



THALESNano

"Good reactions"™



X-Cube Flash™

Chemistry "in a Flash"

FEATURES

The X-Cube Flash™ is a high temperature, high pressure continuous flow reactor to perform homogeneous organic synthesis. The X-Cube Flash™ is capable of 350°C and 200 bar.

Chemists can access new chemical space by working safely and conveniently at temperatures and pressures that were not easily accessible before.

See reactions go “in a Flash”, saving time, materials, and effort. Analyze results faster, leading to quicker reaction optimization. The intrinsic nature of flow chemistry means scaling up of reactions is easier.

The high temperature, high pressure capability of the X-Cube Flash™ means that many solvents may reach to supercritical conditions. This increases reaction rates by orders of magnitude meaning reactions may progress in minutes, even in the absence of catalysts.

- A continuous flow of reaction mixture (flow rate up to 9.99 mL) is pumped into the system using a single or dual HPLC pump control, or an injector. The reaction mixture is then preheated and passes into an exchangeable reaction coil.
- The reaction coil can be heated up to 350°C (662°F) and pressurized up to 200 bar (2900 psi). Reaction conditions can be monitored and changed on the fly using the touch screen interface.
- Different size reaction coils (4 mL, 8 mL, 16 mL) may be used to increase reaction residence time or to increase the throughput of the reaction.
- The reaction mixture is then cooled before eluting into a collection vessel.

ADVANTAGES

Speed

- High temperatures and pressures mean that many reactions progress in minutes.
- Temperature, pressure, and flow rate can be changed on the fly for rapid optimization.

Safe

- The flow nature of the X-Cube Flash™ means only small volumes of reaction mixture are heated at any one time, so there is less risk involved.
- Precise control.
- Temperature sensors along the coil result in precise reaction temperature control.
- Using a dual pump control, different ratios of reagents can be mixed and reacted in the system.

Convenient

- The system has a small footprint minimizing the space taken up in the fume hood.



1. UMPC (Ultra Mobile PC)

The X-Cube Flash™ is controlled using a software driven UMPC touch screen computer. Parameters such as pressure, temperature, reaction time, flow-rate, injection, and reaction progression can all be viewed, set, and controlled using the software.



2. Changeable Heater Block

The Changeable Heater Block contains the heatable and pressurable (up to 350°C and 200 bar respectively) reaction zone. Size of the loop within the reaction takes place can be changed between 4, 8 and 16 mL for scale-up reactions.



3. System Pressure Valve & Sensor

The System Pressure Valve sets and stabilizes the set pressure value between a pressure range of 50 - 200 bar.



4. Dual Pump & Injection System

Reagents can be introduced via single, dual pump control or via syringe injection.



5. Outlet Tube:

The reaction mixture or product elutes into a collection vessel at ambient temperature and atmospheric pressure. The short reaction times allow analytical samples to be taken in minutes for reaction optimization.



Specification of X-Cube Flash™

Pressure range:	50 bar – 200 bar (725 -2900 psi)
Temperature range:	Room temperature – 350 °C (662°F)
System material:	Stainless Steel 316 L
Loop volume:	16 mL – 8 mL – 4 mL (Changeable)
Flow rate range:	0.1 – 9.99 mL/min
Dimensions:	Height: 490 mm (19.29")
	Width: 257 mm (10.12")
	Depth: 376 mm (14.80")
Weight:	ca. 25 kg (55 lbs)
Voltage:	100 – 240 V AC
Frequency:	50 – 60 Hz
Power consumption:	Injection unit: max. 500 VA
	Pump unit: max. 200 VA
Fuses:	Injection unit: 2 x T6.3A/117V 2 x T3.15A/230V
	Pump unit: 2 x T3.15A/117V 2 x T2.5A/230V

Wide variety of reactions can be performed on the X-Cube Flash™, including:

- esterification
- alkylation
- deamination
- Buchwald coupling
- Diels-Alder and
- Heck reactions without catalyst

For further information please contact us at flowchemistry@thalesnano.com or visit our website:

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