

High-Purity AlCl_3 Vapor Delivery for Al^+ Ion Implantation

Entegris PDS®-S package with ProE-Vap® canister technology

- 1 | Container in Axcelis ion implanter gas box
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- 2 | Heated delivery lines to the arc chamber
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- 3 | Precise flow control with integrated system

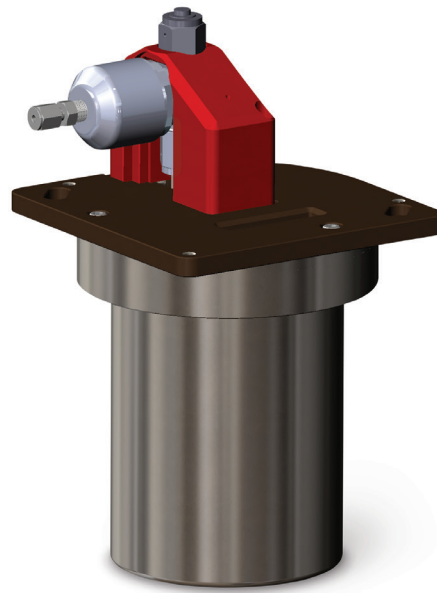
AlCl_3 vapor is delivered from a container within the Axcelis gas box through heated lines, with flow controlled by valves, pressure transducers, and a mass flow controller.

The Entegris PDS®-S Aluminum Trichloride (AlCl_3) package delivers AlCl_3 vapor for use in Al^+ ion implantation applications. Entegris provides purified AlCl_3 processed and packaged using proprietary techniques designed to maintain material integrity, enhance purity, and minimize contamination throughout delivery.

The PDS-S AlCl_3 solution uses the ProE-Vap® canister design, which has demonstrated high reliability and robust delivery performance in high-volume manufacturing environments since 2008 in ALD, CVD, and other emerging technologies.

What This Enables

Advanced materials + delivery systems	Supports end-to-end materials lifecycle management for device manufacturers.
Purity maintained through delivery	Packaging approach is designed to reduce contamination risks.
Field-proven canister platform	ProE-Vap design has been used in HVM environments since 2008.

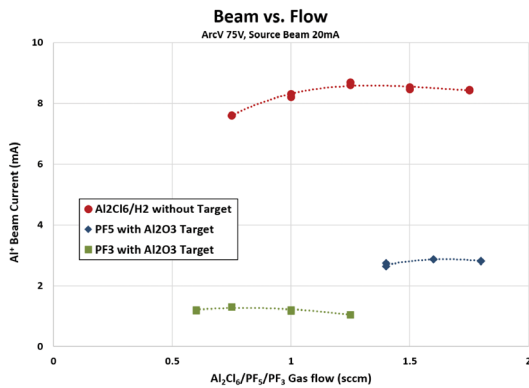


Representative PDS-S/ProE-Vap package components.

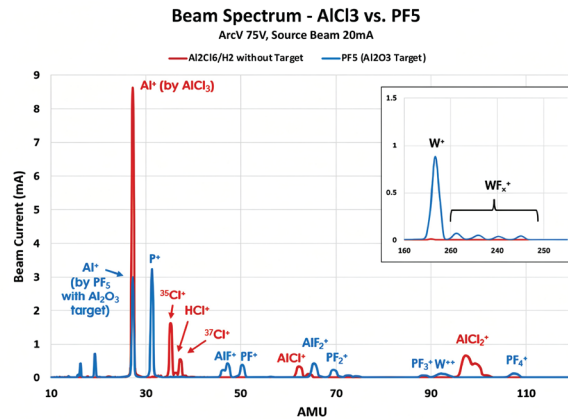
FEATURES & BENEFITS

- Innovative design ampoule for vapor delivery from a solid material
- Automation and temperature control maintained within control system
- Fully submersible pneumatic valve up to 200°C enables remote operation and enhanced safety
- Ultra-high AlCl_3 purity $\geq 99.995\%$
- Consistent purity and flow over the entire canister lifetime
- No manual loading of AlCl_3 material into traditional vaporizer reduces operator exposure to hazardous material
- Recipe switchover and on/off flow transition time demonstrated less than 30 seconds
- 20x more AlCl_3 material than traditional vaporizer reduces material changeouts, increasing tool productivity
- Reduced cost of ownership

PERFORMANCE DATA



Al+ beam current comparison for Al₂Cl₆/H₂, PF₅, and PF₃



Beam spectrum comparison of AlCl₃/H₂ and PF₅/Al₂O₃

AT A GLANCE

≥99.995%

Ultra-high AlCl₃ purity

<30 sec

Flow transition/recipe
switchover

<1% heel

Consistent purity and
flow to near-empty

200°C

Fully submersible
pneumatic valve operation

FOR MORE INFORMATION

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit entegris.com and select the [Contact Us](#) link to find the customer service center nearest you.

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