

Aera® AS-71C Thermal Vaporizers

Outstanding flow stability for semiconductor, FPD, and other advanced applications

Benefits

- Enable highly consistent, repeatable film characteristics
- Facilitate process innovation
- Increase process uptime and throughput
- Reduce material cost and process complexity
- Increase ease of use

Features

- Industry-leading vapor-flow stability
- Thermal vaporization method—inherently stable and resilient performance, with minimal maintenance
- High reliability—over 20 years of dependable operation in the field
- Integrated high-temperature Aera® MFC
- Optional control panel and automatic refill system for increased ease
- Electropolished and ultra-clean gas-wetted surfaces

The Aera® AS-71C thermal vaporizer system features industry-leading reliability and flow stability—resulting in measurably improved film uniformity and increased system uptime. Unlike units that require constant refill pressures and frequent maintenance, AS-71C vaporizers enable consistent delivery of vaporized TEOS, SiCl₄, HCD, and other precursor materials with minimal upkeep and no need to constantly monitor refill pressures. Ideal for the 300 sccm range, they provide flows up to 600 sccm.

Aera AS-71C vaporizers integrate leading thermal-chamber and MFC technologies with the exceptional design and manufacturing quality you've come to expect from Aera products. The result is a highly reliable, low-maintenance system that increases uptime, process repeatability, and film uniformity for semiconductor, FPD, other advanced applications that require high vapor-delivery stability.



greater accuracy and stability compared to other methods. Integrated thermal technology further increases flow stability by preventing condensation.

Facilitate Process Innovation

As fabrication techniques and materials evolve, the need for tight process control and stability continues to escalate. Other vapor-delivery methods may force you to sacrifice flow stability in order to gain the manufacturing benefits of liquid precursors. This may limit the use of vapor in advanced processes. However, Aera thermal vaporizers facilitate process innovation by enabling the use of a variety of liquid precursor materials while maintaining excellent flow stability.

Enable Highly Consistent, Repeatable Film Characteristics

Extremely Stable Vapor Flow

Aera AS-71C vaporizers combine thermal chamber vaporization with the high flow uniformity of Aera MFCs to provide outstanding vapor-flow stability. The vaporized gas itself (not the liquid precursor) is delivered through the built-in MFC. Thus, vapor flow is measured and controlled directly, for

The AS-71C Series suits a variety of precursor materials, including:

TEOS	HCD (Si ₂ Cl ₆)	BTBAS	SiCl ₄
TiCl ₄	TDMA	TMCTS	

Reduce Material Cost and Process Complexity

Unlike bubbler methods, AS-71C vaporizers do not require a continuous flow of carrier gas. Further, very little of the refill supply gas is consumed during vapor delivery. These factors save material costs and reduce carrier gas impact on the process chemistry.

Specifications

Operational	AS-71C
Precursor Materials	TEOS, HCD (Si ₂ Cl ₆), BTBAS, TiCl ₄ , TDMAS, SiCl ₄ , TMCTS
Control Range	Up to 600 sccm, depending on material
Input Power	120 VAC, ±10, single Φ, 50/60 Hz, 2.5 A
Leak Integrity (Per Fitting)	< 1×10 ⁻⁹ Pa-m ³ /sec (He) per fitting
Alarm/Diagnostics	Temperature error, temperature ready

Environmental	AS-71C
Temperature	20 to 45°C
Relative Humidity	45 to 85%
Altitude	≤ 2,000 m above sea level

Physical	AS-71C
Surface Finish	Electropolished and ultra-clean
Attitude Sensitivity	Units must be positioned horizontally
Clearance	
Gas Controller Assembly	100 mm (3.9") on right side and 150 mm (5.9") from top
Control Module	150 mm (5.9") in front of unit door
Weight	
Gas Controller Assembly	~13.7 kg (30.2 lb)
Control Module	~3.7 kg (8.2 lb)
Fittings	
External Connections	3/8, 1/4" VCR® type stainless steel 316
Internal Connections	3/8, 1/4" VCR® type stainless steel 316, stainless steel 316L

For more information on AS-71C vapor delivery systems, visit:
www.advanced-energy.com/en/Aera_AS_Thermal_Vaporizer_System.html

To view AE's complete vapor delivery product portfolio, visit:
www.advanced-energy.com/en/Material_Delivery_Systems.html

Specifications are subject to change without notice.



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Increase Process Uptime and Throughput

Long Product Lifetime with Minimal Service

With over twenty years of dependable operation in the field, Aera vaporizers are the ideal choice for maximum process uptime. Their rugged designs ensure long product lifetime and greatly reduced downtime for service.

Inherently Resilient Vaporization Method

Thermal chamber vaporization does not require constant liquid flow pressure into an LMFC. This reduces the likelihood of process interruptions due to problems with the refill system, and eliminates flow fluctuations that occur when the refill supply gas is released from the liquid (outgassing). It also does away with the need to shut down production for bubbler flask changes.

Minimal Routine Maintenance

Aera vaporizers are optimized to reduce routine maintenance to an absolute minimum. Designed with a thermal chamber and high-temperature MFC, they have no tendency to plug or foul. This enables greater flow stability and virtually eliminates machine service downtime.

Optional Accessories for Increased Ease of Use

Two optional accessories enable a high level of convenience. The RS system automatically refills the thermal chamber for seamless vaporizer operation. Further, Aera vaporizers can be controlled either directly from the tool, or through an optional control panel that enables you to directly set and monitor operational parameters.