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

Mass Transfer 100x better  
Heat Transfer 1000 x better

Boundary Conditions

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Pressure (barg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-60 to 200</td>
<td>0 to 18</td>
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Corning’s Advanced-Flow™ Reactor auxiliaries for the G4 reactor provide customers with complete turnkey solutions for chemical production.

Our high performance auxiliaries feature an optimized design specifically manufactured for industrial environments. AFR’s customized solutions meet industrial recommendations and guidelines including pharmaceutical compliance, standard industrial automation, and explosive atmosphere regulations.

Reaction Volume 1000 x lower *

Residence Time Distribution 50x better *

* compared to batch reactors
Higher yields, lower cost

Corning innovation brings significant performance benefits to the chemical processing industry through Corning® Advanced-Flow™ Reactors - 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’s reactors can be effectively run on reactions with miscible and immiscible liquids, and gases and liquids containing some amounts of small solids particles.

Many different types of reactions are well suited for Corning’s 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 upon request to ATEX and cGMP standards. Corning’s reactors can be easily incorporated into industrial systems via standard connectors, helping customers migrate to Corning’s technology with little to no downtime.

A full range of services to suit your needs

Corning Advanced-Flow Reactors include a full range of services to enhance customers’ projects from development through to implementation and operation, including:
- workshops and trainings
- basic and detailed auxiliary systems engineering
- customized turnkey solutions
- technical support
- FAT/SAT and industrial startup
- assistance for equipment qualification following cGMP/FDA requirements
- pre- and post-purchase technical support
- compliance with international standards (ATEX, ASME, PED, SELO, KGS, etc.)
Product Portfolio

Lab Reactor
Stepping into Flow Chemistry
FLOW RATE: 2 to 10 ml/min *

Lab Photo Reactor
Stepping into Flow Photo Chemistry
FLOW RATE: 2 to 10 ml/min *

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

*recommended flow rate
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: 30 to 200 ml/min *

G1 SiC Reactor
Process development and small production silicon carbide reactor

FLOW RATE: 30 to 200 ml/min *

*recommended flow rate
G3 Reactor
Pilot and production glass reactor

FLOW RATE: 400 to 2000 ml/min *

G3 Photo Reactor
Photochemistry production reactor

FLOW RATE: 400 to 2000 ml/min *

G4 Reactor
Production silicon carbide reactor

FLOW RATE: 1000 to 8000 ml/min *

*recommended flow rate
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.