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SILICON CARBIDE HEATING ELEMENT USE BY ATMOSPHERE

ATMOSPHERES	TEMPERATURE LIMIT	MAXIMUM LOADING W/in ²	MAXIMUM LOADING W/cm ²	EFFECT
CLEAN DRY AIR	2822°F (1550°C)	Maximum	Maximum	No detrimental effect- see note 1
HYDROGEN	2370°F (1300°C)	30	5	Reduces silica film, Form CH ₄ from SiC - see note 2
DP+75°F	2370°F (1300°C)	30	5	
DP-60°F	2000°F (1093°C)	30	5	
AMMONIA	2370°F (1300°C)	30	5	Reduces silica film, Form CH ₄ from SiC
NITROGEN	2500°F (1370°C)	30	5	Form insulating Silicon Nitrides
PURE OXYGEN	2400°F (1315°C)	25	4	Faster oxidization than in air. Use LMA infusion glaze coated Starbar elements, or type TW, SE, SER or SEU.
CO ₂	2730°F (1500°C)	25	4	No effect, may deposit Carbon
CO	2800°F (1540°C)	25	4	No effect
ARGON/HELIUM	3092°F (1700°C)	Maximum	Maximum	No detrimental effect
WATER DP 60°F	2000°F (1095°C)	30	5	Reacts with SiC to form Silicon Hydrates. Use LMA infusion glaze coated Starbar elements, or type TW, SE, SER or SEU.
50°F	2200°F (1200°C)	35	5.5	
0°F	2500°F (1370°C)	40	6.5	
-50°F	2800°F (1540°C)	45	7	
HALOGENS	1300°F (700°C)	25	4	Attacks SiC and SiO ₂ reducing
HYDROCARBONS	2400°F (1315°C)	20	3	Hot spotting from C pick-up
METHANE	2400°F (1315°C)	20	3	Hot spotting from C pick-up
DRY EXOTHERMIC GAS	2550°F (1400°C)	Maximum	Maximum	Dependent on composition
DRY ENDOTHERMIC GAS	2280°F (1250°C)	Maximum	Maximum	Dependent on composition
VACUUM	2200°F (1205°C)	25	4	To 7 Microns - Below vaporizes SiC. Short term use only
S and SO ₂	2400°F (1315°C)	25	4	Attack SiC

1. In clean, dry air the one piece Starbars can be operated at furnace control temperatures up to 2912°F (1600°C) (Maximum element temperature is 2957°F 1625°C). The three-piece Starbar is limited to 2600°F (1427°C).

2. An atmosphere which contains any percentage of hydrogen whatsoever will react with silicon carbide if the temperature exceeds 2370°F (1300°C).

3. For atmospheres containing water vapor, alkali metal vapors, flux vapors, or oxygen enrichment, we recommend the use of LMA infusion glaze coated elements, or elements of type TW, SE, SER or SEU.

Please contact us for recommendations.