



Ammonia Resistant Components

- Extended life sources and heaters for ammonia environments
- SUMO® crucible available with optimal flux distribution and minimized depletion effects
- Sources and substrate heaters for ammonia partial pressures up to 1×10^{-4} Torr
- Sources for temperatures up to 1200°C

Description

Using ammonia (NH_3) as the nitrogen source is becoming increasingly more common due to the ability to achieve high growth rates and for its ease of control. Consequently, ammonia can dramatically reduce equipment lifetime. Due to hydrogen embrittlement, it is not uncommon for source and heater filaments to last only a few months. Therefore, equipment uptime is compromised, leading to shorter campaign lengths and high repair costs.

Utilizing special ammonia resistant materials, Veeco enables operation of its innovative and proven sources and substrate heaters in high ammonia partial pressures. Veeco's ammonia resistant sources and heaters are currently available for temperatures up to 1200°C with ammonia partial pressures as high as 1×10^{-4} Torr.

Substrate Heater Product Specifications

Filament Material	W-based
Heat-Shielding Material	Tantalum
Maximum Outgassing Temperature	1200°C (in NH_3 environment)
Maximum Operating Temperature	1200°C (in NH_3 environment)
Maximum NH_3 Partial Pressure	1×10^{-4} Torr
Thermocouple Type	Standard Type C (W/Re 5/26%)
Maximum Substrate Size	10" (4x4")
Backside Optical Access	Optional

Source Product Specifications

Capacity ^{1,2}	5cc	12cc	16cc	200g (27cc)	30cc	35cc	300g (51cc)	60cc	70cc	85cc	400g (70cc)	800g (100cc)	125cc	150cc
In-Vacuum Diameter	1.15"	1.4"	1.4"	1.4"	1.6"	1.4"	1.6"	2.14"	2.36"	1.6"	2.14"	2.36"	2.14"	2.36"
Filament Style	SF	SF	SF, DF	DF	SF, DF	SF, DF	DF	SF, DF		SF, DF	DF	DF	SF, DF	
Crucible Shape	Conical			SUMO	Conical	Straight-walled	SUMO	Conical		Straight-walled	SUMO		Straight-walled	
Crucible P/N ³	200527	201629	200612	204054	200173	200799	204053	200954	201184	201089	204052	204128	200984	201968
Minimum Flange Size	2.75"/70mm				4.5"/ 114mm	2.75"/ 70mm	4.5"/114mm							
Water-Cooling ⁴	Optional 4.5"/114mm flange or larger required							Optional 4.625"/ 118mm flange or larger required	Optional 4.5"/114mm flange or larger required		Optional 4.625"/ 118mm flange or larger required	Optional 4.5"/ 114mm flange or larger required	Optional 4.625"/ 118mm flange or larger required	
Integral Shutter	Optional 4.5"/114mm flange or larger required							Optional 4.625"/118mm flange or larger required		Optional 4.5"/ 114mm flange or larger required	Optional 4.625"/118mm flange or larger required			
Thermocouple Type	Standard Type C (W/Re 5/26%)													
Maximum Outgassing Temperature ⁵	1600°C (using both filaments)													
Maximum Operating Temperature ⁵	1350°C													
Maximum NH ₃ Partial Pressure	1x10 ⁻⁴ Torr													
Filament Material	W-based alloy													

¹ SUMO capacities designate recommended useful capacity in cubic centimeters (cc) with nominal Ga capacity indicated for SUMO Sources. Other crucible capacities are nominal and do not represent useable capacities.

² Larger source capacities available for multi-wafer production systems such as GEN200®, Riber 49 and V100 Systems.

³ PBN crucible.

⁴ 60cc, 400g (70cc) and 125cc capacity sources require a 2.5" I.D. port.

⁵ For medium temperature sources. Low temperature versions are also available for increased stability at lower operating temperatures.



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Compound Semiconductor • MBE Operations
4900 Constellation Drive, St. Paul, MN 55127 USA
Phone: (651) 482-0800, Fax: (651) 482-0600
www.veeco.com/mbe