
Specification of O-Cube™

Flow rate range:	0.2 - 2 mL/min
Temperature range:	Ambient to -25 °C (lower temperature is possible with additional setup)
Pressure range:	1 bar (max. 6 bar)
O ₂ /O ₃ production range:	5 - 20 mL/min
Ozone production:	7 - 15% wt
Dimensions:	Width: 364 mm (14.33")
	Height: 471 mm (18.54")
	Depth: 495.5 mm (19.51")
Weight:	54 kg (119 lbs)
Voltage:	115 VAC - 230 VAC
Frequency:	50 - 60Hz
Power consumption:	Max. 600 VA


**O-Cube™
Ozonolysis Reinvented**

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

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FEATURES

The O-Cube™ is a ground breaking new reactor designed to make ozonolysis easier and safer to perform. Ozonolysis has many advantages over other oxidative methods for generating aldehydes, alcohols and carboxylic acids. Ozonolysis is fast, atom efficient, and progresses cleanly in high conversion and yield. Other methods use toxic reagents, generate heavy metal waste, require water and are difficult to control leading to generation of side products.

Until now, ozonolysis has often been avoided or not even considered due to safety concerns. The O-Cube™ makes ozonolysis completely safe, allowing the technique to be performed in any lab environment by any level of chemist, so scientists need not avoid or work around this important process any longer.

HOW DOES IT WORK?

A continuous flow of cooled substrate is reacted with ozone (generated on demand by the system) and then quenched using a separate flow of oxidative or reductive reagent at temperatures from ambient down to -25°C. The product emerges within minutes, and sophisticated software controls every function, allowing the O-Cube™ to be used safely.

ADVANTAGES

Safety

Only a small amount of the ozonide is generated at any given time and this is then quenched continuously. The temperature of the reaction is therefore more easily controlled and monitored.

Reproducibility

The accurate control of temperature in the O-Cube™, coupled with a uniform temperature and mixing across the reaction zone means that the same experiment can be repeatedly performed at the same reaction parameters giving the same result.

Selectivity

The residence time of the substrate and the ozone concentration can be very precisely controlled using the software. This means highly selective reactions may be performed in high yield.

Quick Optimization

The O-Cube™ allows users to obtain an analytical sample of the product formed within 10 minutes. Reaction parameters may then be changed "on the fly" for quick reaction optimization.

Easy to Use

The software has an experiment wizard that can calculate and actively control the amount of ozone needed for the reaction based on reactant concentration, the number of ozonizable functional groups, and liquid flow rate. The system will then perform the entire reaction for you giving true "walk-away" functionality!



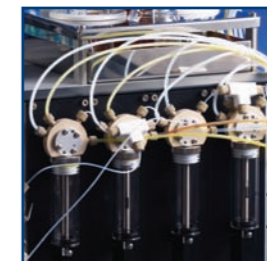
1. UMPC

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



2. Reagent/Quench Holders

All the reagent and quench solutions along with the solvent and waste collection are placed on top of the O-Cube™.



3. Liquid Inlet Pumps

Reactant and quench solutions can be pumped into the system using syringe pumps without any fluctuation in flow. The switch between solvent and reactant is software controlled requiring no manual change from the user.



4. Reaction Zone

The reaction takes place in the cooled reaction loop. After the gas-liquid reaction zone, the cooled quenching agent is introduced to the reaction line.



5. Product Collector

The product is collected continuously in the glass vessels on top of the reactor. The short reaction times allow analytical samples to be taken in minutes for rapid reaction optimization.