Comparing Natural Stone to Artificial Materials

To understand how natural stone can help to reduce the embodied carbon of building projects, review the infographics below that detail the steps in the manufacturing process for natural stone, precast concrete cladding, terrazzo flooring, and engineered guartz countertops. It is easy to understand why natural stone's global warming potential is lower than those materials whose manufacturing processes are more complex and include multiple inaredients.

Natural Stone





Quarried

Transported to Producer



Cut into Units, Surface & Edges Finished

Precast Concrete Cladding

Transported

to Cement

Manufacturer





Minerals Heated at Extremely High Temperatures to Create Cement

or Resin, is Manufactured



Steel is Acquired and Transported to Steel Manufacturer



and Cast into Rods



and Sorted





Mined, Crushed





Fly Ash, and Other Additives Transported to Precast



Manufacturer

Ingredients Combined with Water, Placed into Molds and Cured





Raw Materials such as Limestone, Marble or Quartz are Quarried and Sorted



Aggregates, Binders, and Additives are Transported to Terrazzo Manufacturer





Additives such as Piaments, Sealers, and Fibers Manufactured



Binder Mixed, Aggregates & Additives Incorporated, Mixture Poured onto Surface or into Molds, Cured, Polished

Engineered Quartz Countertops





Series of Chemical Reactions



Ingredients Transported to Manufacturing Plant



Quartz, Resin and Additives Are Combined, Placed into Molds, Compacted, and Cured

Embodied Carbon Comparisons



The embodied carbon quantities displayed were estimated based on the following: Unite of Measure: Global Warming Potential (kg CO₂ eq) Functional Unit: 1m²

Scope: Raw Material Extraction, Transportation, Manufacturing (A1-A3)

Natural Stone: Industry-Wide EPDs for Cladding, Flooring & Countertops

Pre-Cast Concrete Cladding: Industry-Wide EPD for Architectural Precast Panels, 150 lbs per ft³, 4" thick Engineered Quartz: Average of three individual manufacturer EPDs including Corian Quartz, Vicostone, and Lotte

Terrazzo: Average of three individual manufacturer EPDs including Compac, Sensitile, and Sherwin Williams

To help quantify the embodied carbon of natural stone, the Natural Stone Institute published a set of Industry-Wide Environmental Product Declarations (EPDs). The disclosures include cradle to grave life cycle impacts for cladding, flooring, countertops.

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