

HINDALCO CHEMICALS

FOR

# Ceramics



Everything in alumina....

# HINDALCO

An industry leader in aluminium and copper, Hindalco Industries Limited, the metals flagship company of the Aditya Birla Group is the world's largest aluminium rolling company and one of the biggest producers of primary aluminium in Asia. Its copper smelter is amongst the largest single location custom smelter globally.

Hindalco operates 51 units in 13 countries and includes a workforce of 34,000 representing 15 different nationalities. Hindalco's consolidated turnover was around USD 17 Billion in FY15.

Hindalco has units across India in 10 locations while Hindalco Novelis has 25 manufacturing facilities across 9 countries in 4 continents. The company's production sites are spread across Asia, Europe, North and South America.



Belgaum Operations

## HINDALCO CHEMICALS BUSINESS

Hindalco produces metallurgical alumina, chemical grade aluminas and hydrates. These chemical grade aluminas and hydrates are products of the technological innovations of our R&D team, Hindalco Innovation Centre - Alumina. It is recognized by the Department of Scientific & Industrial Research (DSIR), Government of India. Our chemicals serve a wide range of customers around the world with a wide spectrum of grades, suitable for diverse applications, like high grade refractories, ceramics, fire retardant plastics, alum, zeolite and many more. Today, our customised, tailor-made products serve variety of customers in 37 countries across the world.

With an installed capacity of 380,000 TPA, we have the potential of catering to the specific demands of our customers.

In order to further enhance its global reach and supplement its present product portfolio, Hindalco has also started a chemical grade alumina plant in Brazil at Ouro Preto with a capacity of 145,000 TPA.

# CERAMICS :

Standard Ceramics are used by various industries like infrastructure, household etc. These classic ceramic bodies consist of components of plastic and non plastic materials. These can be categorized in following heads

- Frits
- Glaze and Engobes
- Tableware
- High Voltage Insulator

Technical Ceramics can be categorized as dense and porous ceramics. These Ceramics use high purity of Alumina to have better performance in mechanical strength, thermal and electrical stability.

- Structural Ceramics
- Grinding Media
- Ceramic Liners
- Advanced Ceramics

### Role and Advantages of Alumina in Ceramics:

- ☐ It improves thermal shock, abrasion and scratch resistance
- ☐ It is one of the most chemically inert oxides.
- ☐ It has excellent hardness.
- ☐ It is insoluble in water, most inorganic acids and alkalis
- ☐ Improve mechanical and thermal properties
- ☐ It improves dielectric and electrical properties.
- ☐ It adds aesthetic values to ceramics



## RANGE OF ALUMINA

**1. Coarse Aluminas :** These aluminas are used in the manufacturing of dense Ceramics. These aluminas varies from low calcined to hard calcined. Low calcined aluminas can be used in standard ceramic application like Glaze, Frits etc. Hard calcined aluminas have better shrinkage and structural properties. These hard calcined aluminas can be used in technical ceramics like Grinding Media, Ceramic Rings, HV Insulators etc.

		STANDARD CERAMICS			TECHNICAL CERAMICS		
Chemical Properties	Unit	SX	G	B	HT	GMU35	A12H
Na <sub>2</sub> O	%	0.40	0.40	0.40	0.35	0.35	0.35
SiO <sub>2</sub>	%	0.02	0.02	0.02	0.02	0.2	0.2
Fe <sub>2</sub> O <sub>3</sub>	%	0.02	0.02	0.02	0.02	0.2	0.2
Physical Properties							
SSA	m <sup>2</sup> /g	70	10	1	0.7	0.8	4
+200 mesh	%	55	55	55	55	55	55
+325 mesh	%	80	80	80	80	80	80

\* Typical Values



**2. Ground Alumina:** These are used for porous and structural ceramics. These alumina can be used in Glaze and Engobes for Tablewares and Tiles. For Technical Ceramics there can be used in Auto gas filter, Trap filter, Foam filters, Filtration Membranes and HV Insulators.

**Fine Alumina:** These aluminas have consistent particle size distribution and controlled top cut.

**Milled Alumina:** These alumina have wide particle size distribution which improves packing efficiency.

		FINE					MILLED			
Chemical Properties	Unit	HTM30	SRM30	SRN70	BC15	NSR03	AE304CB	AE305CB	WDR4	
Na <sub>2</sub> O	%	0.35	0.35	0.35	0.35	0.35	0.25	0.25	0.35	
SiO <sub>2</sub>	%	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
Fe <sub>2</sub> O <sub>3</sub>	%	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
Physical Properties										
SSA	m <sup>2</sup> /g	0.8	1.2	1.2	12	1.2	1.2	1.2	6	
d50(Sedigraoh 5120)	µm	4	5	7	5	3	3.5	4.5	1	

\* Typical Values



**3. Low Soda Alumina:** These are used for high purity ceramics application like electronics, semi-conductors, solar panels, catalytic carrier, ballistic applications

Chemical Properties	Unit	GMU10	HIM06A	HTM10	LSR01	MR10SG	LHR1SG
Na <sub>2</sub> O	%	0.06	0.06	0.06	0.06	0.06	0.06
SiO <sub>2</sub>	%	0.05	0.05	0.05	0.05	0.05	0.05
Fe <sub>2</sub> O <sub>3</sub>	%	0.02	0.02	0.02	0.02	0.02	0.02
Physical Properties							
SSA	m <sup>2</sup> /g	0.8	1	0.8	1.2	2	6.5
d50(Sedigraoh5120)	µm	80	3	4	3	2	0.7

\* Typical Values

**Alumina for Hi-Tech Ceramics :** These low soda aluminas are produced by controlled calcination in specialized kilns for 99% alumina ceramics. These unground aluminas have controls on specific surface area and alpha particle size. They can be used in applications like Grinding Media, Bio Ceramics, Cutting and Abrasive tools, HF Chip Package, IC Chips, Spark Plugs, Catalytic Carrier etc.

Specific Characteristics

Na<sub>2</sub>O 0.06

SSA: 0.6 to 1.4

UCS: 1.4 to 2.5

Further details would be available on request.

## Hindalco Innovation Centre-Alumina (HIC-A)



HIC-A is recognised by the Department of Scientific & Industrial Research (DSIR), Government of India. With over 25 years of experience, the Research & Development Team of expert scientists carry out research in the field of bauxite, processibility studies of the Bayer Process, product development, quality control and application research for enhanced understanding of the end-usage of speciality chemicals.

## Application support Partners in Progress

State-of-the-art Lab equipment at HIC-A includes :

- Scanning Electron Microscope for studying crystal shape and structure
- Sedigraph Particle Size Analyser
- X-Ray Fluorescence for elemental analysis
- X-Ray Diffraction for analysing phases in alumina
- Surface Area Analyser
- Infrastructure for carrying out application engineering studies and new product development.



## Quality Control Certification



## Customised Aluminas to achieve your mission of

- Conserving Energy
- Reducing Contamination
- Improving Lives

## Customer Service with...



## Our Global Reach



For more details, contact :

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