New Kilo Lab and Pilot Plant for Fine Chemicals Production

• Fine Chemicals Production
• Custom & Contract Services
• Full Time Equivalent Services

Yantai, China

Where Science Meets Service
Located in Yantai, Shandong province, China, Alfa Aesar Synmax is a joint venture between Alfa Aesar and our Chinese partner. The brand new facility is designed to meet the current and growing needs of Alfa Aesar’s fine chemicals customers throughout the world. Operating on a 25,000 square meter site with 2 buildings, the new operation employs dozens of chemists and support staff, with substantial ongoing growth.

The Alfa Aesar Synmax management and production staff is a highly experienced team of leading industrial and academic chemists. Drawing on years of production experience and the shared intellectual resources across the Alfa Aesar and Johnson Matthey groups, our chemists have the skills and experience to deliver quality chemicals utilizing process routes from laboratory scale through pilot plant to commercial scale production.

Chemistry Expertise
Our capability and experience includes:

- Acylation
- Alkylation
- Amidation
- Amination
- Arbuzov Reaction
- Chlorosulfonylation
- Condensation
- Dehydration
- Diazonium Chemistry
- Diels-Alder Reaction
- Esterification
- Friedel-Crafts Reaction
- Grignard Chemistry
- Halogenation
- Heterocyclic Synthesis
- Lithiation
- Nitration
- Oxidation
- Quaternization
- Reduction
- Suzuki Coupling
- Vilsmeier Reaction
- Wittig Reaction
- And more…
Kilo Lab

Alfa Aesar Synmax’s new 4,200 square meter kilo lab facility adds significantly to Alfa Aesar’s capacity in lab scale production of fine and specialty chemicals. Utilizing 60 bench top hoods and 18 walk-in hoods, the team of synthetic chemists employs a wide range of chemical know how in producing novel building blocks, screening compounds and intermediates.

Key Equipment Listing

Hoods

- Bench Top (1-1000g capacity)  60
- Walk In (1-10kg capacity)  18
- Alcohol cooling systems  2 (-40° to -70° C)
  (excellent for boronic acid reactions)
- Hydrogenation reactor  1 (1kg capacity)
- Pressure rating normal  0.81 mpa (117.48 PSI)
- Pressure rating under vacuum  0.2 mpa (29.01 PSI)

Operating Temperature Ratings

- Glass lined reactors  0° to 180° C
- Stainless reactors  -40° to 220° C
- One 200L stainless reactor  -100° to 25° C (pilot plant)
The 2,100 square meter pilot plant is also a significant addition to the Alfa Aesar capacity to handle development and production scale batches. The pilot plant operates eight reactors, including specialized equipment for distillation and low temperature chemistry.

### Pilot Plant

#### Key Equipment Listing

- 2 2000L Glass lined reactors
- 1 1000L Glass lined reactor
- 1 500L Glass reactor
- 1 500L Stainless reactor
- 1 200L Low temperature stainless reactor
- 1 200L Stainless reactor
- 1 50L Rotary evaporator
- 2 600L Centrifuges
- 1 100L Glass distillation reactor

### Process Support Systems

#### Key Equipment Listing

- Glycol cooling unit
- Steam generator
- Water recirculation system
- Core Dryer
- 100L Centrifuge
State of the art facilities also include an analytical lab and numerous support systems. Solvents are stored in 12m containers with state of the art fire suppression systems, ventilation and solvent collection systems in case of release. One hundred percent of wastewater is routed to an on-site treatment plant employing membrane and ionic separation techniques, where acids and bases are separated and reduced to low concentrations.

All governmental treatment regulations are strictly adhered to and the environmental health, safety and security procedures are calibrated to the Johnson Matthey global standards. Other features:

- Centralized main power plant, nitrogen and vacuum systems.
- All hoods and storage cabinets ventilated.
- A roof mounted solar collector provides 200L of hot water daily.

Analytical and Process Support Systems

Analytical Lab

All chemicals produced at Alfa Aesar Synmax are tested against the quality standards our customers have come to expect. Currently, the analytical lab at Alfa Aesar Synmax features gas chromatography (GC), HPLC and LC-MS units.
Alfa Aesar offers synthesis capabilities from various locations globally. Our experienced development and production teams can deliver a variety of products to meet the needs of customers in fields varying from pharmaceuticals to semiconductors, structural materials and imaging.

Organics
In addition to the new Alfa Aesar Synmax operation in Yantai, Alfa Aesar undertakes advanced organic synthesis in its Heysham, UK plant. Our Heysham team offers one of the most advanced and varied portfolios of chemistry in the industry.

High Purity Inorganics
Alfa Aesar carries out high purity inorganics production in its Royston, UK facility. Capabilities include salts, solutions, pure elements, ultra dry materials and nanoparticles and dispersions.

Catalysts
Alfa Aesar offers a full range of precious metal and base metal catalysts manufactured at various Johnson Matthey plants worldwide.

Global Inventory
The majority of our over 33,000 products are available in semi-bulk and bulk stock from our five worldwide distribution centers or through one of our distributors.

Key Distributors with stocks:

- **Singapore/Malaysia region**
  - VWR Singapore

- **Taiwan**
  - Uni-Onward (limited but growing stocks)
  - Echo Chemical Co. Ltd.
Additional Services

Catalog
This 2,900 page publication with 33,000 products is equal parts catalog and handbook. The Alfa Aesar catalog has been extensively augmented with thousands of new and updated literature references. Virtually all catalog products are available from stock at our global distribution locations.

Custom Synthesis
We offer flexible custom manufacturing services to produce quality products with the assurance of full confidentiality.

Customer Service
Our dedicated scientific and commercial teams offer the full service package, from concept to production, packaging and delivery.

Technical Service
Our technical Product Specialists are on hand and ready to help you with your technical questions and to help with your application.

Quality Control
We employ advanced quality control for both in-process and final testing phases. The high standard of modern quality control and assurance facilities is matched by the expertise of our experienced staff. Various ISO certifications are in place or pending at all Alfa Aesar production and distribution locations.

New Product Development
As a research chemicals business we strive to bring you a constant stream of new screening compounds, building blocks, novel materials and other hard to find items. Our new product development team works hand in hand with our production chemists and key supply partners to identify and bring to market the most cutting edge items. Hundreds of new products per month are added to supplement the catalog.

Full Time Equivalent (FTE) Services
Full Time Equivalent (FTE) services are available for those customers not requiring GMP certification (GMP services are available through our sister company Johnson Matthey Pharma Services - contact us for more details). Drawing on years of experience and the shared intellectual resources across the Alfa Aesar and Johnson Matthey groups, our chemists have the skills and expertise to perform top level chemistry utilizing process routes from laboratory scale through to kilo and pilot plant scale.

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