

IBAAS-JNARDDC WEBINAR 2020

THE MEDIUM /LONG TERM OUTLOOK FOR NON-METALLURGICAL HYDRATE/ALUMINA MARKET

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NON-METALLURGICAL ALUMINA GRADES

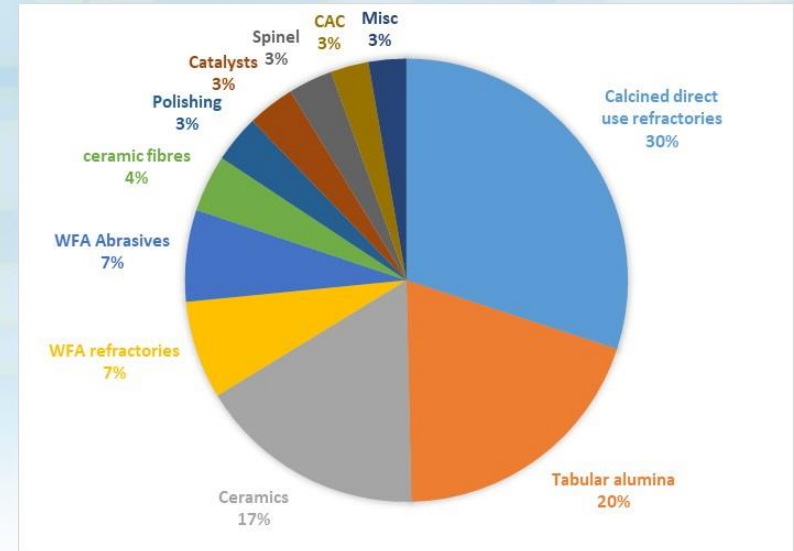
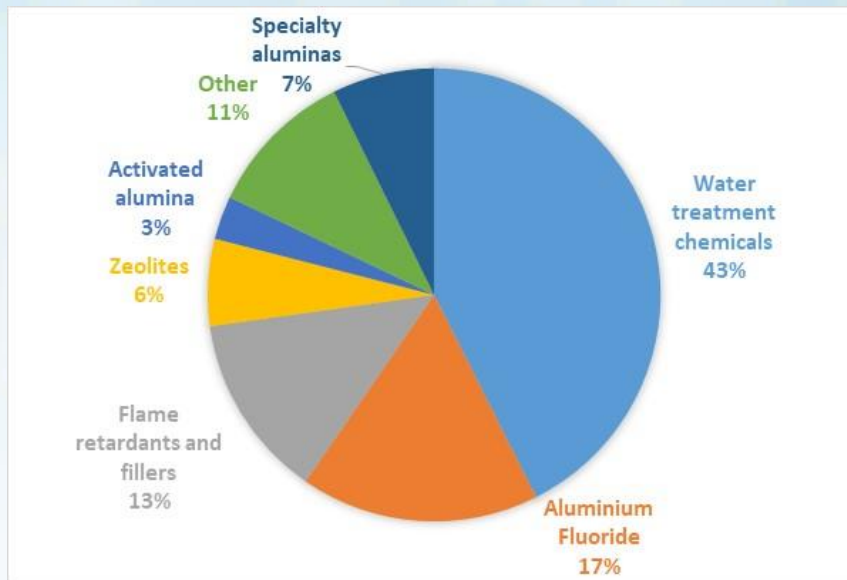
- Alumina hydrate
 - Commodity grades in the form of wet hydrate or dried hydrate as feedstock for a variety of chemicals and specialised uses
 - Specialty grades of ground white or near white Bayer hydrates and re-precipitated grades for flame retardants and fillers
 - High purity low volume but high added value grades for high tech applications
- Calcined alumina
 - Used directly in refractories, ceramics, polishing
 - Feedstock for the production of white fused alumina, ceramics, catalysts, tabular alumina, spinel, mullite and other specialty products
- Multiple grades of specialty aluminas produced from these feedstocks

NON-METALLURGICAL ALUMINA DEMAND

Total demand 2019 – 8.56 mt Al_2O_3 content

Alumina hydrate 4.13 mt Al_2O_3
(6.55 mt Gross Weight)

Calcined alumina 4.43 mt



COVID EFFECT

IAI Chemical Alumina production/sales

PERIOD	AFRICA & ASIA (EX CHINA)	CHINA (EST.)	NORTH AMERICA	SOUTH AMERICA	WEST EUROPE	EAST & CENTRAL EUROPE	OCEANIA	ROW EST. UN- REPORTED	TOTAL	DAILY AVERAGE
Q2 2020	62	858	133	143	427	7	117	228	1,975	21.7
Q1 2020	76	838	164	160	341	6	98	226	1,909	21
Q4 2019	85	878	159	155	375	7	111	231	2,001	21.8
Q3 2019	81	900	174	177	431	6	117	231	2,117	23
Q2 2019	90	887	180	173	452	12	125	228	2,147	23.6
Q1 2019	85	902	144	184	468	7	128	226	2,144	23.8
Q4 2018	57	920	191	202	429	12	103	231	2,145	23.3
Q3 2018	57	900	164	237	453	10	135	231	2,187	23.8
Q2 2018	57	900	192	174	484	9	137	228	2,181	24
Q1 2018	55	850	151	165	429	7	135	226	2,018	22.4

PROJECTED GROWTH RATES PRE-PANDEMIC

- **Total Hydrates (as Al_2O_3) 4.13 mt in 2019 → 4.88 mt 2028**
 - **Gross weight 6.55 mt in 2019 → 7.75 mt 2028**
 - Growth rate of about 1.7% per annum
- **Total Calcined alumina 4.43 mt in 2019 → 5.5 mt 2028**
 - Growth rate of about 2.2% per annum
- **Variations within these categories depending on the application**
- **Pandemic effect different by industry**

WATER TREATMENT CHEMICALS OUTLOOK

- **Water treatment chemicals largest consumer of alumina hydrate**
- **Mature industry with more than 60% of demand in the developed nations of North America, Europe and Japan with growth expected to be about 1% per annum**
- **Potential for much larger growth in countries such as China and India from a lower base and expected to be slow in the medium term**
- **Modest effect from pandemic. Demand for treating industrial waste water showing modest declines but little change in requirements for potable water treatment**

ALUMINIUM FLUORIDE OUTLOOK

- **Aluminium fluoride demand linked closely to primary aluminium metal production**
- **Growth expected to be moderate at about 1.8% with some continuing efficiency reducing unit requirement and greater growth in secondary aluminium production**
- **Pandemic effect likely to have reduced demand for aluminium but there have been limited cuts in production of primary aluminium with few major cuts announced, partly as there is a cost and time penalty to closing production but pot relines may have been suspended when they fail removing some capacity.**
- **In the short term low demand is likely to result in an increase in the surplus of aluminium expected for 2020 before the pandemic and it will take some time for recovery to regain equilibrium.**
- **New project and expansions likely to be delayed and some high cost producers may be suspended before a return to normal growth patterns.**

FLAME RETARDANT OUTLOOK

- **The flame retardant an filler market for ATH, both ground hydrate and re-precipitated grades are expected to be the fastest growing sector for alumina hydrates**
- **Forecasts through to 2028 were expected to average close to 5% per annum and flame retardant applications could have grown to be larger than those for aluminium fluoride by that time.**
- **Demand has been hit hard during the pandemic with falls of as much as 15-16% in the first half of 2020.**
- **Long term growth in demand should return after the pandemic but likely to be a lag then a period of catch up boosting demand**

OTHER HYDRATE APPLICATIONS

- **Zeolites**
 - **Slow growth of probably less than 1% now that declines in the use in detergents matured**
- **Activated alumina**
 - **modest growth of about 1% in a relatively mature market**
- **Other applications such as titanium dioxide coatings, glass batch additives and specialty chemicals may grow at as much as 2% per in a diverse range of uses**
- **Specialty aluminas**
 - **This sector overlaps with the demand for calcined aluminas**
 - **A few producers of specialty aluminas primarily in Germany and Japan purchase Bayer hydrates as their feedstock, whereas the majority of producers use calcined alumina feedstock. Modest growth of only 0.5% per annum expected.**

CALCINED ALUMINA REFRACTORY DEMAND OUTLOOK

- **Primary use for calcined alumina is in refractories**
 - **Combined direct use plus as feedstock for tabular alumina, WFA (for refractories) spinel, CAC, mullite and ceramic fibres amounts to about 67% of demand**
- **Expected growth of about 1.8% per annum**
 - **May be higher if there is greater use of WFA replacing BFA**
- **Covid effect pronounced with lower production of steel, the major consumer, as well as cement, glass, ceramics etc. Major refractories companies reporting declines of over 20% in first half 2020 sales**
- **Steel production down significantly with the exception of China where production has been increasing year-on-year again**
- **Difficult to forecast recovery time, which will be highly dependent on recovery in demand for crude steel.**
- **Longer term forecasts to recover to previously predicted levels with a Covid gap.**

OTHER CALCINED ALUMINA USES OUTLOOK

- **Alumina ceramics expected to show the greatest growth at 3.2% per annum**
- **Catalysts or more correctly catalyst carriers growth expected to slow to less than 1% as the move to electric vehicles accelerates since they do not need catalysts.**
- **Abrasives and polishing expected to grow at a high rate of as much as 3.6%**
- **All of these will have experienced significant declines in demand during 2020 and may take some time to recover**
- **Much greater growth in the small volume high priced, ultra high purity alumina market that does not rely on Bayer alumina as its feedstock and driven by demand from LED lighting and lithium ion battery separators.**

OVERALL OUTLOOK

- **The medium to long term outlook for alumina hydrate and calcined alumina in non-metallurgical applications is expected to remain valid but with an interruption due to the pandemic**
- **How long the interruption will be is impossible to predict**
- **There have been recoveries in economic activity in some countries, notably China but there are worrying trends of new waves elsewhere**
- **May need successful development of a vaccine and the roll out of mass vaccination to return to some sort of normality**
- **Some industries may take longer than others to recover**
- **There may be a short term surge in demand at the start of recovery to cater for pent up demand and to rebuild producer and consumer stocks before a return to normal patterns**

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