



# SPECIFICATIONS FOR RAW MATERIALS

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## BIKANER CLAY POWDER

1. General : This Specification governs the requirements of Bikaner Clay. The clay shall be free from foreign material such as sand, red ochre and lumps.
2. Application : To serve as one of the constituents in the Ceralin.
3. Form : It should be in powder form
4. Physical Properties :
  - a) Particle size above  $10\mu\text{m}$   $9\pm 4\%$
  - b) Free iron content shall be less than 0.05%.
  - c) 75 Microns sieve : 100% Pass
  - d) Retention on  $45\mu\text{m}$  sieve : 1.5% Max.
  - e) Water absorption less than 0.5%
  - f) Green Strength Min. 50 kgs/cm<sup>2</sup>
5. Chemical Composition :
  - a)  $\text{SiO}_2$  :  $57.5 \pm 3.5\%$
  - b)  $\text{Al}_2\text{O}_3$  :  $28.5 \pm 2.5\%$
  - c)  $\text{Fe}_2\text{O}_3$  : Less than 2%
  - d) L.O.I :  $11.0 \pm 2.0\%$
6. Packing : 50 kg in HDPE double bags

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## BIKANER CLAY

1. General : This Specification governs the requirements of Bikaner Clay.
2. Application : To serve as one of the constituents in the manufacture of porcelain body mass.
3. Particle Size : Particle Size  
above 10  $\mu\text{m}$  :  $9 \pm 4$  %
4. Residue over 45 $\mu\text{m}$ -sieve : Maximum 1.5 %
5. % Water absorption : Less than 0.5 %
6. Green Strength (kgs/Cm<sup>2</sup>): Minimum 50.0
7. Viscosity :  $\leq 27$  poise
8. Freedom from Defects : The clay shall be free from foreign materials such as sand and red ochre.
9. Chemical Composition :
  - a) SiO<sub>2</sub> ....  $57.5 \pm 3.5$  %
  - b) Al<sub>2</sub>O<sub>3</sub> ....  $28.5 \pm 2.5$  %
  - c) Fe<sub>2</sub>O<sub>3</sub> .... Less than 2.0 %
  - d) L.O.I.....  $11.0 \pm 2.0$  %

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# SPECIFICATIONS FOR RAW MATERIALS

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## CALCINED ALUMINA FOR HVAC PORCELAIN

1. General : This Specification governs the requirement of Calcined Alumina
2. Application : To serve as one of the constituents in HVAC Alumina porcelain.
3. Freedom from Defects : Shall be free from foreign materials.
4. Properties :
  - a)  $Al_2O_3$  .... 99.5 % Minimum
  - b)  $Na_2O$  .... 0.3 % Maximum
  - c) Average Particle Size  
( $D_{50}$  Value) : 5.5  $\mu m$  (Max.)  
% Particle Size  $>10 \mu m$  : 14 (Max.)
  - d) Alpha Content : 95% Minimum

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# SPECIFICATIONS FOR RAW MATERIALS

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## CALCINED ALUMINA FOR CERALIN

1. General : This Specification governs the requirement of Calcined Alumina for Ceralin.
2. Application : To serve as one of the constituents in the manufacture of Ceralin
3. Freedom from Defects : Shall be free from foreign materials & supplier should guarantee minimum 90 % Alpha content
4. Properties :
  - % Al<sub>2</sub>O<sub>3</sub> : 99.2 % Minimum
  - % Na<sub>2</sub>O : 0.35 % Maximum
  - % Particle Size >10 µm: 20% Max.

Average Particle Size  
(D<sub>50</sub> Value) : 4.0 to 6 µm

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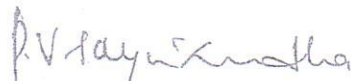
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## CALCINED ALUMINA FOR HVDC/HVACPORCELAIN

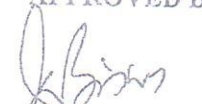
1. General : This Specification governs the requirement of Calcined Alumina.
2. Application : To serve as one of the constituents in the manufacture of HVDC / HVAC porcelain body.
3. Freedom from Defects : Shall be free from foreign materials & supplier should guarantee min.95% Alpha content.
4. Properties :
  - Average Particle Size (D<sub>50</sub> Value) : 5.5 µm Max.
  - % Particle Size above 10 µm : 14.0 max.
  - % Al<sub>2</sub>O<sub>3</sub> : 99.5 Min.
  - % Na<sub>2</sub>O : 0.10 Max

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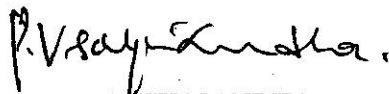
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## ORDINARY PORTLAND CEMENT

1. General : This specification governs the Requirements of Ordinary Portland Cement
2. Visual Appearance : Should be free from moisture or water and should not have any nodules formed due to moisture.
3. Physical Properties : Optimum water content:  $29.5 \pm 2.0\%$   
Initial setting time: 2 to 4.0 Hours  
Final Setting time : 3 to 5 Hours  
Flow value :  $200 \pm 5$  mm
4. Chemical Composition : a) CaO ....  $62 \pm 3.0 \%$   
b) MgO ....  $1.5 \pm 0.5 \%$   
c) SO<sub>3</sub> ....  $2.2 \pm 0.6 \%$   
d) L.O.I .... Less than 5 %
5. Mechanical Strength : Tensile strength :Min 40Kg/cm<sup>2</sup>  
or  
Compressive strength :Min 700kg/cm<sup>2</sup>
6. Autoclave Expansion :  $\leq 0.12 \%$

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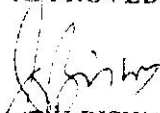
## SPECIAL PORTLAND CEMENT

1. General : This Specification governs the requirements of special Portland cement.
2. Visual Appearance : Should be free from moisture or Water and should not have any Nodules formed due to moisture.
3. Physical Properties : Optimum water content : Max. 22 %  
Initial Setting Time :  
80 Minutes to 200 Minutes  
Final Setting Time :  
135 Minutes to 240 Minutes
4. Mechanical Strength : Tensile Strength : Min 40 kg/cm<sup>2</sup>  
(After 6 days Hot  
water curing) or  
Compressive Strength: Min 700kg/cm<sup>2</sup>
5. Autoclave Expansion :  $\leq 0.12\%$

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# SPECIFICATIONS FOR RAW MATERIALS

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## CALUNDUM CEMENT

1. General : This Specification governs the requirement of Calundum Cement.
2. Visual Appearance : Should be free from moisture or water and should not have any nodules formed due to moisture.
3. Application : To serve as a binder in the assembly of Ceralin in MS bends.
4. Physical Properties :
  1. Minimum compressive strength of 3:1 (cement:water) vibrated mortar using graded standard sand.  
At 1 day : Minimum 300 kgs/cm<sup>2</sup>  
At 3 days: Minimum 350 kgs/cm<sup>2</sup>
  2. Setting time :  
Initial(min): 15 to 45 minutes.  
Final(max) : 180 minutes
5. Chemical Composition :
  - a) Al<sub>2</sub>O<sub>3</sub> .... > 46 %
  - b) Fe<sub>2</sub>O<sub>3</sub> .... < 5 %

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## FELCITE POWDER

1. General : This Specification governs the requirements of Felcite powder.
2. Application : To serve as one of the constituents in the manufacture of porcelain body mass.
3. Particle Size : Powder
  1. Residue over 1000  $\mu\text{m}$  sieve shall be less than 1.5 %.
  2. Below 150  $\mu\text{m}$  sieve shall be between 50% to 75%.
4. Freedom from Defects : Shall be free from foreign materials. Free Iron in powder shall not exceed 0.01%.
5. Chemical Composition :
  - a)  $\text{SiO}_2$  .... 75.5  $\pm$  2.5 %
  - b)  $\text{Al}_2\text{O}_3$  .... 15.0  $\pm$  1.5 %
  - c)  $\text{Fe}_2\text{O}_3$  .... Less than 1.5 %
  - d)  $\text{KNaO}$  .... 8.0  $\pm$  1.0 %
  - e) L.O.I..... Less than 1.0 %

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## SPECIFICATIONS FOR RAW MATERIALS

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### SERICITE POWDER

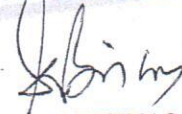
1. General : This Specification governs the requirements of Sericite powder.
2. Application : To serve as one of the constituents in the manufacture of porcelain body mass.
3. Particle Size : Powder
  1. Residue over 1000  $\mu\text{m}$  sieve shall be less than 1.0 %.
  2. Below 150  $\mu\text{m}$  sieve shall be above 75%.
4. Freedom from Defects : Shall be free from foreign materials. Free Iron in powder shall not exceed 0.01%.
5. Chemical Composition :
  - a)  $\text{SiO}_2$  .... 50.0  $\pm$  5.0 %
  - b)  $\text{Al}_2\text{O}_3$  .... 32.5  $\pm$  2.5 %
  - c)  $\text{Fe}_2\text{O}_3$  .... Less than 1.0 %
  - d)  $\text{KNaO}$  .... 8.0  $\pm$  1.0 %
  - e) L.O.I..... Less than 5.0 %

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# SPECIFICATIONS FOR RAW MATERIALS

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## L.A.PYROPHYLLITE POWDER

1. General : This Specification governs the requirements of L.A.Pyrophyllite.
2. Application : To serve as one of the constituents in the manufacture of porcelain body mass.
3. Particle Size : Powder
  1. Residue over 1000  $\mu\text{m}$  sieve shall be less than 0.2 %.
  2. Below 150  $\mu\text{m}$  sieve shall be above 80%.
4. Freedom from Defects : Shall be free from foreign materials. Free Iron in powder shall not exceed 0.01%.
5. Chemical Composition :
  - a)  $\text{SiO}_2$  ....  $63.5 \pm 3.0$  %
  - b)  $\text{Al}_2\text{O}_3$  ....  $28.0 \pm 2.0$  %
  - c)  $\text{Fe}_2\text{O}_3$  .... Less than 1.0 %
  - d)  $\text{KNaO}$  .... Less than 1.5 %
  - e) L.O.I.....  $4.5 \pm 1.5$  %

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# SPECIFICATIONS FOR RAW MATERIALS

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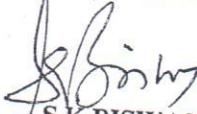
## TALC

1. General : This Specification governs the requirements of Talc Powder.
2. Application : To serve as one of the constituents in the manufacture of alumina body and Ceramic glaze.
3. Form : It should be supplied in powder form and should pass through 150  $\mu\text{m}$  sieve. (Data for information only)
4. Chemical Composition :
  - a)  $\text{SiO}_2$  ....  $61.0 \pm 2.0$  %
  - b)  $\text{MgO}$  ....  $30.0 \pm 2.0$  %
  - c)  $\text{CaO}$  .... Less than 6.0 %
  - d)  $\text{Fe}_2\text{O}_3$  .... Less than 3.0 %
  - e)  $\text{Al}_2\text{O}_3$  .... Less than 2.0 %
  - f) L.O.I ....  $4.0 \pm 2.0$  %
5. Moisture Content : Nil

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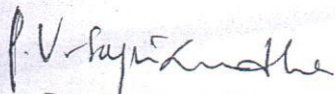
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## DOLOMITE POWDER

1. General : This Specification governs the requirements of Dolomite Powder.
2. Application : To serve as one of the constituents in the Ceramic glaze.
3. Form : It should be supplied in powder form and should pass through 150  $\mu$ m sieve. (Data for information only)
4. Chemical Composition :
  - a) CaO ....  $30 \pm 2.0$  %
  - b) MgO ....  $20 \pm 2.0$  %
  - c) Fe<sub>2</sub>O<sub>3</sub> .... Less than 2 %
  - d) L.O.I.....  $43.5 \pm 3.5$  %
5. Moisture Content : Nil

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## CALCITE POWDER

1. General : This Specification governs the requirements of Calcite Powder.
2. Application : To serve as one of the constituents in the Ceramic glaze.
3. Form : It should be supplied in powder form and should pass through 150  $\mu\text{m}$  sieve. (Data for information only)
5. Chemical Composition :
  - a) CaO ....  $52 \pm 2.5 \%$
  - b) Fe-O<sub>3</sub> .... Less than 2 %
  - c) L.O.I..... Less than 50.0 %
6. Moisture Content : Nil

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## SPECIAL PORTLAND CEMENT

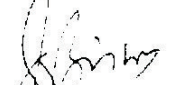
1. General : This Specification governs the requirements of special Portland cement.
2. Visual Appearance : Should be free from moisture or Water and should not have any Nodules formed due to moisture.
3. Physical Properties : Optimum water content : Max.22 %  
Initial Setting Time :  
80 Minutes to 200 Minutes  
Final Setting Time :  
135 Minutes to 240 Minutes
4. Mechanical Strength : Tensile Strength : Min 40 kg/cm<sup>2</sup>  
(After 6 days Hot  
water curing) or  
Compressive Strength: Min 700kg/cm<sup>2</sup>
5. Autoclave Expansion :  $\leq 0.12\%$

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## CALUNDUM CEMENT

1. General : This Specification governs the requirement of Calundum Cement.
2. Visual Appearance : Should be free from moisture or water and should not have any nodules formed due to moisture.
3. Application : To serve as a binder in the assembly of Ceralin in MS bends.
4. Physical Properties :
  1. Minimum compressive strength of 3:1 (cement:water) vibrated mortar using graded standard sand.  
At 1 day : Minimum 300 kgs/cm<sup>2</sup>  
At 3 days: Minimum 350 kgs/cm<sup>2</sup>
  2. Setting time :  
Initial(min): 15 to 45 minutes.  
Final(max) : 180 minutes
5. Chemical Composition :
  - a) Al<sub>2</sub>O<sub>3</sub> .... > 46 %
  - b) Fe<sub>2</sub>O<sub>3</sub> .... < 5 %

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