

Titanium Sublimation Pumps (TSPs) are often used in combination with ion pumps or independently to remove reactive gases from the vacuum environment. Combined with an ion pump, the TSP allows for low ultimate pressures in a shorter amount of time. All TSP components are bakeable to 400 °C.

TSPs operate by heating a titanium filament and subliming (converting from solid to gas phase) titanium molecules onto a surface. Sublimed titanium molecules are then available to chemically react with reactive gases, like oxygen and nitrogen, and disassociate and diffuse hydrogen. TSPs can operate from 10^{-5} to 10^{-12} mbar and have pumping speeds in excess of 10,000 $l s^{-1}$ for hydrogen.



PRODUCT FEATURES

TSP FILAMENT CARTRIDGE

The filament cartridge is mounted on a 2- 3/4" CFF (DN40). The feedthrough supports three titanium-molybdenum filaments and a return path for ground isolation. Each filament contains 1.5 grams of usable titanium and averages 20 hours of operation.



LIQUID CRYOSHROUD

The liquid cryoshroud consists of a double walled, type 304L stainless steel cylinder with two liquid nitrogen feedthroughs (.375 in. diameter) with flare type fittings. It provides 1578 cm^2 (245 in^2) of liquid nitrogen cooled surface area that provides pumping speeds up to 12,000 $l s^{-1}$ for hydrogen (see table). The shroud is mounted on an 8 in. CFF (DN160).



AMBIENT SPUTTER SHIELD

The ambient sputter shield economically maximizes surface area when cooling is not practical or possible. It provides 827 cm^2 (128 in^2) of ambient temperature surface area that provides pumping speeds up to 2200 $l s^{-1}$ for hydrogen (see table). The shield is mounted on an 8 in. CFF (DN160) or a 6 in. CFF (DN100).

Technical data

	Area	Temperature	H ₂		CO		H ₂ O	
			Rate	Speed	Rate	Speed	Rate	Speed
Typical TSP pumping speeds	cm ² /inch ²	°C	l s ⁻¹ / cm ²	l s ⁻¹	l s ⁻¹ / cm ²	l s ⁻¹	l s ⁻¹ / cm ²	l s ⁻¹
Liquid cryoshroud (8")	709/110	20	2.6	1843	8.2	5814	7.3	5176
	1578/245 ⁽¹⁾	-195	17	12053	11	7799	14.6	23039
Ambient sputter shield (8")	827/128	20	2.6	2150	8.2	6780	7.3	6037
Ambient sputter shield (6")	621/96	20	2.6	1614	8.2	5092	7.3	4533

(1) applies to H₂O speed only

Ordering information

Product description	Order number	Product description	Order number
TSP cartridge 3 filaments 2-3/4" CFF	G360819	1.5 metre cable with MS connectors	MSHC1MS
TSP ambient sputter shield 6" CFF	G360190	3 metre cable with MS connectors	MSHC3MS
TSP ambient sputter shield 8" CFF	G360044	6 metre cable with MS connectors	MSHC6MS
TSP liquid cryoshroud 8" CFF	G360051	10 metre cable with MS connectors	MSHC10MS