Industrial Application of Limestone by utilizing its Chemical & Engineering Properties

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Introduction

• The calcium carbonate content of limestone rocks has been used from the earliest civilizations, dating a variable resource that serves the needs of a multitude of construction and other industries.

• The UAE limestones are suitable for cement making because of their high CaO and Low MgO contents.
Suitability

The physical and chemical properties of the limestone available in UAE shows that they are suitable for use in:

- cement manufacturing
- agriculture
- fertilizers
- making animal feed
- iron making
- wastewater treatment

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Primary Functions of Limestones

Industrial limestone has two primary functions

1. **Extender** - reduce cost by displacing or “extending” more expensive raw materials

2. **Technical Function:**
   - Physical action (rheology, whiteness, strength)
   - Chemical action (hydration of cement)
   - Alkaline (raise pH)
   - Provide calcium
Engineering Properties

- Soundness,
- Water Absorption,
- Bulk Density
- Compressive strength
- durability

The above properties reflects that limestone of UAE has good properties for use in aggregate and other construction purpose.
Limestone From Quarry

- Extraction Process
  - Quarry Limestone Loading.AVI

- Unloading in Crusher:
  - Unloading in Crusher_Unit_IIA.AVI

- Spray to Control Fugitive Emission:
  - Water Spray in Quarry Main.AVI
Limestone in Cement Industry

Raw Material Production

- Lime Percentage in Clinker. (65-66%)
- Clinker Limestone Percentage (40-45%).
- Cement Limestone Percentage (63-64%)
Applications of Limestones:

- Building our Homes and Cities
- Improving our Farming
- Making Glass
- Cleaning our Air
- Adding Nutrients
- Affordable Roofs
- Cleaning Our Water
- Bringing Paper to Life
- Durable Paints
- Everyday Products
- Joining and Sealing Our Lives
- A Staple of Construction
Other Wide Applications

- Used as aggregate or base for roads and foundations.
- Used in the purification of molten glass.
- Used to remove impurities from molten iron.
- Used as filler and abrasive in toothpastes.
- Used in the production of Portland cement.
- Used as an aggregate in concrete.
- Used as a soil conditioner for neutralizing acidic soils.
- Used as a source of calcium in supplements and food additives.
- Used to make paper white.
- Used in the purification of sugar.
- Used in the manufacture of brake pads.
- Used in the manufacture of medicinal antacids.
- Used in the preparation of wools and dyes.
- Used as a construction stone in buildings.
- Used as counter tops and flooring.
- Used as a water neutralizer.
- Used as a paint additive.
- Used as landscaping rock.