

Critical Materials Report on Electronic Gases

Supply Chain and Market Information

By Techcet CA, LLC. G. Elder, Ph.D. and L. Shon-Roy April 2014

Acknowledgements

Thanks to all those who provided inputs for this year's report. Those surveyed represent business managers and technologists working for major gas suppliers as well as IC fabricators and OEMs. We can not mention their names or companies, as most of these people prefer to remain anonymous.

Report Outline

	Executive Summary	Page :6
	Silicon Wafer Starts	4.0
	Market Statistics	
	Gas Market Growth	······································
	 Market Shares 	
	 Specialty Gases 	
	Bulk Gases	
•	Specialty Gases: SiH4, NF3, WF6 and Related Supply	Chain
	Issues and Supply Chain Issues	
		18
•	Supply Alert – He and other Noble Gases, HCl	31
•	Regulations Activity Update	38
	Impact of 450mm and EUV on Gases	
	Gas Requirements for Future Device Processes and D	
	cas requirements for racare bettee riocesses and b	46
•	Market Assessment & Analysis	52
	Supplier Information and News	

9/12/2014

Figures and Tables List

		Page #
1.	Silicon Wafer Starts History and Forecast	10
2.	Predicted Wafer Starts Change by Wafer Size	11
3.	Global Electronics Gas Market Revenue History and Forecast	13
4.	WW Supplier Market Shares	14
5.	Specialty Gas History and Forecast (GeH4, NH4, WF6, SiH4, NF3, N2O)	15
6.	Revenue Split – Top 6 Specialty Gases as a % of Revenues	16
7.	Bulk Gas History and Forecast	17
8.	NF3 Application Split as a % of Revenues 2011, 2013	19
9.	NF3 Supply and Demand	
10.	NF3 Capacity Manufacturer Market Share	22
11.	Silane Application Split as a % of Revenues 2011, 2013	23
12.	WF6 Revenue History and Forecast	26
	Tungsten Ore Production by Regional Share	
14.	Tungsten Ore Demand by Regional Share	31
15.	Crude and Refined Helium Pricing History and Forecast	34
16.	Kr, Xe and Ne WW Supply and Demand	37
17.	Lithography Gas Particle Requirements	50
18.	ITRS Yield Enhancment Table	51-5