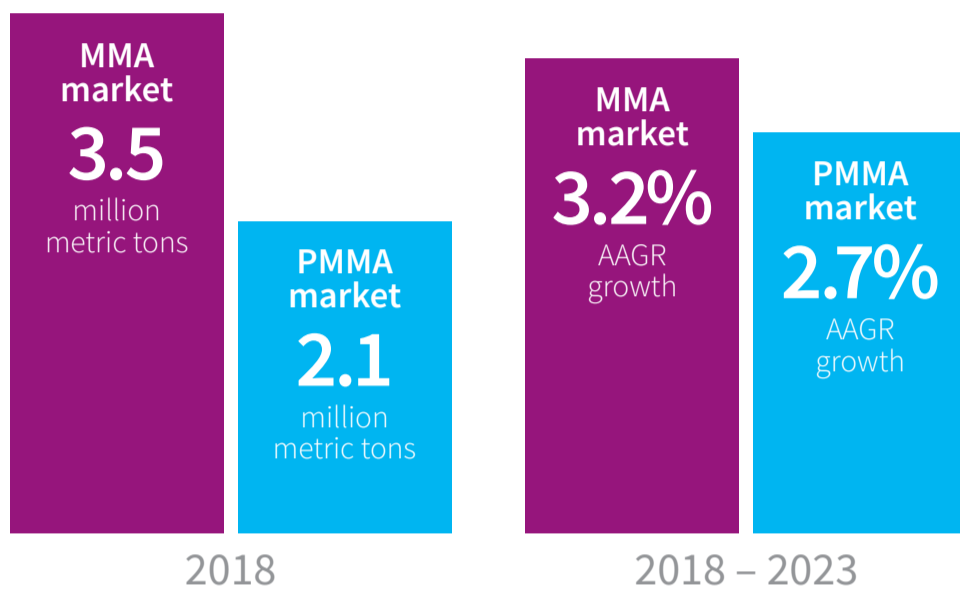


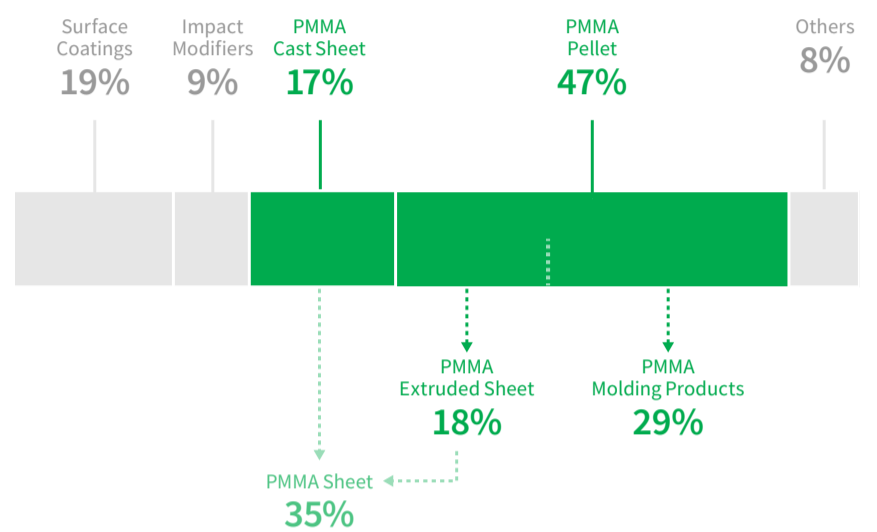
MMA and PMMA Getting Back on Track

Methyl Methacrylate (MMA) and Polymethyl Methacrylate (PMMA) have experienced 2-3 years of supply constraints and historically high prices. Today, we now see a shift to more stability and a normalization in its markets. Newer technology also is present and deemed advantageous.

Automobile and Construction markets heavily dictate MMA and PMMA markets. Importantly, **MMA and PMMA prove to be quite resilient.**



In interconnected markets, PMMA was approximately **60-65% of MMA Consumption in 2018**



Applications



Market movements

2017 & 2018 Prices Increased

Many Planned & Unplanned Outages in the United States, China, and Western Europe. Hurricane Harvey, Long Maintenance turnarounds and technical difficulties, which mainly occurred at older MMA plants

#2 Global MMA Producer Sold

Evonik being sold to Advent International (private equity company)
What will this mean for the future?

#1 Largest MMA Exporter Saudi Arabia

Start-up of Saudi plants and new C2 technology has and will change the competitive landscape.
2018 - Two New MMA and PMMA producers from Saudi Arabia providing new material

Technology

C2 -based MMA Technology >Most competitive in regions with abundant and low-cost ethylene.

Includes: Evonik/Advent C2 Technology (LiMA process, not yet commercial), and Mitsubishi Chemical/Lucite C2 Technology (Alpha process, commercial). All MMA commercial processes have been analyzed by the IHS Markit Process Economics Program (PEP).

IHS Markit analyzes these two interconnected markets and provides an in-depth five-year regional/global outlook; including capacity, production, consumption, trade, prices, trends, and end use applications.

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