Creative Enzymes®

# Native Bacillus stearothermophilius NAD Synthetase

*Cat. No. NATE-0471*

*Lot. No.* (See product label)

## Introduction

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| ***Description*** | In enzymology, a NAD+ synthase (EC 6.3.1.5) is an enzyme that catalyzes the chemical reaction:ATP + deamido-NAD+ + NH3↔ AMP + diphosphate + NAD+. The 3 substrates of this enzyme are ATP, deamido-NAD+, and NH3, whereas its 3 products are AMP, diphosphate, and NAD+. 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+ synthetase; NAD+ synthase; nicotinamide adenine dinucleotide synthetase; diphosphopyridine nucleotide synthetase |

## Product Information

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| ***Source*** | Bacillus stearothermophilius |
| ***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 × 10-5M; ATP 4.3 × 10-5M; NH3 2.16 × 10-3M |
| ***Unit Definition*** | One unit is defined as the amount of enzyme which converts 1 μmole of deamido–NAD to NAD+ per minute at 37°C under the conditions specified in the assay procedure. |

## Storage and Shipping Information

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