus stearothermophilus* NAD Synthetase

Cat. No. NATE-0471

Lot. No. (See product label)

### Introduction

**Description** In enzymology, a NAD<sup>+</sup> synthase (EC 6.3.1.5) is an enzyme that catalyzes the chemical reaction: ATP + deamido-NAD<sup>+</sup> + NH<sub>3</sub> ⇌ AMP + diphosphate + NAD<sup>+</sup>. The 3 substrates of this enzyme are ATP, deamido-NAD<sup>+</sup>, and NH<sub>3</sub>, whereas its 3 products are AMP, diphosphate, and NAD<sup>+</sup>. This enzyme belongs to the family of ligases, specifically those forming carbon-nitrogen bonds as acid-D-ammonia (or amine) ligases (amide synthases). This enzyme participates in nicotinate and nicotinamide metabolism and nitrogen metabolism.

**Applications** Useful for enzymatic determination of ATP, ammonia, urea or creatinine. It is also suitable for enzymatic cycling method

**Synonyms** EC 6.3.1.5; 9032-69-3; NAD<sup>+</sup> synthetase; NAD<sup>+</sup> synthase; nicotinamide adenine dinucleotide synthetase; diphosphopyridine nucleotide synthetase

### Product Information

**Source** *Bacillus stearothermophilus*

**Appearance** White powder

**Form** Freeze dried powder

**EC Number** EC 6.3.1.5

**CAS No.** 9032-69-3

**Molecular Weight** 50 kDa (gel filtration); 25 kDa (SDS-PAGE)

**Activity** > 1 U/mg

**Isoelectric point** pH 5.2 ± 0.2

**pH Stability** 6.0-9.0 (37°C, 15 mins)

**Optimum pH** 9.0-10.5

**Thermal stability** Stable at 60°C and below (pH 7.5, 10 mins)

**Optimum temperature** 70°C (Tris-HCl buffer)

**Michaelis Constant** Deamido-NAD 2.4 × 10<sup>-5</sup>M; ATP 4.3 × 10<sup>-5</sup>M; NH<sub>3</sub> 2.16 × 10<sup>-3</sup>M

**Unit Definition** One unit is defined as the amount of enzyme which converts 1 μmole of deamido-NAD to NAD<sup>+</sup> per minute at 37°C under the conditions specified in the assay procedure.

### Storage and Shipping Information

**Storage** Storage at -20°C in the presence of a desiccant is recommended

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Storage at 20 °C in the presence of a desiccant is recommended.