Quality is more than a word

ESPEC

Extreme Thermal Cycling

Liquid Nitrogen Cooled Chambers

ESPEC NORTH AMERICA, INC.

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ESPEC brings all the speed of our Qualmark HALT chambers to applications where repetitive-shock vibration is not needed. These liquid nitrogen cooled chambers can change temperature up to 100°C/minute.

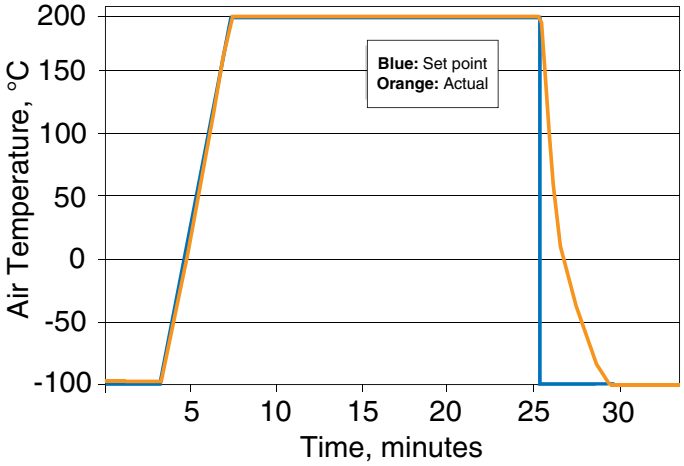
A single chamber with extremely fast cycling and product recovery times expands the possibilities of traditional thermal shock testing to larger products and more extreme stress.

These chambers may also be used to supplement HALT testing programs by dedicating one system to thermal profiling. They can also be retrofitted with a Qualmark repetitive-shock vibration table in the future for full HALT testing capabilities.

Standard Features

- Nichrome wire heating, resulting in heating rates of 60-100˚C per minute
- Liquid nitrogen cooling via proportional control valve (optional for EXT2.0)
- Allen-Bradley PLC controller, PC, and Typhoon Manager software
- Four thermocouple input channels available
- Eight event relays
- Stainless steel interior construction
- Adjustable feet for leveling unit

Extreme Cycling Example



Ramping of 70°C/minute is possible across the entire range of these chambers. Transition shown uses controlled ramping during heating to safely manage performance, while the cooling is a step change to maximize liquid nitrogen performance.

EXT2.0 with optional stand

EXT3.0

EXT4.0

Specification

	EXT2.0	EXT2.5	EXT3.0
Temperature	-100°C to 200°C		
Thermal Ramp Rate *	70°C/min.		
Interior Volume	12 cu. ft	32 cu. ft.	52 cu. ft.
Interior Dimensions (W x D x H)	27" x 27" x 29" (686 x 686 x 736 mm)	35" x 35" x 46" (889 x 889 x 1168 mm)	44" x 45" x 46" (1117 x 1143 x 1168 mm)
Power Supply	208/230V 1Ø 50/60Hz, 70A	400/480V 3Ø 50/60Hz, 60A	400/480V 3Ø 50/60Hz, 80A
Liquid Nitrogen	1.8 GPM at 65 psi	3.2 GPM at 65 psi	4.7 GPM at 65 psi

	EXT4.0	EXT8.0
Temperature	-100°C to 200°C	
Thermal Ramp Rate *	70°C/min.	
Interior Volume	112 cu. ft	224 cu. ft.
Interior Dimensions (W x D x H)	53" x 54" x 68" (1346 x 1371 x 1727 mm)	53" x 108" x 68" (1346 x 2743 x 1727 mm)
Power Supply	400/480V 3Ø 50/60Hz, 100A	400/480V 3Ø 50/60Hz, 100A
Liquid Nitrogen	6.8 GPM at 65 psi	6.8 GPM at 65 psi

**Ramp rate varies based on load and setpoints*

Options

Instrumentation options

- QDaq data acquisition system provides dynamic charting and analysis capabilities for up to 32 thermal channels.

Operation options

- Proportional control valve upgrade for EXT2.0
- 250°C high temperature modification
- Dewar tank manifold kit, if dedicated LN2 system is not available. Includes SuperFlex vacuum jacketed hoses and mounting hardware.
- Oxygen sensor for safety
- Product thermocouple with strain relief

Cabinet options

- Cable ports for running cables and other wiring into the chamber. Round and rectangular sizes available, as well as door notches.
- Shelves
- Elevation stand and/or casters for EXT2.0

250°C High Temp. Option

An extended temperature-range modification is available specifically for extreme testing needed for harsh operating environments, such as oil field and space applications.

The temperature range is expanded to -100°C to 250°C, creating the extremes necessary to analyze design weaknesses and extend operational margins for devices destined for use in hostile conditions.

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DANGER

Not for use with specimens which are explosive or flammable, or which contain such substances. To do so could be hazardous, as this may lead to fire or an explosion.

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