



MOMENTIVE

performance materials

Metal Carbide Coatings on Graphite

For Improved Performance in GaN and SiC Thin Film Equipment

TaC and NbC Coatings

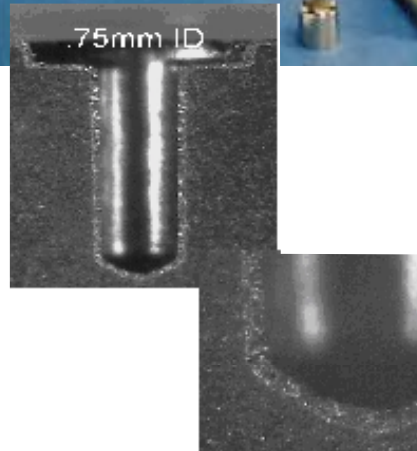
TaC and NbC coatings can be applied to a range of graphite grades for use as wafer carriers, susceptors, etc. TaC and NbC coatings seal the graphite surface to:

- Minimize dusting
- Prevent saturation and attack by reactants
- Minimize auto-doping from graphite
- Provide a hard, smooth electrically conductive surface

Longer Life, Improved Reliability

TaC and NbC are not directly attacked by hot ammonia or hot hydrogen. Metal Carbides are also thermally stable to over 2000°C, even in hot hydrogen. The coating helps protect the underlying graphite from corrosion by these hot gasses.

TaC and NbC coatings protect in GaN growth atmospheres above 1000°C and SiC epi and bulk growth atmospheres above 2000°C.



Purity

Trace Dopant Impurity Levels for TaC & SiC

(measured in ppm by GDMS)

Coating Type	Be	B	N*	Mg	Al	Zn	S	P	Si
SiC	<.01	1.3	150	<.05	.2	<.10	.10	<.05	**
TaC	<.01	.14	87	<.01	.2	<.05	.02	<.01	.15

*These levels may reflect the presence of N₂ carrier gas during deposition. **SiC can react and break down to more reactive species, which may contaminate product and equipment with Si and C.

Uniformity, Coverage

TaC and NbC coatings are more uniform, thinner and penetrate smaller dimensions better than other coatings, thus providing superior protection of graphite, improved dimensional control and greater design freedom.

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