

Calcium-Carbonate Grinding Line

Complete Turnkey Business Proposal



Made-in-China supplier reference: real calcium-carbonate grinding line equipment.

2-5 t/h screened starter output	200-325 mesh launch GCC range	1 grade initial product	12-22 entry workforce
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Prepared for investment planning in Afghanistan and regional export markets. Final specifications, pricing, civil works, and utility loads require supplier quotation and site survey.

Executive Summary

A medium-industrial ground-calcium-carbonate line converting tested high-purity limestone or marble into dry controlled mineral filler through covered receiving, crushing and metal removal, drying when moisture requires it, feed buffering, Raymond or vertical grinding, dynamic air classification, cyclone and baghouse recovery, separate product silos, laboratory release, 20-25 kg valve-bag or jumbo-bag packing and palletized storage. It does not precipitate calcium carbonate chemically.

Why this project fits Afghanistan

- High-purity Afghan limestone and marble can supply filler markets instead of leaving as low-value stone.
- A 200-325 mesh product reaches broader putty, paint, mortar and selected plastics applications than an unproven ultrafine grade.
- One classifier-controlled grade keeps mill balance, laboratory work and inventory manageable.
- Chemical purity, whiteness and particle distribution must be proven with real buyer formulations.

Sanaatchi delivery scope

- Factory setup planning, supplier pre-qualification, and technical comparison
- Complete production-line and individual equipment supply
- Factory layout, utilities, civil-work coordination, installation, and commissioning
- Raw-material sourcing, trial-batch qualification, and repeat supply planning
- International logistics, customs documentation, operator training, spare parts, and after-sales support

Recommended configuration

Start with one GCC filler grade-typically 200-325 mesh-only after buyers approve whiteness, chemistry and particle-size distribution. Screen a 2-5 t/h plant with jaw/hammer crushing, magnetic protection, dryer only if needed, one Raymond mill, dynamic classifier, cyclone/baghouse, one product silo, bagging and a particle-size/whiteness laboratory. Do not buy an ultrafine 800-3000 mesh system before a premium buyer is contracted.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Ground calcium carbonate filler	Buyer-approved CaCO ₃ , whiteness, moisture, residue and particle-size distribution at 200-325 mesh	Wall putty, dry mortar, paint and selected polymer compounders
Coarser mineral filler	Separate buyer-defined grading and chemistry	Construction compounds and non-critical industrial fillers

Raymond-mill capacity falls as required fineness rises. Feed hardness, moisture, whiteness and abrasive silica determine output and wear. Acceptance uses the contracted local stone and measures feed moisture, t/h, kWh/t, particle-size distribution-not mesh sieve alone-whiteness, CaCO₃, iron, silica, residue, bulk density, moisture, bag weight and formulation trial.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Receiving hopper, crusher and magnet	Produces clean stable mill feed	Tested stone top size
2	Optional dryer and hot-gas system	Removes excess moisture before grinding	Install after seasonal study
3	Raymond grinding mill	Reduces mineral to filler powder	2-5 t/h at contracted fineness
4	Dynamic air classifier	Controls top size and returns oversize	200-325 mesh launch range
5	Cyclone and baghouse	Recovers product and contains fine dust	Negative-pressure design
6	Product silo and discharge aids	Buffers released powder without bridging	One-grade entry
7	Valve/jumbo bag packing	Forms controlled saleable packs	20-25 kg and optional FIBC
8	Mineral powder laboratory	Tests chemistry, whiteness and size distribution	Buyer formulation trials

Equipment models are indicative and will be matched to the selected capacity, local raw-material tests, available utilities, and preferred automation level.

Reference Equipment Gallery



Made-in-China supplier reference: real calcium-carbonate grinding line equipment.



Made-in-China supplier reference: second real machine configuration for calcium-carbonate grinding line.

Images are supplier references for configuration discussion; final equipment appearance and model may differ.

Plant, Raw Materials & Utility Requirements

Raw materials

- Selected high-purity limestone or marble with controlled whiteness, iron, silica and moisture
- Clean hot-air fuel only if drying is required
- Valve bags or FIBCs, pallets, wrap and labels
- Grinding rollers/rings, classifier parts, filters and critical spares

Utilities & infrastructure

- Stable three-phase power and transformer/motor-starting study
- Covered dry feed and finished-powder storage
- Fully enclosed conveyors with negative-pressure dust collection
- Compressed air for baghouse cleaning and packer controls
- Laboratory ventilation, safe sampling and worker respiratory protection

Quality, safety and environmental controls

- Map quarry benches and release stone lots by chemistry/whiteness
- Control feed moisture, mill differential and classifier setting
- Trend tonnes per hour, kWh/t and wear
- Test particle distribution, residue, whiteness and chemistry
- Verify bulk density, moisture, bag weight and sealing
- Run buyer putty, mortar, paint or polymer trials before claims

A final factory layout must reserve safe forklift routes, maintenance clearances, raw-material segregation, finished-goods storage, fire protection, ventilation, and future expansion space.

Indicative Investment & Implementation Plan

LOW-ENTRY CONFIGURATION

The lowest credible plant makes one 200-325 mesh GCC filler with a Raymond mill and dynamic classifier. Ultrafine coating, quarry fleet, building and working inventory are excluded.

Component	Indicative range	Notes
Crushing, feed handling and optional drying	US\$55k-160k	2-5 t/h dry feed basis
Raymond mill, classifier and dust collection	US\$110k-320k	200-325 mesh launch grade
Silo, packing, laboratory and utilities	US\$45k-130k	One product route
Civil works, freight, installation and spares	US\$65k-190k	Foundation and power dependent
Indicative installed project total	US\$275k-800k	Quarry fleet, building and working capital excluded

Implementation sequence

Phase 1	2-5 weeks	Confirm product specification, representative raw material, buyer, capacity, site and utilities
Phase 2	3-7 weeks	Run supplier trials with the buyer material and freeze the balanced machine, tooling and utility scope
Phase 3	8-22 weeks	Manufacture or refurbish, inspect, document and ship the contracted equipment
Phase 4	3-12 weeks	Install, commission, train operators and pass material-specific acceptance tests

Ranges are planning targets for a low-cost entry configuration, exclude land, and remain subject to confirmed capacity, supplier quotation, freight, duties, exchange rates and site conditions.

Next Steps & Contact Information

Recommended next steps

- Confirm target products, hourly output, and packaging formats
- Test representative raw materials and document quality requirements
- Complete site survey covering electricity, water, fuel, drainage, roads, and warehouse space
- Request comparable technical and commercial quotations from shortlisted suppliers
- Finalize financing, logistics, installation, training, and spare-parts plan

Sanaatchi Industrial Vision Group

Afghanistan Office: +93 779 819 820 | info@sanaatchi.com

China Office: +86 159 5171 6867 | china@sanaatchi.com

Website: www.sanaatchi.com

Research and image references

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