



INDEVCO

# COMPOUNDING FILLERS FROM MINERALS





# Compounding Fillers from Minerals

**Our commitment** is to develop and expand production from naturally abundant minerals, to offer sustainable raw material options to plastics converters.

## How we manage this topic

Identifying renewable raw materials as a material topic, INDEVCO's Masterpak Nile in Egypt and subsidiary Napco National's Recom in Saudi Arabia compound mineral fillers from Calcium Carbonate (CaCO<sub>3</sub>). This naturally abundant mineral replaces fossil-fuel-based raw materials. This reduces the impact of sister and external plastic packaging converters especially on finite resource depletion and greenhouse gas (GHG) emissions.


## Why this topic matters


The global sustainability agenda calls for sustainable alternatives to reduce fossil fuel-based raw material consumption in both the energy industry and plastic manufacturing. Calcium Carbonate and Talc are two naturally abundant mineral fillers [1] utilized for plastic production, predominantly in polypropylene (PP) [2]. Demand for both inorganic fillers has been rising as both improve plastic properties. Calcium carbonate significantly enhances the dimensional and thermal of plastic products, improving product stiffness, along with other characteristics while decreasing power consumption during production.

## UN Sustainable Development Goals




## IMPACT

 Maintained **CaCO<sub>3</sub>** production from 2019 to 2022 & increased **Talc** production by **46%** compared to 2018

 From 2019 to 2022, eliminated GHG emissions by **~550 thousand** metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e) [7]

## COUNTRIES

 Egypt

 Saudi Arabia

The global market for mineral fillers is projected to grow at a CAGR of 4.9% over 2020-2027 [3], and the global calcium carbonate market size to expand at a CAGR of 5.4% from 2022 to 2030, knowing that product demand witnessed a decline in 2020 owing to the outbreak of coronavirus [4]. The Talc market is projected to expand at CAGR of 4.9% from 2021-2031 [5]. Calcium carbonate forms 4% of the earth's crust, making it one of the most common raw materials in nature. Calcium carbonate is pervasive in nature and constantly replenished by means of natural cycles or formed as minerals. In compliance with the ISO 14021 definition of renewable, calcium carbonate is revived at a minimum twice the rate of consumption [6]. Fillers reduce the impact on resources and, thus, increasing demand for filler materials from various industries is likely to boost the market growth.

## OUTCOMES

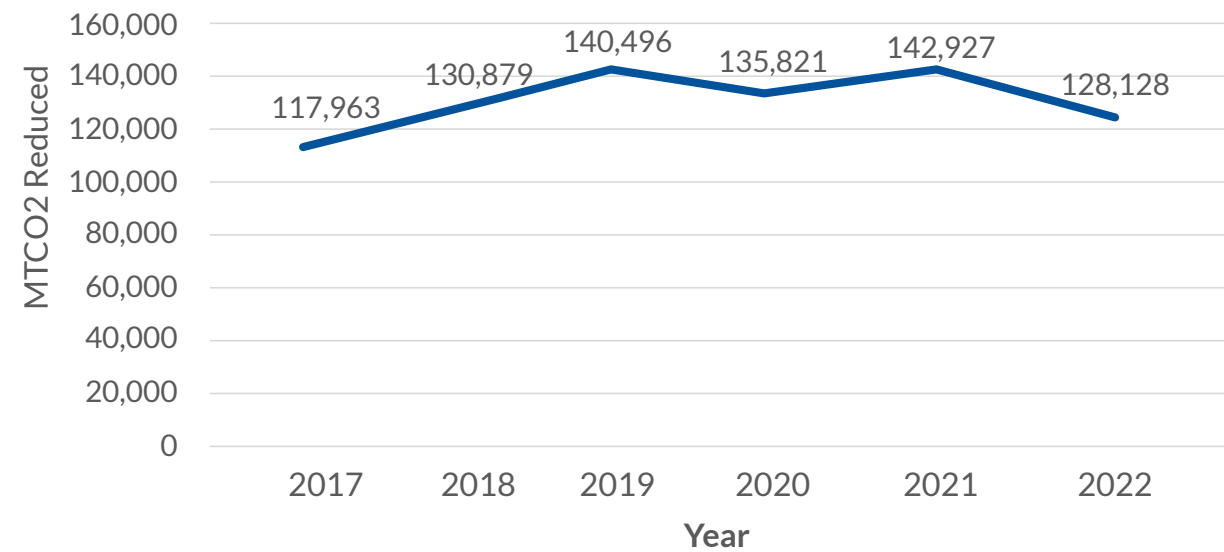
From 2018-2021, INDEVCO mineral filler manufacturing plants in Egypt (Masterpak Nile) and Saudi Arabia (Napco National – Recom) increased CaCO<sub>3</sub> production by 9.2% and Talc production by 215%. In 2022, however, production of mineral fillers faced a slight drop of 10% due to market demand and the devaluation of the Egyptian currency which impacted business operations. Given the situation globally and in the region, however, INDEVCO was able to maintain mineral filler production with slight fluctuations. As our operations also produce plastic films and packaging, INDEVCO and Napco National plastic converting plants consumed 40-50% of the CaCO<sub>3</sub> compound produced by Masterpak Nile and Recom annually.

Calcium Carbonate reduces energy consumption and consequent greenhouse gas emissions during plastic production. From 2019 to 2022, INDEVCO has reduced GHG emissions by nearly 550 thousand metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e) through the use and sale of CaCO<sub>3</sub> to plastic converters [7]. In addition to reducing energy consumption, CaCO<sub>3</sub> fillers speed up heating, cooling, and plastic converting, increase output, and support material consumption reduction (downgauging).

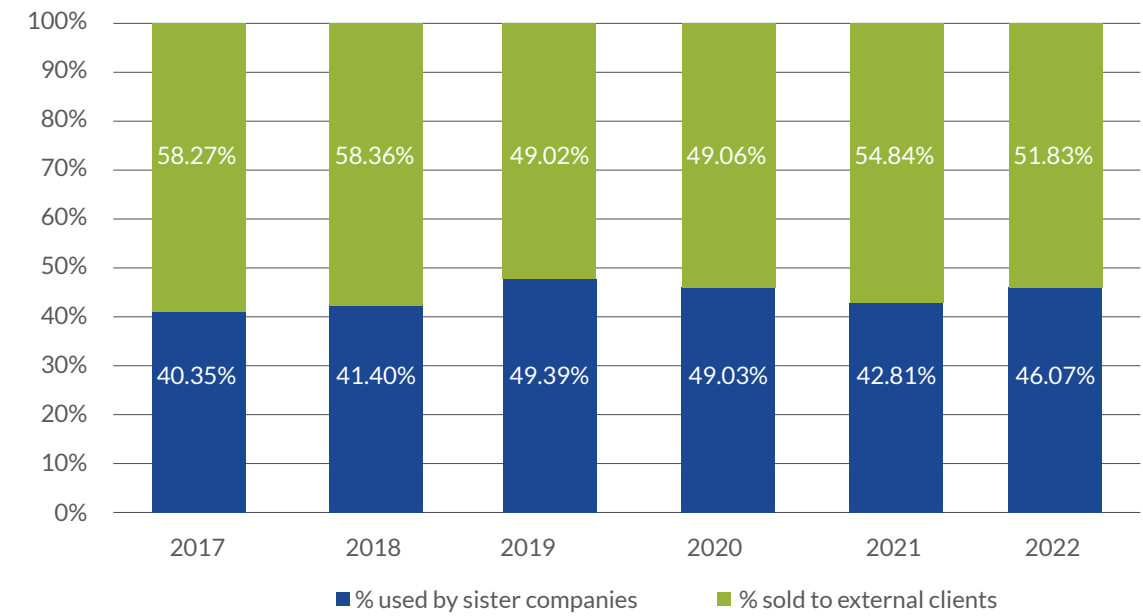
CaCO<sub>3</sub> and Talc are also important in enhancing the properties of plastic scrap, otherwise lost during the mechanical recycling process. Mineral fillers used in recycling plastics enhance impact strength, barrier properties, material viscosity, and help maintain stiffness [8]. CaCO<sub>3</sub> fillers can be used in end applications such as blown and cast films, blow molding, injection molding, and rotational molding [9].

Over three years, Masterpak Nile tripled silica-based talc filler production, which supports the manufacturing of plastic films with softer surface, heat resistance, better tensile strength, impact absorption, stability, and electrical insulation. Talc enhances the thermal and mechanical properties of plastic compounds [10]. It shows better transparency and less haze compared to other fillers [11]. In 2022, INDEVCO Talc production dropped 40% based on market demand which fell due to various factors including the market recession in Europe following the political turmoil in the region. Europe is a major market served for Talc fillers.

### GHG Emission Reduction from Use of CaCO<sub>3</sub>



### CaCO<sub>3</sub> Consumption in Plastic Production



#### References

- [1] IMA Europe. Calcium Carbonate is a renewable raw material. <https://ima-europe.eu/wp-content/uploads/2021/12/Renewability-Statement.pdf>
- [2] LinkedIn Articles. Calcium carbonate vs talc: who the best filler for polypropylene. <https://www.linkedin.com/pulse/calcium-carbonate-vs-talc-who-best-filler-akhmat-fauzi/>
- [3] Market Research. Mineral Fillers. <https://www.marketresearch.com/Global-Industry-Analysts-v1039/Mineral-Fillers-13586498/>
- [4] Fortune Business Insights. Calcium Carbonate Market. <https://www.fortunebusinessinsights.com/calcium-carbonate-market-104299>
- [5 & 11] Fact.MR (2021, October). Talc Application as Anti-blocking Agent in Polyethylene Production to Continue Rising, Creating US\$ 600 Mn Incremental Opportunity by 2031. <https://www.prnewswire.com/news-releases/talc-application-as-anti-blocking-agent-in-polyethylene-production-to-continue-rising-creating-us-600-mn-incremental-opportunity-by-2031-301403382.html>
- [7] Derivation: 1 MT of CaCO<sub>3</sub> reduces 4.5 MTCO<sub>2</sub> E – Sourced from INDEVCO Polymer Application Center for Technology
- [8] Elsevier Science of Total Environment (2018, January). Are functional fillers improving environmental behavior of plastics?
- [9] Roskill (2015). Talc: Global industry markets & outlook, 10th Edition. <https://roskill.com/product/talc-global-industry-markets-outlook-10th-edition-2015/>
- [10] Prime Scholars (2017). Talc as Reinforcing Filler in Polypropylene Compounds: Effect on Morphology and Mechanical Properties. <https://www.primescholars.com/articles/talc-as-reinforcing-filler-in-polypropylenecompounds-effect-on-morphology-andmechanical-properties.pdf>



# INDEVCO

2019-2022 Global  
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