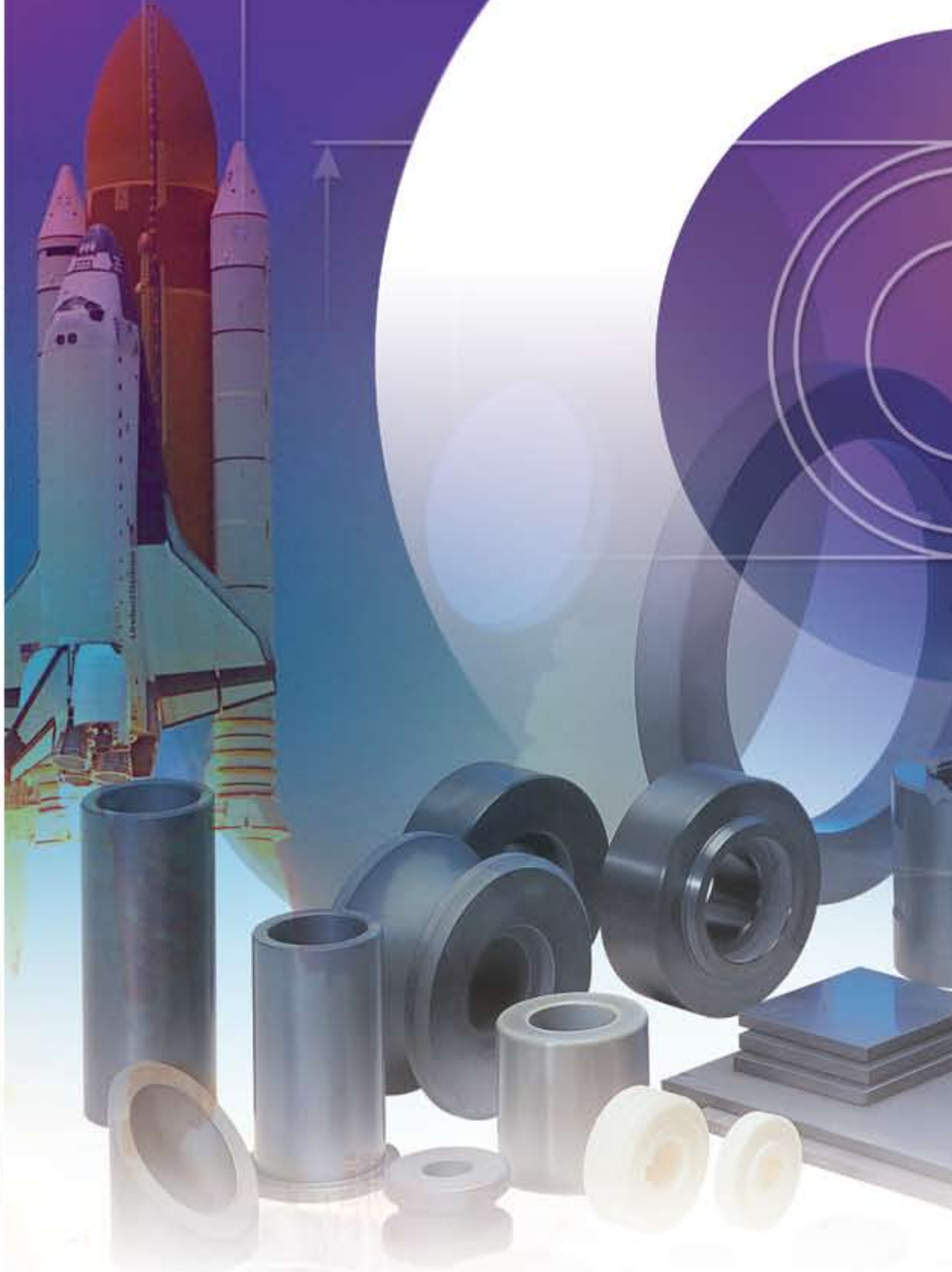
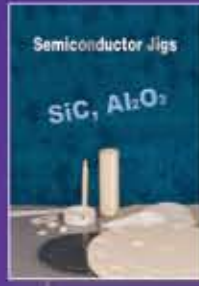


# CERAMIC WEAR PARTS


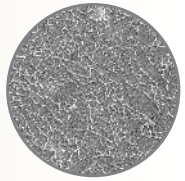
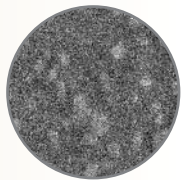
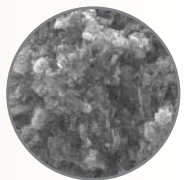
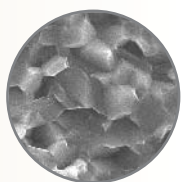
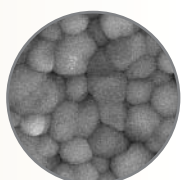
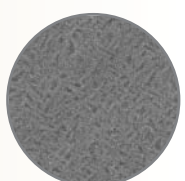



## Grade

TaeguTec Ceramic Wear		SiC	Si <sub>3</sub> N <sub>4</sub>			Al <sub>2</sub> O <sub>3</sub> TIC	ZrO <sub>2</sub>		Al <sub>2</sub> O <sub>3</sub>		
		AC10	AS10	AS20	AS70	AB30	AW50-Y	AW50-M	AW10-998	AW10-990	AW10-960
Density	g/cm <sup>3</sup>	3.18	3.4	3.5	2.4	4.25	6.05	5.7	3.98	3.85	3.70
Hardness	HV	2500	1600	1500	200	2100	1250	1200	1700	1500	1350
Bending Strength (4-Pt MOR)	MPa	450	850	950	150	800	900	700	400	350	300
Compressive Strength	MPa	3500	4000	3500	-	3500	2500	1800	2500	2300	2100
Fracture Toughness	MPa.m <sup>1/2</sup>	3.5	5.2	5.5	5	3.5	6	9	3	3	3
Young's Modulus	GPa	430	290	310	100	410	200	200	390	360	320
Poisson`s Ratio		0.16	0.28	0.28	0.26	0.2	0.31	0.3	0.23	0.23	0.23
Friction Coeff.	0.5m/sec(5N)	0.6	0.9	0.7	-	1	0.6	0.85	1.1	1.1	1.1
Thermal Conductivity	W/(m.K)	100	25	40	32	40	3	3	35	30	25
Thermal Expansion Coeff.	10 <sup>-6</sup> /K	4.0	3.0	3.0	-	7.5	11	10	7.9	7.9	7.5
Thermal Shock Resistance	ΔT °C	400	800	900	1300	250	300	400	200	200	250
Maximum Use Temp.	°C (static con.)	1800	1300	1400	1600	1700	1500	500	1600	1600	1600
Grain Size	μm	5	0.7	0.7	-	1	1	0.3	2.5	3.5	5
Elongated Grain Size	μm	-	4	4	-	-	-	65	-	-	-
Chemical stability	Acid (HCl)	Excellent	Good			Good	Good		Normal		
	Alkali (KOH)	Excellent	Good			Good	Good		Poor		

■ Excellent 
 ■ Good 
 ■ Normal 
 ■ Poor

## Features & Application

Base Material	Grade	Features and application	Micro Structure (X5000)
<b>SiC</b>	<b>AC 10</b>	<ul style="list-style-type: none"> <li>• High wear resistance and corrosion resistance.</li> <li>• High hardness and strength at elevated temperature.</li> <li>• Low thermal expansion coefficient and friction coefficient.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Mechanical seals, bearings.</li> <li>• Parts for valves and pumps.</li> <li>• Jigs for semiconductor equipment and furnace parts.</li> </ul>	
<b>Si<sub>3</sub>N<sub>4</sub></b>	<b>AS 10</b>	<ul style="list-style-type: none"> <li>• High wear resistance and corrosion resistance.</li> <li>• High hardness and strength at elevated temperature.</li> <li>• Low thermal expansion coefficient and friction coefficient.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Pin-chucks, guide rolls.</li> <li>• Pins and jigs for heat treatment.</li> <li>• Nozzles.</li> </ul>	
	<b>AS 20</b>	<ul style="list-style-type: none"> <li>• Good thermal shock resistance.</li> <li>• Uniform performance and durability.</li> <li>• High hardness and strength at elevated temperature.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Pin-chucks, guide rolls.</li> <li>• Dies for hot extrusion and drawing.</li> <li>• Nozzles.</li> </ul>	
	<b>AS 70</b>	<ul style="list-style-type: none"> <li>• Excellent machinability.</li> <li>• Excellent chemical stability at elevated temperature.</li> <li>• High thermal shock resistance.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Side dams for molten iron.</li> <li>• Crucibles for high temperature applications.</li> <li>• Nozzles, tubes.</li> </ul>	
<b>Al<sub>2</sub>O<sub>3</sub></b>	<b>AW 10</b>	<ul style="list-style-type: none"> <li>• High strength and hardness.</li> <li>• Excellent wear resistance and electrical insulation.</li> <li>• Wide range of application.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Jigs for semiconductor equipment.</li> <li>• Mechanical seals, faucet valves.</li> <li>• Parts for textile and industrial machines.</li> </ul>	
<b>ZrO<sub>2</sub></b>	<b>AW 50-Y</b>	<ul style="list-style-type: none"> <li>• High strength and fracture toughness at room temperature.</li> <li>• Low friction coefficient and high wear resistance.</li> <li>• High chipping resistance.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Parts for textile and industrial machines.</li> <li>• Knives for magnetic tapes.</li> <li>• Pump shafts, bearing valves.</li> </ul>	
	<b>AW 50-M</b>	<ul style="list-style-type: none"> <li>• High fracture toughness.</li> <li>• Low friction coefficient and high wear resistance.</li> <li>• High thermal shock resistance.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Dies for hot extrusion and drawing.</li> <li>• Rolls for can making industry.</li> <li>• Parts for valves, bearing and pumps.</li> </ul>	
<b>Al<sub>2</sub>O<sub>3</sub>-TiC</b>	<b>AB 30</b>	<ul style="list-style-type: none"> <li>• High strength, hardness and fracture toughness.</li> <li>• Low friction coefficient.</li> <li>• Uniform performance and durability.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Magnetic heads for HDD.</li> <li>• Paper sliders.</li> <li>• Parts requiring higher strength and hardness than alumina at room temperature.</li> </ul>	

## Silicon Nitride Ceramics

### AS 10



#### Features

- High strength and fracture toughness
- High hardness at elevated temperature
- Excellent high-temperature strength
- Uniform performance and durability

#### Application

- Pin-chucks, guide rolls
- Pins and jigs for heat treatment
- Nozzles
- Gate blocks for aluminum casting
- Dies for hot extrusion and drawing

### AS 20



#### Features

- Good thermal shock resistance
- Uniform performance and durability
- High hardness and strength at elevated temperature

#### Application

- Pin-chucks, guide rolls
- Dies for hot extrusion and drawing
- Nozzles



## Silicon Carbide Ceramics **AC 10**



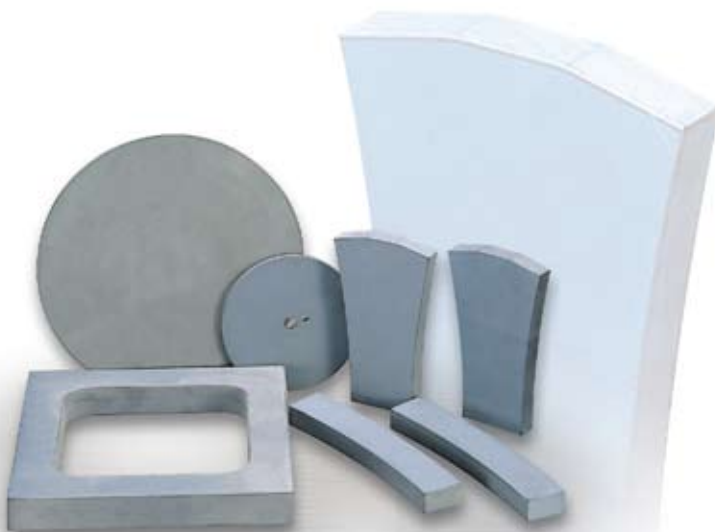
### Features

- High wear resistance and corrosion resistance
- High hardness and strength at elevated temperature
- Low thermal expansion coefficient and friction coefficient
- Uniform performance and durability

### Application

- Mechanical seals, bearings
- Parts for valves and pumps
- Jigs for semiconductor equipment and furnace parts
- Grit-blast nozzle liners
- Thermocouple protection tubes and high temperature liners (parts of waste incinerator)
- Various bulletproof products

## Boron Nitride Ceramics **AS 70**




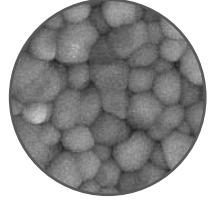
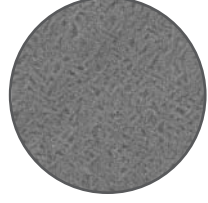
### Features

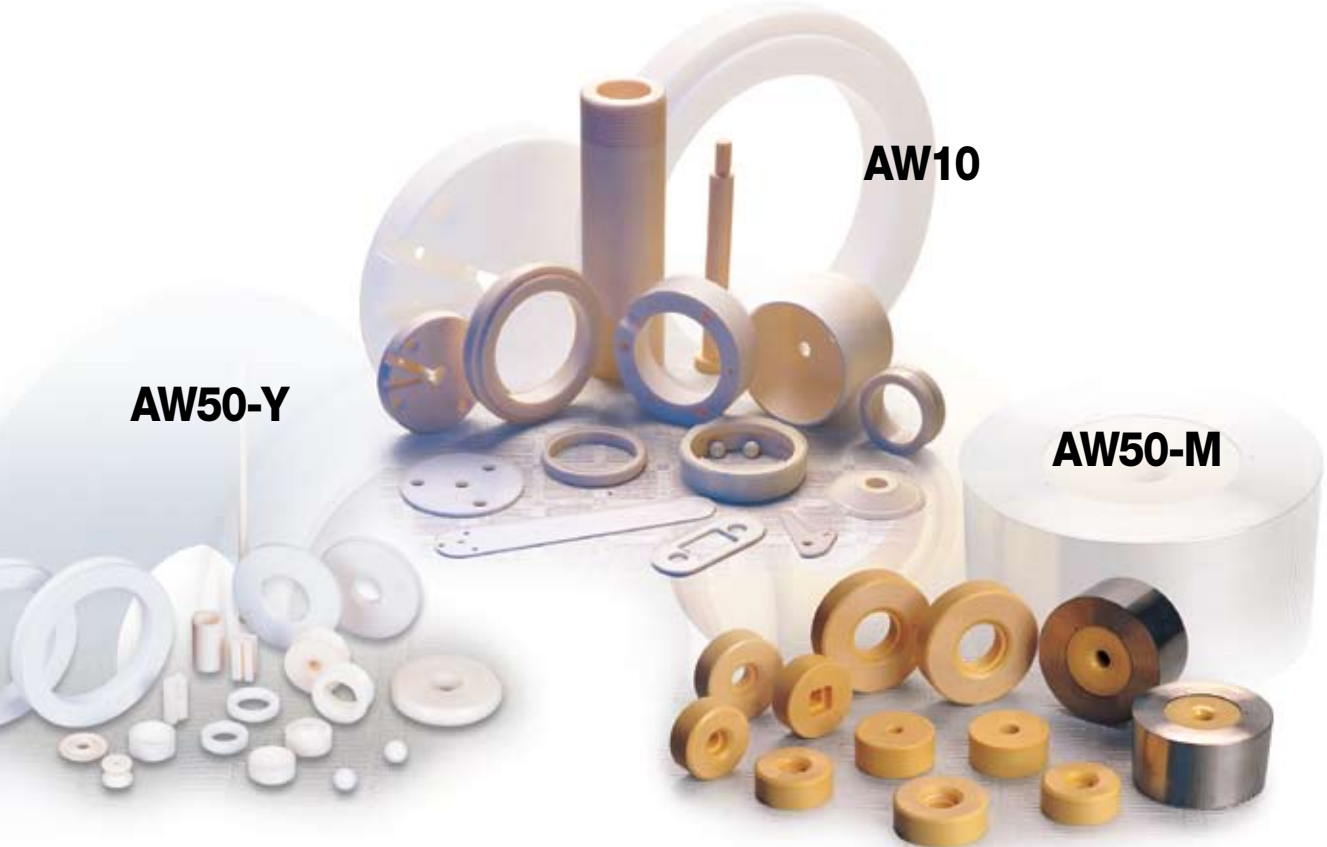
- Excellent machinability
- Excellent chemical stability at elevated temperature
- High thermal shock resistance
- High corrosion resistance for molten iron

### Application

- Side dams for molten iron
- Crucibles for high temperature applications
- Nozzles, tubes
- Precision parts for electronics and medical instruments

**Oxide Ceramics AW10/AW50-Y/AW50-M**

Grade	Features	Application	Microstructure (x5000)
<b>AW10</b>	<ul style="list-style-type: none"> <li>• High strength and hardness.</li> <li>• Excellent wear resistance and electrical insulation.</li> <li>• Wide range of application.</li> </ul>	<ul style="list-style-type: none"> <li>• Jigs for semiconductor equipment.</li> <li>• Mechanical seals, faucet valves.</li> <li>• Parts for textile and industrial machines.</li> </ul>	
<b>AW50-Y</b>	<ul style="list-style-type: none"> <li>• High strength and fracture toughness at room temperature.</li> <li>• Low friction coefficient and high wear resistance.</li> <li>• High chipping resistance.</li> </ul>	<ul style="list-style-type: none"> <li>• Parts for textile and industrial machines.</li> <li>• Knives for magnetic tapes.</li> <li>• Pump shafts, bearing valves.</li> </ul>	
<b>AW50-M</b>	<ul style="list-style-type: none"> <li>• High fracture toughness.</li> <li>• Low friction coefficient and high wear resistance.</li> <li>• High thermal shock resistance.</li> </ul>	<ul style="list-style-type: none"> <li>• Dies for hot extrusion and drawing.</li> <li>• Rolls for can making industry</li> <li>• Parts for valves, bearing and pumps.</li> </ul>	



# Al<sub>2</sub>O<sub>3</sub>-TiC Ceramics AB 30

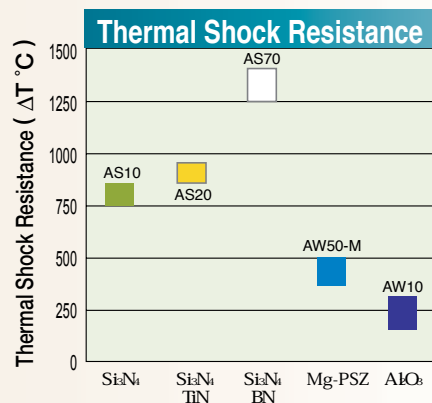
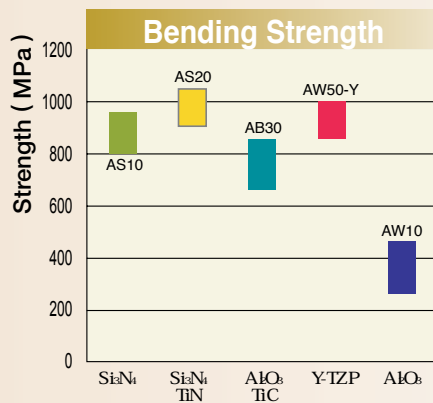
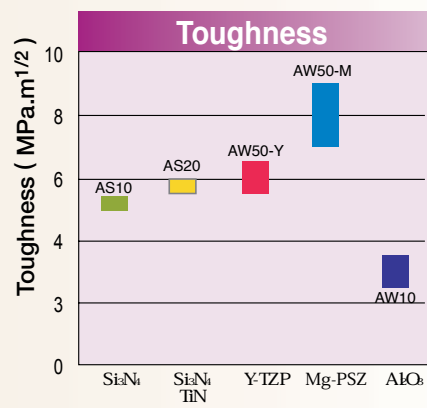
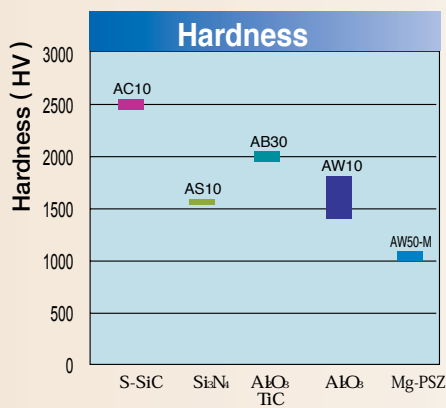


## Features

- High strength, hardness and fracture toughness.
- Low friction coefficient
- Uniform performance and durability

## Application

- Magnetic heads for HDD
- Paper sliders
- Parts requiring higher strength and hardness than alumina at room temperature





## Industrial Products



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