The future flows through Corning® Advanced-Flow™ Reactors
Seamless scale-up from laboratory to production with impressive corrosion resistance

Boundary Conditions

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>-60 to 200</th>
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</thead>
<tbody>
<tr>
<td>Pressure (barg)</td>
<td>0 to 18</td>
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Made for industrial production

Our reactors enable the continuous processing of chemicals with a smaller footprint than conventional batch reactors and are specially designed for the seamless transition from lab feasibility to process development to industrial-scale producing of chemicals for the pharmaceutical, fine and specialty chemical industries.

Mass Transfer 100x better *
Heat Transfer 1000x better *
Reaction Volume 1000x lower *
Residence Time Distribution 50x better *
Higher yields, lower costs

Corning® Advanced-Flow™ reactors bring significant performance benefits to the chemical processing industry through a full range of reactor products suited to meet the needs of a particular reaction or a wide portfolio of reactions.

Continuous-flow chemical production utilizing Corning® Advanced-Flow™ reactors can provide:

- **Seamless scale-up**
- **Increased production yields**
- **Lower overall production costs**
- **Enhanced plant safety**
- **Higher product quality**
- **Decreased waste generation and energy consumption**
- **Faster product time to market**

Corning® reactors can be effectively run on reactions with miscible and immiscible liquids, and gases and liquids containing some amounts of solids with dimensions up to 200 microns.

Many different types of chemical reactions are well suited for Corning® reactor equipment, including:

- Nitrations
- Oxidations
- Brominations
- Chlorinations
- Grignards
- Alkylations
- Organo-metallics
- Hydrogenations
- Polymerizations
- and others.

Corning® Advanced-Flow™ reactors can be integrated into existing chemical processing infrastructures and designed to meet ATEX and GMP standards. Corning's products can be easily incorporated into existing systems as an upgrade, or customized into an entire facility leveraging expertise in Corning® technology with End-to-end execution.

**Product Portfolio**

**Low-Flow Reactor**
Laboratory scouting glass reactor
FLOW RATE: 2 to 10 ml/min

**G1 Reactor**
Process development and small production glass reactor
FLOW RATE: 30 to 200 ml/min

**G1 Photo Reactor**
Process development and small production photo reactor
FLOW RATE: 10 to 200 ml/min

**G1 SiC Reactor**
Process development and small production silicon carbide reactor
FLOW RATE: 30 to 200 ml/min

**G3 Reactor**
Pilot and production glass reactor
FLOW RATE: 400 to 2000 ml/min

**G4 SiC Reactor**
Production silicon carbide reactor
FLOW RATE: 1000 to 8000 ml/min

**A full range of services to suit your needs**

Corning® Advanced-Flow™ reactors include a range of services from evaluation to full-scale projects, development, through to implementation and operation including:

- **Workshops and training**
- **Quick feasibility test (QFT)**
- **Basic and detailed auxiliary systems engineering**
- **Technical support**
- **FAT/SAT and industrial start up**
- **Assistance for FDA qualification**
- **Pre- and post-purchase technical support**
- **Compliance with international standards (ATEX, PED, 21 CFR, etc. )**
Corning Incorporated is a world leader in specialty glass and ceramics. Corning® Advanced-Flow™ reactors are specially designed for the seamless transition from lab feasibility to process development to industrial-scale to multi-ton production of chemicals. Corning reactors are designed to meet the needs of pharmaceutical, fine and specialty chemicals companies who are seeking process optimization of a particular reaction or a wide portfolio of reactions. Corning reactors comprise highly engineered fluidic modules that integrate heat-transfer and mass-transfer in a single piece of equipment. These reactors are easily scalable and enable seamless, cost-effective solutions for fast scale-up and time to market. Corning reactors increase the efficiency, scalability, yields and quality of chemical processing while reducing environmental impact, performance variability and cost.

Corning® Advanced-Flow™ Reactors - a worldwide presence
Thinking global and acting local

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