The ORG Specialty Materials Mid-Year Update: Reasons To Be Optimistic About The Markets In 2017

Key Charts And Notes From Our 3Q Analysis
Presented On Sept. 28, 2016
Bottom-line: We Believe Specialty Materials Channel Has Have Entered Into A Period Accelerated Growth.

1- Volume growth acceleration for the longer lead time product categories – titanium demand is approaching the healthiest levels since 2011.

2- The commercial aerospace channel has transitioned into a positive catalyst for the industry – the airframe and jet engine markets have become stronger demand-pulls since April/May.

3- Lead times are starting to extend for certain products – there are early indications for better pricing in 2017.

4- Inventories appear to be much better balanced.

5- Any positive changes to the industrial market landscape could create a very tight supply situation for certain products.

6- Industry consolidation is likely to take place over the next 12 months.

*** We do not believe the equities for the publically-traded peer group fully reflect the recent strength in the titanium & nickel-based alloy markets. We are looking for much better results to be reported by companies like ATI, CRS, and AA over the next 3-4 quarters.
Quarterly Demand Update: Data Shows Steady Underlying Growth in 3Q

We calculated the average quarterly shipment comp for the entire specialty materials group at +3-4%, which is essentially unchanged versus 2Q (black dotted line represents the total market average).

- The “strength” continues to be generated by the titanium channel. The average comp is now running above +6% for our peer group.
- The nickel-based alloys market showed modest deceleration this quarter. The average unit volume growth rate is now estimated at +2% (versus +3% last quarter).
- Aero aluminum plate looks modestly stronger in 3Q. The average comp appears to be in the +1.5% range versus flat last quarter.
- A net +28% of all companies in our survey said business conditions were running ahead of plan.
Titanium Growth Is Now At Healthiest Levels Since 2011

The strongest companies in our survey reported growth in the +18-20 range for 3Q. This appears to be metal suppliers (or forgers) levered to aerospace and airframe.

A net-60% of executives said current titanium business is running above expectations (representing three straight quarters of better-than-expected demand). See the chart below.

The positive momentum should continue – the average 2017 volume growth outlook for the peer group is up to 6% (up one full point since last quarter).
Many Nickel-Based Alloy Companies Are Still Seeing Slow Activity

The strongest companies in our survey have reported growth in the +6-8 range for 3Q. This also reflects the metal suppliers (or forgers) levered to aerospace and airframe. Companies levered to industrial markets have seen growth in the down 4-5% range.

A net-9% of executives said business activity is running above expectations. See the chart below.

The momentum should also continue for the nickel group – the average 2017 volume growth outlook for the peer group is holding at +4%.
The Main-Take Aways:

- The industrial-related markets have reverted back to negative growth. The group has been in contraction in 4 of the past 5 quarters. The average growth for these markets was down 1% (versus up 1.2% last Q).

- The oil & gas customer group is still characterized as the weakest area. However, the momentum has been positive over the past 2-3 quarters. There could finally be a “light at the end of the tunnel.”

- The desalination-based customer base is showing the largest quarter to quarter declines. Nuclear has weakened considerably as well.

- A full time series for each end-market is presented on slides 12-14, toward the back of this presentation.
The Main-Take Aways:

- A vast majority of the specialty materials volume growth has been supported by the various aerospace-related markets. We have now seen 5 consecutive quarters of positive demand momentum for this grouping.

- The average growth in 3Q16 was estimated at +3.8% - large commercial aircraft demand order trends have been offset by slower growth in the niche channels.

- Commercial airframe growth appears to be slower in 3Q. A few suppliers reported inventory adjustments around the BA and AIR channel (which are usually more aggressive buyers in 1H).

- The jet engine market is still showing solid growth as the new engine program orders offset slower activity in legacy.

- A considerable up-tick reported for the aerospace fasteners market.

- A full time series for each end-market is presented on slides 12-14, toward the back of this presentation.
A net-19% of all companies in the survey said they will be looking to build inventories during 2H (dotted line in chart to the left). We watch this data point closely to gauge underlying sentiment for the group and forward-looking expectations on price/demand.

- 30% of titanium-levered companies will be adding to warehouse positions (gray bars).
- The aerospace suppliers are expected to be less-aggressive (see chart below).

Airbus is seen holding too much inventory right now (a potential NT negative for companies like Alcoa).
% of companies having trouble sourcing titanium materials has been slowly rising. Sheet has been mentioned the most – with lead times out to 50 weeks.
Six Questions Asked For The Quarter

We have MORE confidence in the cycle since 2Q
BREXIT is having an impact on our customers
We expect to see industry consolidation over the next 12 months
We are confidence in the demand outlook for BA and AIR
A DEMOCRATIC president would be good for my business

We asked this question before the Aleris deal was announced

High degree of conviction in the production outlooks for the major OEMs

Source: The Olin Research Group Survey
Commercial Aerospace Build Rates Have 30% Upside Versus Current Levels

- Current production schedules for Boeing and Airbus are expected to drive 2,000 jet deliveries by 2020.
- Any weakness in the wide-body market (737, 777, 380) should be more than offset by the underlying strength in single-aisle jet demand.
- A secular story: the next-generation aircraft designs will use more titanium and nickel-based alloys.
Estimated Aerospace Channel Inventories (Fully Balanced In 2017?)

Titanium Industry Model
Estimated Inventory Within The Aerospace Channel (mm lbs.)

Source: The Olin Research Group, Industry Sources

Over-Supply (Channel Build)

Under-Supply (Drawdown)

Estimated point of inventory cycle

Peak Delay On The BA787 Program

Global Titanium Industry Demand
Estimated Demand By Individual Aerospace Market Driver

Source: ORG Estimates
Our Data Suggests Macroeconomic Conditions Are Slowly Improving
Our Updated Titanium Industry Model

We project total titanium mill demand (for the Western World) at 185 million pounds in 2016 (+3%). Our model suggests the growth will accelerated to +6-7% in 2017 (195-200 million pounds).

• The incremental industry volumes should come from: commercial aerospace (+8 million pounds); general industrial (+2); medical (+0.5); and consumer/other (+0.5). We assume a flat environment for military/defense.

• We anticipate 35% volume update over the next 3-4 years. This suggests 11% growth peak-to-peak.

Titanium Industry Model
Estimated Western World Demand -- By End-Market (mm pounds)

Aerospace	Industrial	Military	Medical	Consumer & Other

Global Titanium Industry Demand
Estimated Demand By Key End-Market

Aerospace provided minimal industry growth since 2010

Source: The Olin Research Group, Industry Sources
Titanium Operating Rates Should Start To Move Higher

We believe the industry demand growth will exceed supply changes in 2017. This implies a net-undersupplied position going forward. The ATI sponge plant closure could represent the first positive move in raw materials (or input prices).
Our Updated Nickel-Based Alloy Model

We project global nickel-based alloy demand at 257 million pounds in 2016 (+0-1%). Our model suggests the growth will accelerated to +4-5% in 2017 (265-270 million pounds).

- The “strength” should be generated by robust jet engine channel activity and better MRO momentum. New aircraft models introduced in 2010-2012 will be due for service over the next 1-3 years. Our model suggests 10%+ growth potential in commercial aerospace.

- Oil & gas demand is down 35-40% from peak levels. Volumes should stabilize in 2H, with small upside potential in 2017.

- Pratt-Whiney should become a largest catalyst for demand. Companies levered to this programs have considerable upside potential this cycle.

Source: The Olin Research Group, Industry Sources
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