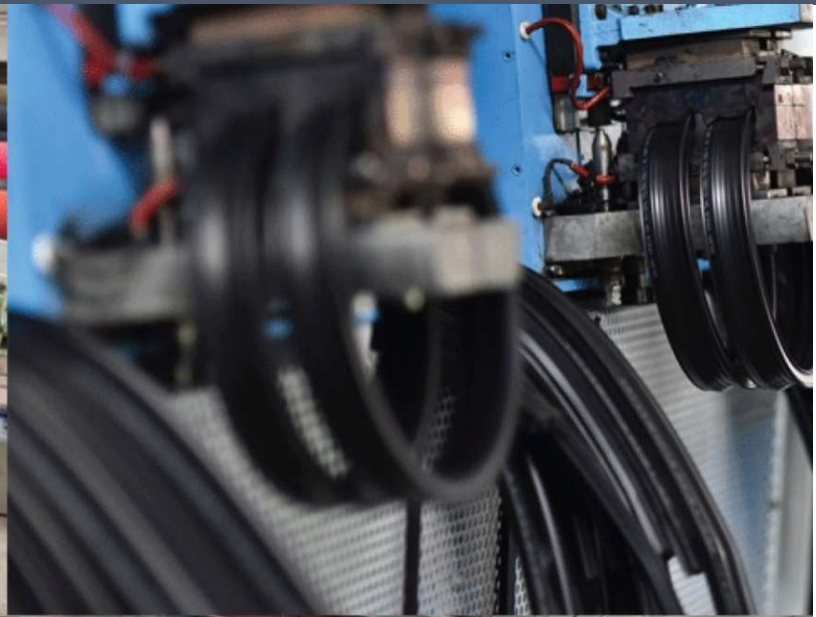


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Heat Treatment for Calcination of Grey Alumina Powder



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| | |
|------------|--|
| Customer : | |
| Process : | Muffle Furnace Heat Treatment for Calcination of Grey Alumina Powder |

Test Report No: 241/KRDC/LAB/17 Mum26/10/2023

Date Sample reception : 07/07/2023
 ID : KRDC/R&D/23-24/26/10

Sample Description:

Sampling : As Requested
 Sample Condition : Acceptable
 Sampling date : 26/10/2023
 Product : Alumina Grey Powder
 Requirement : Calcination of Alumina Grey powder
 Start Date test : 26/10/2023
 End Date test : 26/10/2023

Laboratory Experimental System -

Format: F/R&D/01



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System Specifications –

LAB MUFFLE FURNACE HEATING SYSTEM SPECIFICATIONS:

| | |
|--|----------------|
| Heating Zone (width*height*depth) | 350*350*350 mm |
| Design Temperature | 1000°C |
| Total Power | 30 kW |
| HAC Fan | 0.5 HP |
| Scrubber ID Fan | 1 HP |

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

| | |
|---|--------------|
| Temperature (°C) | 26°C (±5°C) |
| Humidity (%) | ≤74% RH |
| Pressure (kN/m² or kPa) | Not recorded |

Note for recommendation: Environmental conditions have a direct impact on test results. The accuracy and consistency of test data are affected by the laboratory conditions




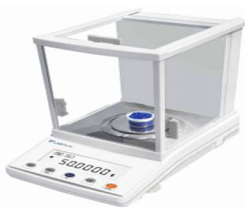


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Equipment Used –

| Name of Equipment | Picture of Equipment | Specifications |
|---------------------------------------|---|--|
| Compact Thermal Imaging Camera |  | Model: FLIR E-30 Resolution: 160x 120IR Thermal sensitivity of 0.10°C |
| Thermo Hygrometer |  | Model No: HTC-2 Temperature accuracy: $\pm^{\circ}\text{C}$ (1.8°F) Temperature resolution: 0.1°C (0.2°F) Humidity range: 10%~99% RH Humidity accuracy: $\pm 5\%$ RH Humidity resolution: 1% RH |
| Moisture Analyzer |  | Make: Axis Balance Description: Moisture range: 1%(sample 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample>5g) |
| Analytical Balances LINB-A10 |  | Capacity : 100 g Minimum weighing : 0.0004 g Resolution : 0.0001 g Pan size : \approx 80 mm |



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Sample Preparation and Method/procedure:

The experiment has been performed on Grey Alumina Powder to speed up the heating rate of the product. The sample was taken in a crucible vessel for this experimental run and then placed in a Muffle furnace. The appearance of the sample was observed after treatment.

Analytical Results:

Trial:

- Temperature: 1000°C
- Initial weight: 120g
- Initial Moisture: 2.3%

| Cycle | Cycle Time (min.) | Remarks, if any |
|-------|-------------------|-------------------|
| C1 | 10 min | Heated as desired |

- Final weight: 85g
- Final Moisture: 0.8%

Before and After images:



Untreated Sample



Treated Sample



ELECTRO MAGNETIC Innovative technologies

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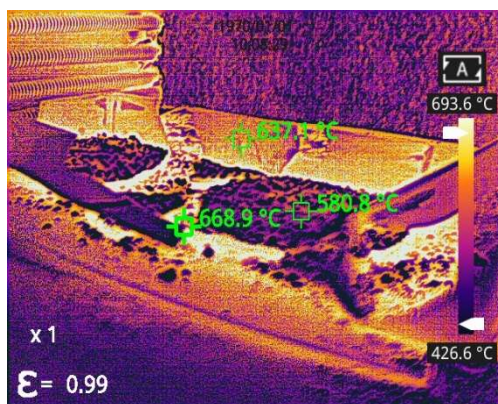
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Thermal images:**Measurements**

| | |
|-----|---------|
| Sp1 | 637.4°C |
| Sp2 | 668.9°C |
| Sp3 | 580.8°C |

Parameters

| | |
|------------|---------|
| Emissivity | 0.99 |
| Temp. | 693.6°C |

**OBSERVATIONS:**

The heating behavior of Grey Alumina Powder has been investigated under the Muffle Furnace Heating System for Calcination treatment. The heating rate is increasing with respect to increasing heating time. As per physical investigation, it has been observed that the product's color changes to milky white after heat-treatment.

Mrs. Priya Tayde**(Tested By)**