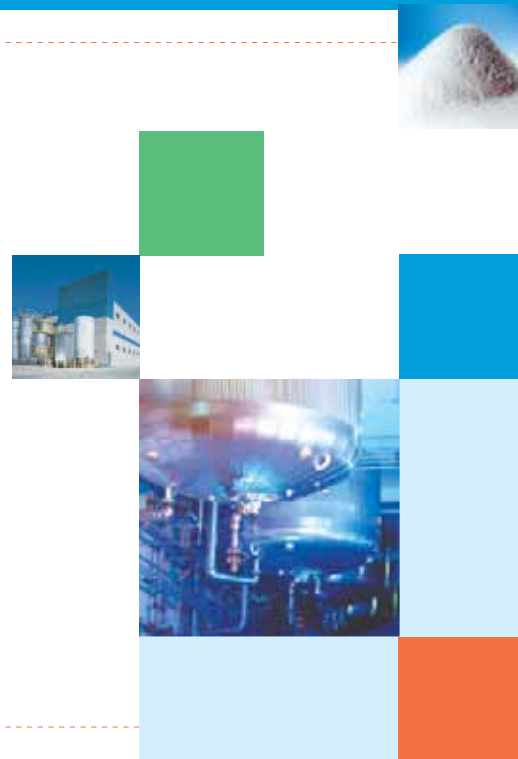


Synthetech Brings Expertise to Customers' Peptide Synthesis Needs

Synthetech is a fine chemicals company that specializes in organic synthesis, biocatalysis and chiral technologies for pharmaceutical, biopharmaceutical and cosmeceutical customers worldwide. Its products are used in peptides, peptidomimetic small molecules and other drugs for the treatment of AIDS, cancer and cardiovascular disease.

With more than 25 years of experience in peptide synthesis technologies, Synthetech is an excellent resource for peptide building blocks, advanced intermediates and resins for solid-phase peptide synthesis (SPPS).



Peptide Building Blocks

cGMP PEPTIDE FRAGMENTS

Synthetech has expertise in the solution-phase manufacture of peptides, which are the final products most often derived from amino acids. Numerous alternate peptide synthesis routes are also available, based on protection group, activating group, order of addition and coupling agent. The company's experience in the manufacture of protected amino acids, as well as solution-phase coupling, allows it to quickly target the most cost-effective processes – to best meet customers' needs.

PROTECTED AMINO ACIDS

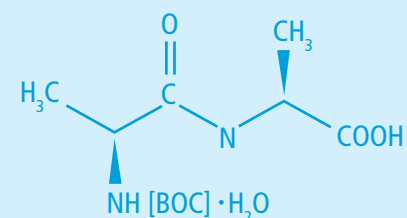
Both solid-phase and solution-phase peptide syntheses demand an increasing array of protected amino acids. These peptide syntheses require amine protection, side-chain protection and acid activation or protection. The order of addition of the protecting groups can have a significant influence on both the cost and quality of the particular derivatives. Synthetech has extensive experience in kilos-to-tons manufacturing of this wide array of protected amino acids.

SPECIALTY AMINO ACIDS

Specialty amino acids, their derivatives and small peptides continue to gain importance in drug development. Synthetech is a reliable, cost-effective commercial supply source for successful drug launches involving these intermediates. The company has developed expertise in both enzymatic and chemical routes to specialty amino acids.

In certain situations, Synthetech also evaluates other enzymes, including transaminase and nitrilase, and employs non-enzymatic (chemical) processes, including asymmetric hydrogenation, chiral auxiliary and classical resolution methods.

Example of cGMP Peptides



PEPTIDE FRAGMENTS

- Boc-L-Alanyl-L-Alanine.H2O



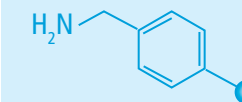
Resins for SPPS

In 2006, Synthetech expanded its core competency to include a range of cross-linked and functionalized polymeric resins widely used in **SOLID-PHASE PEPTIDE SYNTHESIS (SPPS)**. This technology includes the procedure that attaches the specified terminal amino acid to the resin, offering a key value-added service to peptide customers.

Synthetech's functionalized resins are used to produce peptide acids or peptide amides for combinatorial chemistry using an Fmoc or Boc synthetic method. The company offers excellent batch-to-batch reproduction and controlled, optimized particle sizes. These benefits promote improved product quality and increased yields.

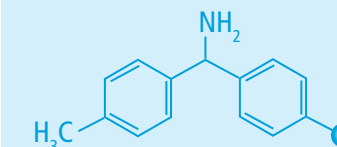
Synthetech's resin portfolio includes Merrifield, aminomethyl, MBHA, Wang, 2-CTC and a wide range of specialty resins, each available from lab to commercial scale.

Examples of SPPS Resins



AMINOMETHYL RESIN

- 1.2-1.3 meq/gram
- 100-200 mesh
- 1% crosslinked



MBHA RESIN

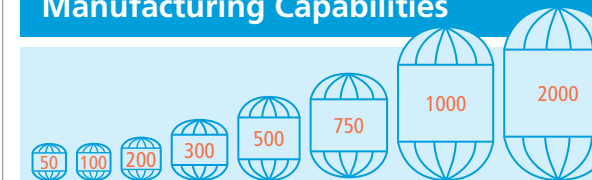
- 1.0 meq/gram
- 100-200 mesh
- 1% crosslinked



Advanced Intermediates

Synthetech also has custom manufacturing expertise in advanced intermediates. Its facilities feature more than 15,000 gallons (60m³) of capacity, divided between glass-lined, Teflon-lined and stainless steel reactors, with grams-to-tons production capabilities for early-phase discovery, clinical development and commercialization.

Manufacturing Capabilities



REACTOR SIZE IN GALLONS

Quality Systems and Safety

Synthetech is committed to delivering the highest-quality products to its customers, while maintaining an excellent safety record.



- Synthetech has been a recipient of SOCMA's Responsible Care® award and OSHA's SHARP award (Safety and Health Achievement Recognition Program) for five consecutive years.
- Manufacturing operations are governed by a multi-customer audited quality system that assures delivery of superior products to Synthetech's customer base.
- All pharmaceutical products are manufactured in full compliance with cGMP guidelines.

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