

Non-GMP and GMP Services From Lab Scale R&D to Bulk API Production

(grams to tons)



**International and
All Encompassing**
Facilities in Asia, Europe,
and North America

- One Stop Manufacturing from Lab to Commercial Scale
- Full Time Equivalents (FTE)
- Products to Support Discovery
- Product Development Services
- Catalytic Screening
- Medicinal Chemistry Services
- Analytical and Compliance Expertise
- Separations Technology

Alfa Aesar[®]
A Johnson Matthey Company

Alfa Aesar Offers Manufacturing Services From the Lab to Bulk API Production



Alfa Aesar, a Johnson Matthey Company, now offers chemical products and services to cover the full scope of the drug development life cycle. From the catalog of over 33,000 products to cGMP compliant commercial manufacturing and a full suite of services in between, Alfa Aesar and Johnson Matthey Pharmaceutical Services and Materials bring together all the resources needed to meet your high expectations.

Our professional team is ready to assist you in the successful development of small molecules, natural products and in the manufacture of highly potent active ingredients, including controlled drug substances. Let Alfa Aesar and Johnson Matthey Pharmaceutical Services and Materials be your partner in development and manufacturing.

With facilities around the globe, Alfa Aesar and Johnson Matthey Pharmaceutical Services and Materials are ready to assist with your production needs.



Feeding the Discovery Pipeline

In Stock, Around the Globe

Alfa Aesar offers 33,000 products from its Research Chemicals Catalog. To help keep your discovery activities moving ahead without delay, a unique range of screening compounds, intermediates and other useful compounds are available from stock for immediate dispatch.

Thousands of New Products

If you are on the look out for new boronic acids, alternative amino pyridine derivatives, or a variety of heterocyclic compounds, just to name a few, keep an eye on Alfa Aesar's new product announcements. Hundreds of interesting new products are added each month.

Broad Based Production Experience

Being a global research chemicals business for nearly 50 years means we have practical experience with the more complex organic reactions and safe routes to thousands of molecules that have been developed in house.

Lab Scale Production

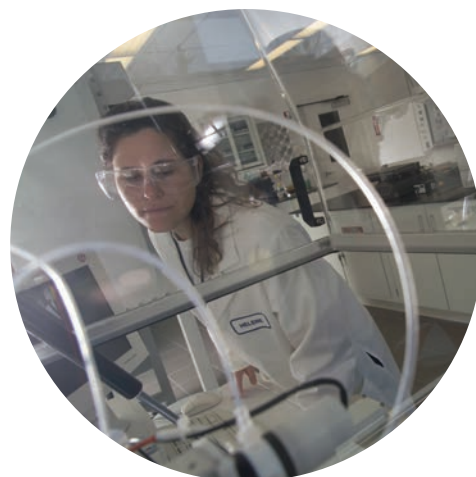
Our research scale labs in Heysham, UK utilize 100 fume hoods for a variety of chemical reactions. The Heysham team is set up to handle projects in the 1kg to 100kg scale.

Kilo Lab and Small Pilot Plant

The Alfa Aesar Synmax production labs in Yantai, China offer a diverse selection of production capabilities. Alfa Aesar Synmax utilizes up to 2000L reactor vessels for development and pilot scale batches. Additional Johnson Matthey kilo labs in the United States are available to support non-GMP production.

Product Data and Interfaces

Through print and the advanced web based catalog as well as third party data access systems such as the Available Chemicals Directory (ACD), Ariba and SciQuest, the Alfa Aesar catalog is available in a variety of formats and media. Contact us to set up a direct link to our complete catalog and new product updates.



Product Development Services

As part of the Johnson Matthey Fine Chemicals Division, Alfa Aesar and Johnson Matthey Pharmaceutical Services and Materials offer services that cater to the entire drug development life cycle. Strong cGMP and regulatory compliance are the foundation for our full selection of services, from custom synthesis, process development, scale-up, optimization and validation to manufacturing from milligrams to commercial scale.

Catalytic Screening

Our goal is to help you accelerate your leads to the clinical stage. The Catalytic Technology Screening Center saves you time and money by incorporating optimized catalytic steps into your process. State of the art facilities, with the core competence and equipment to scale these chemistries, supplement our proprietary Johnson Matthey technologies.

Analytical and Regulatory Compliance

Specialized quality assurance and compliance techniques developed at Johnson Matthey are at your disposal. A flexible quality system and cGMP, ISO 9000 compliant facilities are the backbone for our analytical and regulatory compliance services. We understand the importance of quality assurance to our valued customers. On request, we will be pleased to provide historical compliance documentation on all Johnson Matthey facilities.

Chemical Development

Alfa Aesar and Johnson Matthey Pharmaceutical Services have prepared thousands of new chemical entities. We put this experience at your service, whether it is in the design, development and optimization of synthetic routes, the production and scale up of intermediates and APIs, or process development, process validation and commercial manufacturing.



Medicinal Chemistry Services

Your goal is a viable pre-clinical candidate. Taking advantage of the latest technology and state of the art facilities, such as our Catalytic Technology Screening Center, our medicinal chemistry services team designs novel synthetic routes with the goal of scaling your process as quickly and efficiently as possible.



Separation Technologies

We offer an extensive set of separation techniques in developing a process to suit your need.

These include crystallization, drying and evaporation separation techniques, fractional distillation, micro and ultra-filtration, preparative chromatography, as well as Simulated Moving Bed (SMB) chromatography and SFC (Supercritical Fluid Chromatography). We use feasibility/lab bench studies to evaluate your project to determine the viability of various techniques.

Highly Potent APIs

We have prepared thousands of highly potent active pharmaceutical ingredients (HPAI) over the years. In our potent compound laboratories, we employ robust containment chemistry services for the production of HPAs up to category IV (Safebridge scale) for both clinical and commercial use.

Full Time Equivalentents

Alfa Aesar Synmax also offers Full Time Equivalent (FTE) services for those customers not requiring GMP certification. A variety of packages are available utilizing our R&D labs, Kilo labs and the pilot plant. Contact an Alfa Aesar sales office for more details.

A Variety of Manufacturing Options

Lab and Kilo Scale

Commercial Grade Production

Our research scale labs in Heysham, UK employ dozens of PhD production chemists utilizing 100 fume hoods for a variety of chemical reactions. Our team is process oriented, having extensive experience developing routes that are both scaleable and efficient. The Heysham team is set up to handle projects in the 1kg to 100kg scale.

At the brand new Alfa Aesar Synmax production labs in Yantai, China, an experienced team uses proven techniques and state of the art facilities to offer a diverse selection of production capabilities. Alfa Aesar Synmax utilizes up to 2000L reactor vessels for development and pilot scale batches.

Full Time Equivalentents

Alfa Aesar Synmax also offers Full Time Equivalent (FTE) services for those customers not requiring GMP certification. A variety of packages are available utilizing our R&D labs, Kilo labs and the pilot plant. Contact an Alfa Aesar sales office for more details.

APIs and cGMP Production

Our New Jersey and Massachusetts operations all offer cGMP production of kilogram quantities of API and intermediate compounds in one of our 24 cGMP kilo labs.

Small Commercial and Pilot Scale

Our Devens, Massachusetts plant consists of state of the art, self contained manufacturing suites featuring 375L to 1900L glass lined and hastelloy reactors with cryogenic cooling capabilities.

The North Andover, Massachusetts facility houses three additional reactor trains and a separations technology component. This site enables synthesis of API under cGMP conditions in reactors up to 750L for clinical development and small scale commercial quantities.

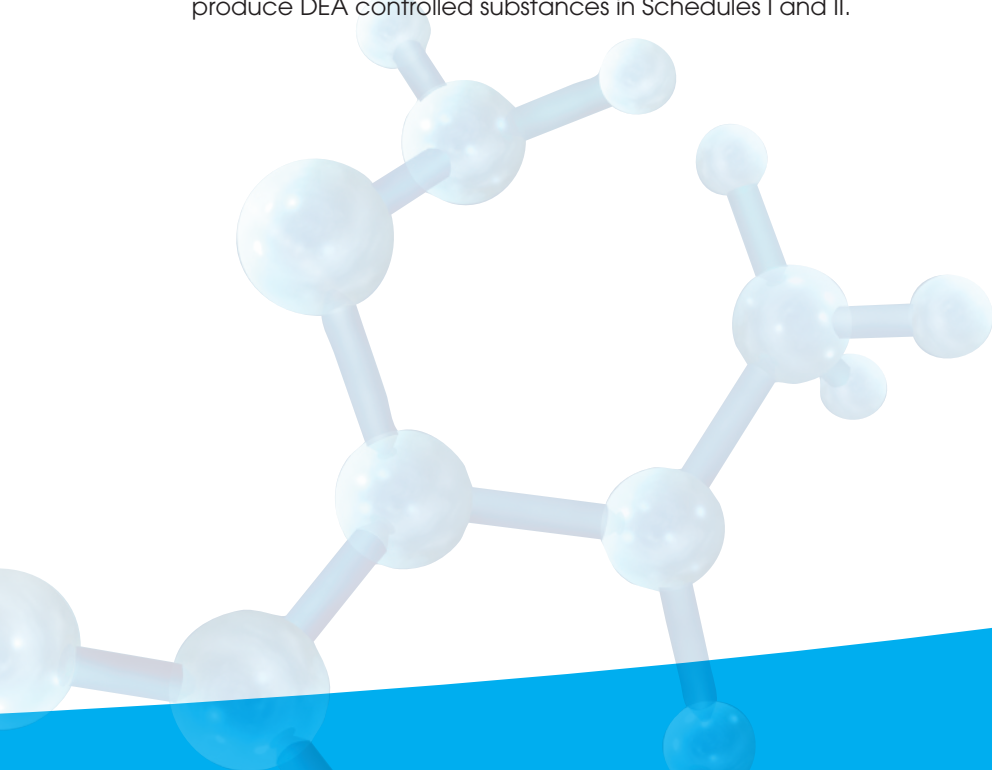
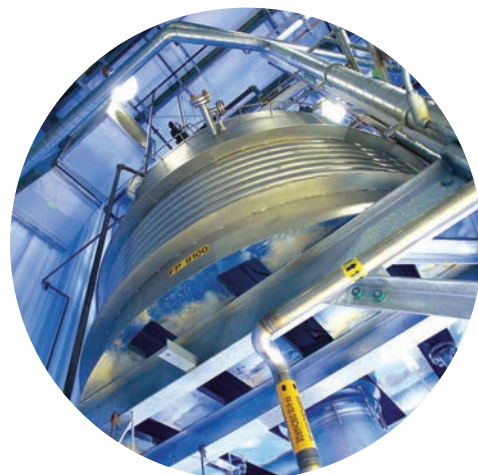


Bulk API Production

Our strictly controlled, self contained reactor trains and DEA registered facilities produce Phase III bulk API specializing in Class I-V controlled substances. All production is under cGMP conditions and is controlled under ISO 9000 standards.

Our bulk cGMP API facility located in West Deptford, New Jersey houses hastelloy and glass-lined reactor trains ranging in capacity 19 to 7,500L. The facility is in strict compliance with DEA manufacturing requirements and utilizes class 100,000 contamination-control rooms with HEPA filtered air handling systems. Our extensive product list includes cisplatin, carboplatin, fentanyl citrate and base, hydrocodone, bitartrate, hydromorphone HCl and oxycodone HCl.

Riverside, our dedicated API manufacturing facility in Conshohocken, Pennsylvania, further expands our large scale operations. With a total reactor capacity of 140,000L and a 5,600m² production area, this facility is a scalable, flexible, multi-purpose production facility with highly automated, DCS recipe driven operations. The facility also features reactors up to 11,000L to fit large scale needs. Riverside is equipped to manufacture parenteral grade APIs (microbial/endotoxin environmental controls) and is licensed to produce DEA controlled substances in Schedules I and II.



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