



THALESNano

"Good reactions"™



H-Cube Pro™

Be Professional At Hydrogenation and Flow Chemistry

OVERVIEW

The H-Cube Pro™ is the next generation version of the number one selling flow reactor, the H-Cube®. The H-Cube Pro™ takes the best of the H-Cube®, such as fast reactions, safe high pressure hydrogen generation from water, catalyst cartridges, and ease of use, and improves upon it dramatically.

The H-Cube Pro™ offers greater hydrogen production for higher throughput, wider temperature capability including - for the first time - active cooling for more selective reactions, and an all new graphical interface with real time reaction monitoring/data logging and method storage capabilities

HOW DOES IT WORK?

The H-Cube Pro™ system is based on the hydrogenation of a continuous flow of reactant. Additional equipment, HPLC pump, is needed to introduce the reactant into the H-Cube Pro™ device, where the solution of reactant is mixed with the in-situ generated hydrogen. The preheated mixture is then transferred to a disposable catalyst cartridge (CatCart®) that is preloaded with the required heterogeneous catalyst. The product then flows out of the cartridge and is collected in a vial or flask. In most reactions the only work-up required is the evaporation of solvent.

ADVANTAGES

Higher Throughput and Control

The H-Cube Pro™ contains two cells to generate up to 60 mL/min of hydrogen. Now reactants can be hydrogenated at up to 2.0 M in concentration applying 1 mL/min flow rate with a 70 mm CatCart®. Users may vary the amount of hydrogen produced offering greater reaction control.

Wider Temperature Range

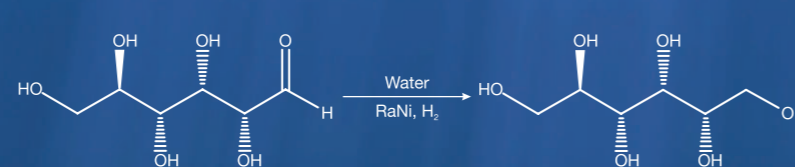
Temperature may now be varied from 10-150 °C offering greater selectivity at lower temperatures and the ability to perform more difficult reactions at higher temperatures.

Intelligent Software

The H-Cube Pro™'s graphical interface is now even easier to use and more powerful. Reaction parameters may be followed in real time and the data exported at the end of the reaction. The software also has a timer function where users can set the duration of the reaction.

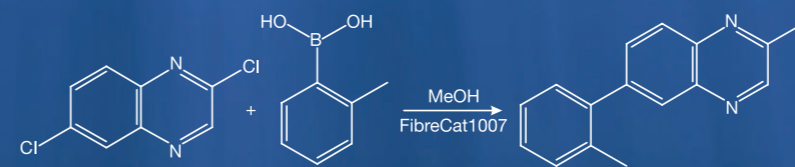
Greater Chemistry Capability

The H-Cube Pro™ will be future compatible with other low-cost reactor modules to give chemists chemistry capabilities beyond hydrogenation. High temperature liquid reactions or other gases will soon be possible on the H-Cube Pro™.



0.4 M, 3 mL/min
150 °C, 90 bar

Purity: 96%



0.02 M, 2.5 equ. NaOH
0.8 mL/min, 100 °C, 20 bar

Conversion: 66%
Selectivity: 69%



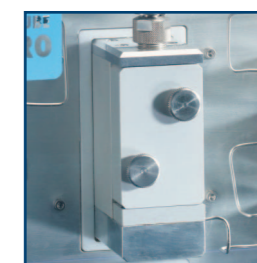
1. Touch Screen

Every operational step of the H-Cube Pro™ is conveniently controlled using a touch screen panel. Parameters such as temperature, pressure, hydrogen production, and flow-rate can be adjusted through the screen. Timer function and online monitoring of parameter changes are also displayed on the touch screen.



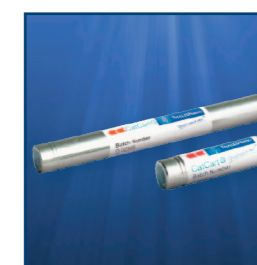
2. Inlet and Outlet Valve Switches

Two valves help chemists to easily switch between the reaction mixture and the eluent. The second valve at the end of the device directs the reaction mixture towards the product collector or waste.



3. Heater/Cooler Unit

The heater/cooler unit can both heat and cool the reaction line and the catalyst cartridge (CatCart®) to temperatures up to 150 °C and down to 10 °C. The low volumes of substrate and hydrogen mean that heating is quick and efficient, while easy to monitor and control.



4. CatCart®

ThalesNano's CatCarts® are sealed cartridges containing heterogeneous catalysts for use with the H-Cube®. Exposure to the catalyst is limited by removing the need for filtration. The cartridges are easy to install and dispose of, and significantly increase the ratio of the catalyst to the hydrogen and substrate, which in turn increases the reaction rate.



5. Product Collector

The reaction mixture or product collects in the collection vial. The short reaction time means that analytical samples can be taken to measure product conversion in minutes.



ThalesNano's CatCarts® contain sealed heterogeneous catalysts, which can be used in hydrogenation and other heterogeneously catalyzed reactions in the H-Cube®.

Exposure to the catalyst is limited by removing the need for filtration, while the cartridges are easy to install and replace. In the CatCarts®, the ratio of catalyst to hydrogen and substrate is significantly increased, which results in faster reaction rates.

CatCarts® come in two standard sizes (30, 70 mm). The smaller CatCarts® are used typically to reduce up to 1g of substrate, while the longer CatCarts® can be reduce over 10 g of material in a day with no sign of catalyst deactivation.



Specifications of H-Cube Pro™

Flow rate range:	0.3 - 3 mL/min
Temperature range:	10 - 150 °C
Pressure range:	Atmospheric to 100 bar
Hydrogenation Production range	0 – 60 cm ³ /min
Water reservoir capacity	340 mL
Dimensions of H-Cube Pro™ including touch screen:	Height: 400 mm (15.75") Width: 470 mm (14.6") Length: 510 mm (20.1")
Weight of H-Cube Pro™:	23 kg (46.3 lbs)
Voltage:	85 - 264 VAC
Frequency:	47 - 63Hz
Dimensions of HPLC pump:	Height: 130 mm (5.1") Width: 110 mm (4.3") Length: 220 mm (8.7")
Weight of HPLC pump:	2.32 kg (5.1 lbs)

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

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