

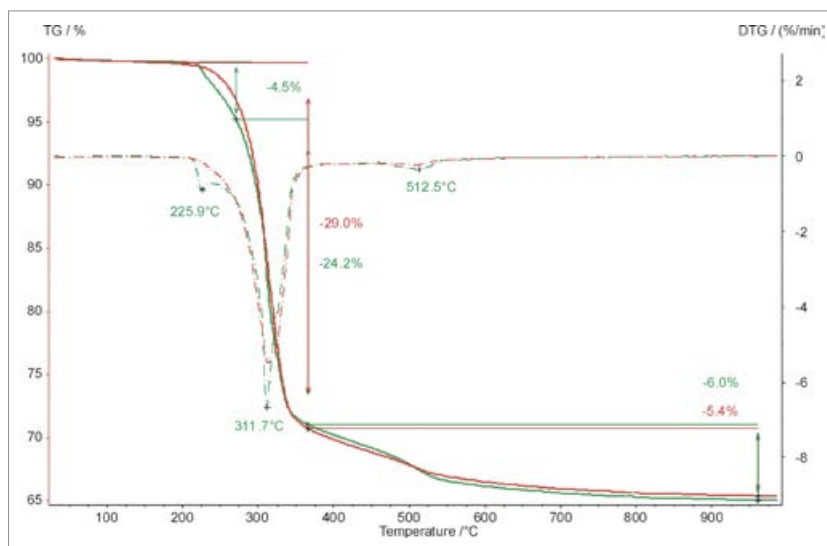
APPLICATION SHEET

INORGANICS – CHEMICAL INDUSTRY

ALUMINUM HYDROXIDE

Aluminum hydroxides are the main compounds of bauxite. The principal aluminium hydroxide minerals found in varying proportions with bauxites are gibbsite ($\text{Al}(\text{OH})_3$) and the polymorphs boehmite ($\alpha\text{-AlOOH}$) and diaspore ($\beta\text{-AlOOH}$). The bulk of world bauxite production (approximately 85%) is processed into aluminium oxide (Al_2O_3) via a wet chemical, caustic leach method

(Bayer process). The resulting Al_2O_3 is then reduced to aluminium metal (Al) using an electrolytic process, the Hall-Heroult process or used in high-temperature ceramic applications. Purified Aluminum hydroxides and oxy-hydroxides were used as flame-retardent fillers in polymers, employed as paper coating pigments or pigments in paints and vanish.



Instrument

TG 209 **F1 Iris**[®]

Test Conditions

Temperature range	RT ... 1000°C
Heating rate	10 K/min
Atmosphere	Air at 40 ml/min
Sample mass	36 mg
Crucible	Alumina
Sensor	Platinel

Results

The two $\text{Al}(\text{OH})_3$ samples are nearly pure indicated by the mass losses of 34.7% and 34.4%. The theoretical mass loss from $\text{Al}(\text{OH})_3$ to Al_2O_3 is 34.6%. This means there might be surface water at sample 1 and some boehmite amounts with the second one. Sample 1 additionally shows a three-step degradation in comparison to sample 2.