



Specialty Chemicals

Your partner for custom
specialty chemical capabilities

Entegris, your partner in developing custom specialty chemicals for your next generation technologies.

Expertise include:

- Formulating tailored complex chemistries
- Understanding specialty chemical requirements
- Development and scaleup
- High-quality consistent manufacturing
- Rapid identification of synthesis routes
- Process engineering
- Quality control
- Proactive supply chain management
- Work discreetly preserving your trade secrets

Working with us means partnering with a sophisticated and reliable organization that can support your next-generation products and speed time to market.

ANALYTICAL CAPABILITIES

Entegris has a broad range of in-house bench, pilot, analytical equipment, and capabilities, including:

- Nuclear magnetic resonance (NMR)
- Gas chromatography (GC)
- Gas chromatography/mass spectrometry (GC-MS)
- Differential scanning calorimetry (DSC)
- Thermal gravimetric analysis (TGA)
- Karl Fischer titration (KF)
- High-performance liquid chromatography (HPLC)
- Microwave digestion
- Ion chromatography
- Liquid chromatography/mass spectrometry (LC-MS)
- High-performance liquid chromatography with chiral column (HPLC)
- Inductively coupled plasma/mass spectrometry (ICP-MS)
- Fourier-transform infrared spectroscopy (FTIR)
- Gel permeation chromatography (GPC)
- X-ray diffraction (XRD)
- X-ray fluorescence (XRF)
- Scanning electron microscope (SEM)

Each of our facilities worldwide utilizes a full set of analytical equipment. By maintaining these capabilities globally, we're able to achieve faster turnaround time on mission-critical requests. These capabilities enable us to support our customers by testing materials down to the level of individual atoms when necessary.

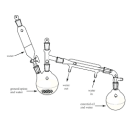
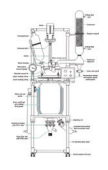
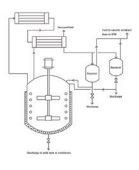


MANUFACTURING

Entegris employs advanced automation and controls within its manufacturing processes to ensure consistency enabling us to meet the demands of accuracy and quality while fulfilling the need for bulk quantities. We can even use trusted and audited toll manufacturing partners to expedite production on an even larger scale.

Full developmental to commercial scale-up capabilities

We can develop and then scale as your business ramps up →

Lab Scale 1 gm to 1 kg	Pilot Scale 1 kg to 75 kg	Commercial Scale 75 kg to >10 MT
 <ul style="list-style-type: none"> • Process Development • Proof of concept • Sample fulfillment 	 <ul style="list-style-type: none"> • Process scale-up • Process optimization • Proof of scalability 	 <ul style="list-style-type: none"> • Ramp to full scale • Timely and quality production

Enabling Pharma and Medical Chemistries: R&D to Pilot to Metric Tons Manufacturing of Ultra-Pure and Sensitive Chemistries

Specialty Chemical manufacturing facilities are located in the US and Canada and all are certified ISO9001, with some having ISO14001. This ensures safety with reliable high-quality chemistries.

Working with Entegris is a collaborative experience, with complete engagement, including videoconferences with technical experts and regular progress reports.



EQUIPMENT AND CAPABILITIES

Hastelloy reactors: Ranging from 100 L to 2,000 L and temperatures from -70°C to 250°C (-94°F to 482°F)

Glass-lined reactors: From 100 L to 4,000 L and temperatures from -30°C to 200°C (-22°F to 392°F)

In-line material discharge into glove box: Allows handling and packaging of highly sensitive materials by bypassing the ambient atmosphere providing full control of environmental exposure.

SYNTHESIS

- Reactors: 12–5,500 L range
- Temperature: -60°C to 225°C (-76°F to 437°F)
- Larger reactors: glass-lined steel and Hastelloy®
- Vacuum: range starts <1 torr distillation
- Kilo Laboratories: benchtop hoods and over 20 walk-in hoods with glass reactors up to 50 L

FILTRATION AND WORKUP

- Rosenmund Hastelloy filter dryers (kilo to metric ton scale)

- Centrifuges: 316 stainless steel and Hastelloy
- Sparkler® filtration
- Vertical plate filters and line filters
- 3000 L holding tanks
- Inert atmosphere solids discharge

DISTILLATION

- Batch: 45–15,00 L GLS and Hastelloy® reactors
- Wiped-film distillation units
- Hybrid wiped-film/fractional distillation units
- Vacuum: <1 torr
- Heating/chilling: up to 225°C (437°F) and down to -20°C (-4°F)

DRYING

- Teflon®-lined double cone dryer
- 316 stainless steel rotary vacuum dryer
- 316 stainless steel shelf dryers
- Filter dryers
 - All vacuum dryers equipped with condensers/receivers
 - Cogiem filter/dryer for moisture and air sensitive products

CASE STUDY

In a recent engagement, an Entegris customer discovered a potentially profitable molecule but lacked the ability to synthesize it. The customer also lacked the ability to test for purity and quality, nor could they easily scale manufacturing. Their challenges were not just in creating the chemical and testing it but also in expeditiously entering the market ahead of their competitors. Entegris was able to use its expertise to support the customer mastering a complex development process on a limited timeline.



Entegris worked with the customer from the beginning to bring their theoretical chemistry to life. Key elements of our approach included:

- **Technical Collaboration.** Entegris experts worked with the customer's scientists to identify potential synthesis routes and select a process suitable for bulk production.
- **Quality Control and Change Management.** Entegris used its internal quality control system to ensure that production maintained consistency with customer requirements during scaling operations. Entegris was able to monitor excursions, mitigate nonconformances, and adjust the production recipe as needed using our change management software.
- **Global Sourcing.** Through its decades of existence, Entegris has maintained relationships with trusted suppliers around the world, allowing us to reproduce high quality standards wherever we produce our specialty chemicals.

With this solution, Entegris was able to support the customer's need for a rapid scale-up, mastering a remarkable technical challenge and helping them become first-to-market with a valuable new material.

ENTEGRIS: THE BUILDING BLOCKS OF SPECIALTY CHEMICALS

When selecting a partner to support high quality, complex analytical requirements, and fast development timelines, Entegris is the right partner. We offer a global infrastructure with local R&D, sophisticated manufacturing capabilities, and trusted suppliers around the world. When you need to scale your chemistries from the benchtop to commercial production, Entegris is your trusted partner, helping you usher in new chemicals at the apex of quality and performance.

OUR SPECIALTY CHEMICALS PRODUCTS ARE USED IN A VARIETY OF DIVERSE MARKETS

- Pharmaceutical
- Life Sciences
- Fragrances and Personal Care
- Eye Care (Ophthalmology)
- Wound Care
- Dental
- Medical Devices
- Polymer Catalysts
- Coatings and Additives
- Organic Synthesis
- ALD and CVD Precursors
- Electronic Materials

LIMITED WARRANTY

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