



## REACTION-BONDED SILICON CARBIDE

- A complete range of material offerings and applications
- forming capabilities unmatched in the industry

*M Cubed Technologies' SiC-based composites offer a broad range of solutions for harsh process applications.*



FEATURES

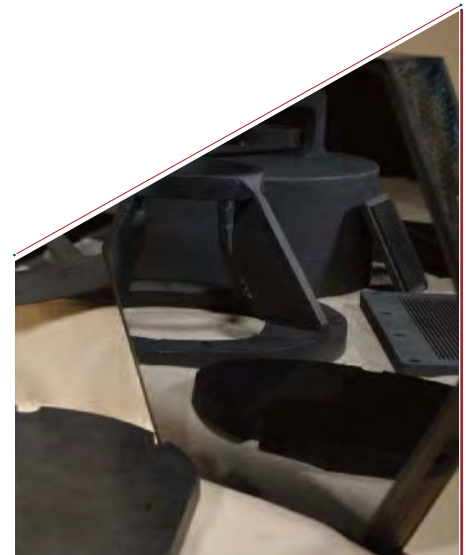
- APPLICATIONS:
  - Coal-fired boilers
  - Mining
  - pulp & paper
- WEAR RESISTANCE:
  - **5 times better** than nitride-bonded SiC
  - **2 times better** than 99.5% alumina
- LIGHT WEIGHT:
  - 80% less dense than tungsten carbide
- KEY BENEFIT:
  - Easier installation and reduced downtime



MATERIAL EXPERTISE

Widest range of reaction-bonded materials in the industry

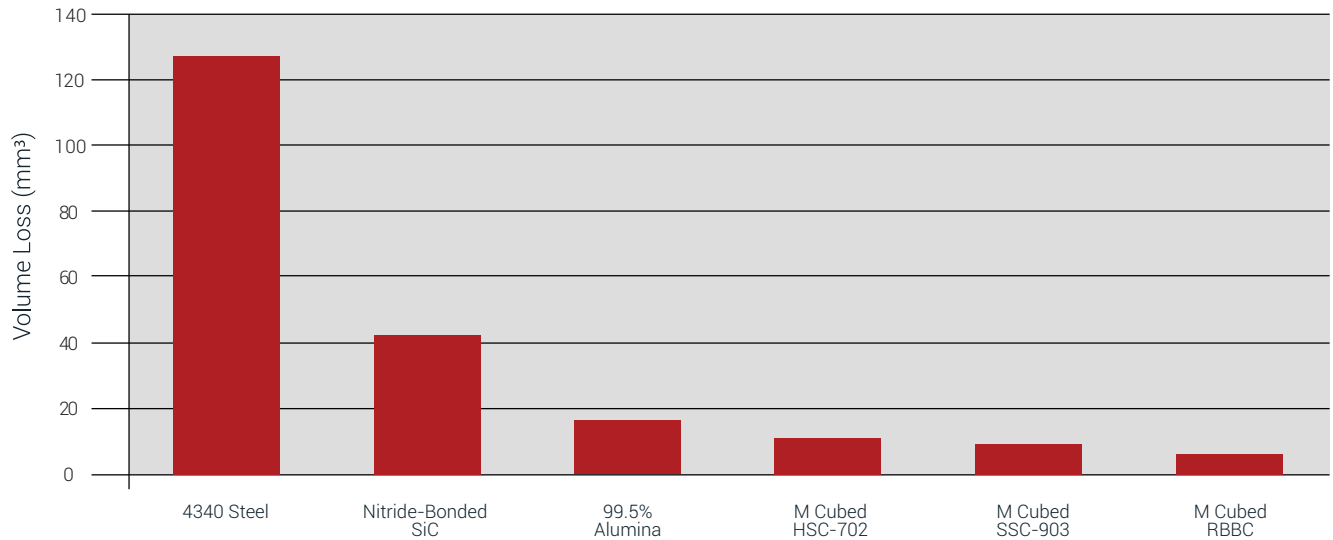
- M CUBED SSC:
  - Reaction-bonded SiC
  - **4 grades available**
- M CUBED HSC:
  - Aluminum toughened RB-SiC
  - Higher fracture toughness than standard RB-SiC
- M CUBED TSC:
  - Titanium-alloyed RB-SiC
  - Interior flow-through channels for thermal control applications
- M CUBED RBBC:
  - Reaction-bonded Boron Carbide
  - Lightest weight, highest wear resistance



SIZE/SHAPE CAPABILITY

- Large, complex shapes with minimal or no machining required
- Cross sections fully-infiltrated up to **6" thick**
- Part size up to **5 feet in length or diameter**
- Multiple grain sizes/structures available
- **Ideal for:**
  - Bullnoses*
  - Fan liners*
  - Hydrocyclone liners*
  - Pump wear components*

## ASTM G65 Procedure A Results



## M Cubed Materials Summary

Particle Reinforcement	
Vol. % Reinforcement	
Matrix	
Density (g/cc)	ASTM C-135
Young's Modulus (GPa)	ASTM E-494
Poisson's Ratio	ASTM E-494
Flexural Strength (MPa)	ASTM C-1161
Fracture Toughness (MPa-m <sup>1/2</sup> )	ASTM C-1421
CTE 25-100°C (ppm/K)	ASTM E-831
Thermal Conductivity (W/m-K)	ASTM E-1461
Knoop Hardness - 2 kg load (kg/mm <sup>2</sup> )	ASTM C-1326

Reaction-Bonded SiC			Aluminum alloy	Titanium alloy	Boron Carbide
SSC-FG	SSC-702	SSC-903	HSC-702	TSC-15	RBBC-751
SiC	SiC	SiC	SiC	SiC	B <sub>4</sub> C
70	70	80	70	80	75
Si	Si	Si	Al-Si	Ti-Si	Si
3.00	3.00	3.01	3.02	3.13	2.56
330	350	360	330	390	380
0.18	0.18	0.17	0.19	0.19	0.18
350	270	165	260	250	280
4	4	4	5.5	4.8	5
3.0	2.9	3.1	4.4	3.0	4.8
150	170	170	200	210	50
1080	1100	1450**	1000	1400	1550

\* SiC Composites are not recommended for use in high pH (basic) environments

\*\* This represents an average of multiple samples. Hardness readings are inherently variable on coarse-grained composites such as SSC-903

Note: All of the above information is based upon internal testing. Although we believe the results to be reliable we expressly do not represent, warrant or guarantee their accuracy, completeness or reliability.

[www.mmmt.com](http://www.mmmt.com)



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