

# **BAUXITE THRESHOLD VALUES**

**Hindalco Industries Limited  
West Coast Mines**

**KOLHAPUR  
MAHARASHTRA**

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# BAUXITE





# BAUXITE MINERALOGY

- Bauxite is basically an aluminous rock containing hydrated aluminium oxide as the main constituent and iron oxide, silica and titanium in varying proportions.
- Hydrated aluminium oxides present in the bauxite ore are **diaspore, boehmite and gibbsite**.
- The iron oxide in bauxite ore is present as **hematite or goethite, silica as clay and free quartz, and titania as ilmenite or rutile**.
- Bauxite is an **essential ore of aluminium** which is one of the most important non-ferrous metals used in the modern industry. It is also an essential ore for refractory, abrasive and chemical industries.



# LATERITES





# BAUXITE





## ***Threshold Value of Minerals***

*“ Threshold value of minerals means limit prescribed by the Indian Bureau of Mines from time to time based on the beneficiability and or marketability of a mineral for a given region and a given time, below which a mineral obtained after mining can be discarded as waste.”*

# BAUXITE THRESHOLD VALUES

As per earlier IBM notifications

SI No	Notification of 1990			Notification of 2009		
	Region	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Region	Al <sub>2</sub> O <sub>3</sub>	R.SiO <sub>2</sub>
1	Eastern Ghats (Panchpatmali, Sapparia, Korukunda etc)	< 35 %	> 5 %	Applicable to all regions	(i) For Aluminous Laterite : 20% (Min)	-
2	Western Ghats (Eg Dhangarwadi), Inland High level Plateux (Eg. Amarkantak, Phutkapahar, Lohardaga & Gumla), Plateaux and Hillocks (Eg. Katni deposit)	< 44 %	> 4.5 %		(ii) For Bauxite : 30% (Min)	Reactive Silica 5% (Max)
3	Coastal Plains (Eg Kutch deposits and other deposits of Gujarat)	< 42 %	> 4.5 %			



# PARENT ROCKS

**BASALT**



**KHONDALITE**



**CHARNOKITE**



**AMPHIBOLITE**



**SAND STONE**



**GRANITE**



**SCHISTS**



**SHALE**



**GNEISS**





# BAUXITE THRESHOLD VALUES

The total alumina in bauxite gets contributed by following minerals :

Gibbsite :  $(Al_2O_3 \cdot 3H_2O)$ , Boehmite:  $(Al_2O_3 \cdot H_2O)$ , & Kaolinitic clay :  $Al_2SiO_5(OH)_4$

West Coast and East Coast bauxite deposits are predominantly gibbsitic in nature. Hence alumina plants are designed for alumina extraction at “low temperature” digestion”.

Boehmite content in these bauxite is around 4 %.

Reactive silica does contain 85% alumina which can not be extracted.

Considering the current threshold value of Total Alumina :  $<30\%$  &  $k.SiO_2 > 5.0\%$ , the alumina available for extraction in low temperature digestion will be 21 to 22 % only.

This increases the bauxite consumption factor, additional red mud generation in the process and hence increases cost of production.

# BAUXITE THRESHOLD VALUES

## Proposed Threshold values

Sl No	Notification of 1990			Notification of 2009			Now Proposed	
	Region	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Region	Al <sub>2</sub> O <sub>3</sub>	R.SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	R.SiO <sub>2</sub>
1	Eastern Ghats (Panchpatmali, Sapparia, Korukunda etc)	< 35 %	> 5.0 %	Applicable to all regions	(i) For Aluminous Laterite : 20% (Min)	-	< 40 %	> 5.0 %
2	Western Ghats (Eg Dhangarwadi), Inland High level Plateaux (Eg. Amarkantak, Phutkapahar, Lohardaga & Gumla), Plateaux and Hillocks (Eg. Katni deposit)	< 44 %	> 4.5 %		(ii) For Bauxite : 30% (Min)	Reactive Silica 5% (Max)	< 35 %	> 5.0 %
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**THANK YOU**