

ACTIVATED ALUMINA



Adchems provide Alumina Balls in 2 sizes: 2 – 5 mm dia & 5 – 8 mm dia, manufactured by our manufacturers at the State of the Art Technology plant in Mehsana (Gujarat). The products have at least equal to & some cases, better properties than what have been specified in the Bureau of Indian Standards: BIS 9700 (Revised 1991). Specifically it has very high water adsorption capacity & mechanical strength & at the same time very low attrition loss. Its main application is in air drying; however, it may be used favorably for purification of drinking water (fluoride removal) & removal of acidic vapours from gases. The robust nature of this product makes it suitable for application in high pressures. Our Activated Alumina is designed to give a dew point of at least 40°C in most conditions. However, in case of rigorous adsorptive drying, under high pressure, the moisture content in the exit gas or air may go down to less than 1 ppm (i.e., a dew point of -70°C & better).

Life:

Activated Alumina has infinite shelf life, when stored in packed condition. The active service life would depend, however, on the operating conditions of the plant, actual application & the usage of the customer.



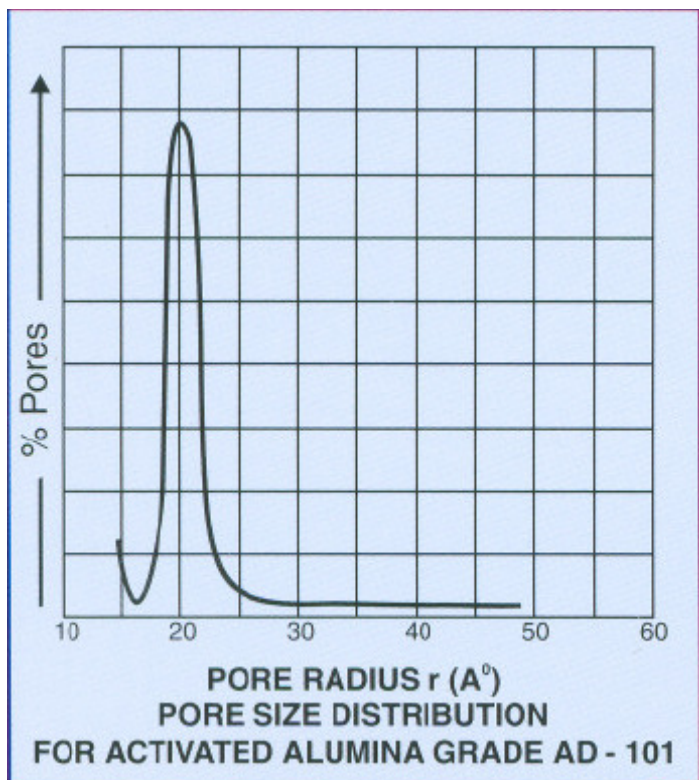
Specifications:

| Particle form | Spheres | |
|---|-----------------------------|-----------|
| Particle size | 2-5 mm and 5-8 mm dia balls | |
| | Typical | Range |
| Adsorption Capacity at 30°C And 60% RH by wt (%) | 21.0 | 20-26 |
| Surface Area (m ² /gm) (min.) | 380 | 360-430 |
| Pore Volume (cc/gm) | 0.42 | 0.4-0.5 |
| Bulk Density (gms/lit.) | 800 | 750-850 |
| Bed Crushing Strength (%) | 97 | 90-99 |
| Loss on attrition (%) | 0.20 | 0-0.4 |
| Loss on Ignition (250°C-1000°C) | 6.0 | 4.5-8.0 |
| Free Moisture (%) | 0.5 | 0-2 |
| Size Tolerance (%) (Oversize/undersize) | 2 | 0-5 |
| Chemical Analysis (%) | | |
| Al ₂ O ₃ (by difference) | 93.0 | 92-95 |
| Na ₂ O | 0.25 | 0.1-0.3 |
| Fe ₂ O ₃ | 0.05 | 0.02-0.12 |
| SiO ₂ | 0.08 | 0.02-0.12 |

Note:

- Surface area by Benzene adsorption method. The values are lower when measured by BET Nitrogen method (300 – 320 m²/gm). Owing to carcinogenic threat to environment, safe method of Nitrogen Adsorption is adopted.
- For spheres of more than 5 mm diameter, the specific surface & water adsorption capacity values are approximately 10% lower than the above figures.





Packing:

Activated Alumina is packed for industrial use in airtight MS drums under hot conditions with proper sealing arrangements so that there is no ingress of moisture during storage & transportation. **Standard Packing:** 210 Ltr. Drum. **Size:** 565 X 850 mm.

Loading:

Activated Alumina does not require any special precaution or procedure during loading. However, the health of the grid support is to be checked, & the vessel is to be cleaned of dust, foreign particles, etc. before the adsorbent is loaded. During actual loading, the material should be poured carefully through funnel & chute so as to avoid dusting & attrition. The drums should not be kept in open condition, as the adsorbent would adsorb moisture. In case of prolonged exposure of the adsorbent to moisture during storage / loading, it may require prolonged regeneration at higher temperature to restore its full adsorptive capacity.



Material Safety Data:

The product as such is neither flammable nor toxic. Over all, it is not hazardous. Repeated exposure may irritate skin, eyes & respiratory system. The product gets hot as it is first exposed to atmosphere due to adsorption of moisture.

Regeneration:

Activated Alumina should be regenerated before first use. The regeneration temperature varies from 110° to 150°C. The higher the regeneration temperature, the longer the operating cycle & lower the exit dew point of the gas. Where high efficiency is needed (dew point better than 50°C, a regeneration temperature of at least 150°C is needed. If the regeneration gas is wet, a higher regeneration temperature of 200 - 250°C is required. For a better performance over a prolonged period, the activated Alumina should not be subjected to temperatures above 350°C repeatedly.

Applications:

1. Air drying for dew point of less than -40°C.
2. Drying of feed air to N₂ – O₂ Cryogenic plant.
3. Purification of process stream by removing HF (LAB Plant), Chloride / HCL from Contaminated gas flow.

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