Si3N4 – SILICON NITRIDE

The most widely used type of ceramic due to very high resistance to wear and abrasion in general. It has a micro-structure specially designed for applications subjet to great stress.

It does not require lubrication, it is resistant to corrosion, anti-magnetic and electrically insulating and it continue to be efficient at high temperatures up to + 1400 C°. it combines extreme hardness with a high precision ball.

Si3N4 balls are widely used in high precision bearings in the airspace industry, for machine tools, measurement instruments, mechanical centrifuges, radar and missiles, pumps and compressors..

CHEMICAL RESISTANCE

Inert to most acids

PROPERTIES OF MATERIALS

PHYSICAL PROPERTIES	
Structure	Multi-Crystal
Chemical formula	Si3N4
Purity %	95.00
Density g/cm	3.20
Operating temperature	1100° C
Melting point	1900° C
Softening point	100° C
Specific heat at 25° C (cal/g/° C) Thermal conductivity	0.17 29 W/m° K

MECHANICAL PROPERTIES	
Vickers Hv10 hardness(N/mm2)	24000
Breaking modulus at 25° C (N/mm2)	700
Compressive strength at 25° C (N/mm2)	2500

Al_2O_3 99,55% - ALUMINA OXIDE

This material has a multi-crystal structure and an excellent resistance to abrasion and high temperatures.

It is resistant to most corrosive agents, but it is not recommended for use in contact with hydrochloric and hydrofluoric acid or strong alkaline solutions.

This type of balls are used in valves, pumps and ball bearings.

CHEMICAL RESISTANCE

Inert to most acids, but not recommended in environments with hydrochloric and hydrofluoric acids or strong alkaline solutions.

PROPERTIES OF MATERIALS

PHYSICAL PROPERTIES	
Structure	Multi-Crystal
Chemical formula	Al_2O_3
Purity %	99.8
Density g/cm	3.90
Operating temperature	1800° C
Melting point	2050° C
Softening point	1725° C
Specific heat at 25° C (cal/g/° C) Thermal conductivity	0.25 29 W/m° K

MECHANICAL PROPERTIES	
Vickers Hv10 hardness(N/mm2)	16500
Breaking modulus at 25° C (N/mm2)	470
Compressive strength at 25° C (N/mm2)	2354

ZrO2 – ZIRCONIUM OXIDE

This material, compared has a high degree of compactness and considerable flexural strength, which makes it very reliable.

It also has an extraordinarily low thermal conductivity.

CHEMICAL RESISTANCE

Inert except to hydrofluoric acid and strong concentrations of sulphuric acid.

PROPERTIES OF MATERIALS

PHYSICAL PROPERTIES	
Structure	Multi-Crystal
Chemical formula	ZrO2
Purity %	97.00
Density g/cm	5.50
Operating temperature	1000
Melting point	
Softening point	
Specific heat at 25° C (cal/g/° C) Thermal conductivity	9 29 W/m° K

MECHANICAL PROPERTIES	
Vickers Hv10 hardness(N/mm2)	20000
Breaking modulus at 25° C (N/mm2)	600
Compressive strength at 25° C (N/mm2)	2100