COMPOUNDING
Mineral Fillers
OUR COMMITMENT to Alternative Fillers

is to develop and expand production from naturally abundant minerals, in order to offer sustainable raw material options to plastics converters.

SUSTAINABILITY CONTEXT

Since 2015, INDEVCO has continued to expand production of MicroMB™ mineral fillers at Masterpak Nile in Egypt and a Napco National’s Recom in Saudi Arabia. Plastics manufacturers are using alternative fillers to replace a percentage of less environmentally-friendly fuel-based resins and additives, especially when fuel prices are high or when specific applications benefit from naturally abundant calcium carbonate (CaCO₃) or talc.

Mineral fillers are readily available around the world, economical, compatible with a wide variety of polymers, and easy to adjust particle size.¹ The Calcium Carbonate Association of Europe identifies calcium carbonate as the most important mineral for plastics compounding.² Ground calcium carbonate demand is expected to rise 5.3% CAGR between 2017 and 2025.³ Talc is close behind at 4.91% CAGR through 2023.⁴ Calcium carbonate meets the ISO 14021 definition for a renewable material:

“Annual replenishment of calcium carbonate varies from 8.8 to 14.5 billion tons/year in different environments. The annual consumption of CaCO₃ in various markets, being in a range of 4.5 billion tons/year, the replenishment rate exceeds the consumption rate.”⁵

End applications for calcium carbonate filler include blown and cast films, blow molding, injection molding, and rotational molding. Talc filler is used for blown films, while specialty micronized grades are used for automotive and engineering plastics products, as well as household appliances.⁶ With mineral fillers, plastic converters convert fewer fossil fuel-based additives, thereby reducing carbon footprint and greenhouse gas (GHG) emissions and contributing to UN Sustainable Development Goal SDG12 Responsible Consumption and Production.⁷
 Compoundable Mineral Fillers

OUTCOMES
MicroMB™ Mineral Fillers

Impact

Maintained steady production of calcium carbonate fillers in 2017
- Which reduce GHG emissions by 143,429 metric tons of carbon dioxide equivalent (MTCO₂E)⁸
- Sister companies replaced virgin masterbatches with 40.6% of the group’s total CaCO₃ filler production

Increased silica-based talc filler production sold to external customers

In 2017, INDEVCO maintained steady compounding of MicroMB™ calcium carbonate filler and expanded production of MicroMB™ talc filler. Masterpak Nile in Egypt manufactured 76% of INDEVCO’s total filler masterbatch production, while Napco National’s Recom in Saudi Arabia produced 24%.

Both companies leverage the technical and scientific expertise of the group’s Polymer Application Center for Technology (PACT), INDEVCO’s R&D center that innovates products to meet plastics industry transformations. PACT developed both fillers with slip agent for North American and Latin American plastic film converters to avoid using two separate masterbatches.

Calcium carbonate filler offers faster heating and cooling, speed up film converting, assist in downgauging, increase output, and reduce blend structure cost.
Compounding Mineral Fillers

Instrumental in regenerating plastics, the naturally abundant filler recovers and enhances key mechanical and physical properties that may have been lost during the recycling process, such as stiffness, impact strength, and barrier property. Calcium carbonate filler also increases viscosity of material so that recycled plastics can be used for different applications, such as for blown films. Masterpak Nile’s location near a major Egyptian producer of calcium carbonate, known in the industry for its quality, reduces the transport cost of raw materials and ensures quality consistency.

Silica-based talc filler enhances plastic properties, improving tensile strength, heat resistance, impact absorption, stability, and electrical insulation, while decreasing energy loss. The end result is softer surface plastic films with no damage to machine screws. Replacing fossil fuel-based resins and additives with mineral fillers not only reduces cost but also energy consumption and GHG emissions, aligning with UN SDG12 (Target 12.2) to achieve sustainable management and efficient use of natural resources.
REFERENCES

   www.ptonline.com/knowledgecenter/Plastics-Feeding/application-profiles

2 CCA Europe. Calcium carbonate mineral factsheet.

3 Grand View Research (2018, January). Calcium carbonate market worth $34.28 billion by 2025 | CAGR: 5.7%.

   www.mordorintelligence.com/industry-reports/talc-market?gclid=CjwKCAjww6XXBRByEiwAM-ZUIPVfDL11gkbFo_F4o9rNceyAFF6dW2N9zFOUJcYE8J4uFn4guBkxVRoCba0QAvD_BwE

5 CCA Europe (2016, March). Calcium carbonate is a renewable raw material.


   https://sustainabledevelopment.un.org/sdg12

8 Pusch, Thema Umwelt, 1/2009, p. 3.
   https://timeforchange.org/plastic-bags-and-plastic-bottles-CO2-emissions
   Derivation: 0.2 MT of CaCO₃ reduces 1.1 MTCO₂E; 1 MT CaCO₃ reduces 5.5 MTCO₂E