Creative Enzymes®

carbamoyl-phosphate synthase (glutamine-hydrolysing)

Cat. No. EXWM-5808

Lot. No. (See product label)

Introduction

Description	The product carbamoyl phosphate is an intermediate in the biosynthesis of arginine and the pyrimidine nucleotides. The enzyme from Escherichia coli has three separate active sites, which are connected by a molecular tunnel that is almost 100 Å in length. The amidotransferase domain within the small subunit of the enzyme hydrolyses glutamine to ammonia via a thioester intermediate. The ammonia migrates through the interior of the protein, where it reacts with carboxyphosphate to produce the carbamate intermediate. The carboxyphosphate intermediate is formed by the phosphorylation of hydrogencarbonate by ATP at a site contained within the N-terminal half of the large subunit. The carbamate intermediate is transported through the interior of the protein to a second site within the C-terminal half of the large subunit, where it is phosphorylated by another ATP to yield the final product, carbamoyl phosphate. cf. EC 6.3.4.16, carbamoyl-phosphate synthase (ammonia).
Synonyms	carbamoyl-phosphate synthetase (glutamine-hydrolysing); carbamyl phosphate synthetase (glutamine); carbamoylphosphate synthetase II; glutamine-dependent carbamyl phosphate synthetase; carbamoyl phosphate synthetase; CPS; carbon-dioxide:L-glutamine amido-ligase (ADP-forming, carbamate-phosphorylating); carA (gene name); carB (gene name); CAD (gene name); hydrogen-carbonate:L-glutamine amido-ligase (ADP-forming, carbamate-phosphorylating)

Product Information

Form	Liquid or lyophilized powder
EC Number	EC 6.3.5.5
CAS No.	37233-48-0
Reaction	2 ATP + L-glutamine + hydrogencarbonate + H2O = 2 ADP + phosphate + L-glutamate + carbamoyl phosphate (overall reaction); (1a) L-glutamine + H2O = L-glutamate + NH3; (1b) ATP + hydrogencarbonate = ADP + carboxyphosphate; (1c) NH3 + carboxyphosphate = carbamate + phosphate; (1d) ATP + carbamate = ADP + carbamoyl phosphate;
Notes	This item requires custom production and lead time is between 5-9 weeks. We can custom produce according to your specifications.

Storage and Shipping Information

Storage	Store it at +4 ℃ for short term. For long term storage, store it at -20 ℃~-80 ℃.