



ALE NEWS

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Special Interest Articles:

- Operational Workshops for Corrosive Gases
- NH₃ supplied in Bulk containers

Improved Equipment for Corrosive Gases

Through its advanced QS 9000 and ISO 14001 certified production facility, Air Liquide Europe supplies consistent quality semiconductor process gases that are used through each semiconductor's process step: oxidation, chemical vapour deposition, sputtering, resist, etch, thermal diffusion and ion implantation.

Air Liquide Europe Specialty Gases plant has made significant investments to upgrade the transfilling equipment's for corrosive gases. Automated new workshops have been designed to fill and analyse cylinders under contamination free environment. Through these state-of-the-art gas workshops, Chalon-sur-Saône facility can receive and fill bulk containers with high purity gases.

ALE wants to confirm its commitment

to supply high reliability corrosive gases, understanding the demanding tolerance and purity specifications necessary for consistent, high-quality semiconductor wafer fabrication.

Below is a list of corrosive gases available in a range of volumes - from individual cylinders to larger volume bulk supply systems.



Dichlorosilane Drum



HCl Drum

Products	Grades mainly supplied			
	N30	N40	N50	
BCl ₃	N30	N40	N50	
BF ₃	N25	N40		
¹¹ BF ₃	N27			
ClF ₃	N30			
Cl ₂		N40	N50	
HBr		N40	N50	
HCl		N47	N50	
HF	N35			
NH ₃		N45	N50	N60
SiF ₄		N40	N48	
SiH ₂ Cl ₂	N30			
WF ₆	N30		N50	



New corrosive filling workshops

New NH3 Drums Successfully Delivered

In September, Air Liquide Europe Specialty Gases' Facility successfully delivered its first NH3 bulk container to a customer in Dresden, Germany.

Ammonia is used in the Semiconductor Industry as a reacting gas. Ammonia is mainly used in conjunction with Silane or Dichlorosilane to deposit Silicon Nitride layers.

The dielectric characteristics of the nitride films depend on the purity of the gas. Air Liquide Electronics Ammonia has a total purity of 99.999%.

The Ammonia vertical drums were passivated using a process developed for high purity Ammonia. This process produces a non-porous, moisture free interior surface.

The Ammonia drums are equipped with two different valves:

- A manual valve with a high integrity metal face seal CGA(DISS) 632 outlet for the liquid phase
- A pneumatic valve with DIN 477-6 outlet for the gas phase

In addition to N50 grade Ammonia, Air Liquide Europe Specialty Gases' facility also offers N45 and N60 grade product, packaged in cylinder.

Impurity	99.995 %	99.999%	99.9999%	Analysis
N2	< 10 ppm	< 5 ppm	< 0.5 ppm	GC
O2 + Ar	< 2 ppm	< 1 ppm	< 0.1 ppm	GC
CO	< 5 ppm	< 1 ppm	< 0.1 ppm	GC
CO2		< 1 ppm	< 0.2 ppm	GC
H2O	< 10 ppm	< 5 ppm	< 0.2 ppm	Hygrometer
CnHm	< 2 ppm		< 0.1 ppm	GC
H2		< 10 ppm		GC
C1-C4		< 1 ppm		GC
CH4			< 0.1 ppm	GC
Fe			< 0.1 ppm	ICP-MS
Shelf life	2 years	2 years	2 years	

GC: Gas Chromatograph
ICP-MS: Inductively Coupled Plasma Mass Spectroscopy

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About Our Organization...

Air Liquide is a global provider of industrial and medical gases and related services. By staying at the vanguard of technological leadership, Air Liquide provides its customers all over the world with new products, services and solutions. Founded in 1902, Air Liquide has 125 subsidiaries in 60 countries and employs over 30,300 people. Sales in 2000 totalled 8.1 billion Euro with revenue outside of

France accounting for 77%. Air Liquide is listed on the Paris stock exchange and is a component of the CAC 40 and EuroStoxx indexes (Euroclear 12 007).

Air Liquide Electronics is a division specialised in servicing the Electronics industry, including circuits, silicon wafers, and related processing equipment.

