

Solid Sodium-Silicate Production Line

Complete Turnkey Business Proposal



Made-in-China supplier reference: real solid sodium-silicate production line equipment.

10 t/day screening basis	1 modulus launch chemistry	1,350-1,450°C fusion range	20-35 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 dry-process plant producing solid sodium silicate from qualified silica sand and soda ash through laboratory recipe control, closed storage and gravimetric batching, intensive mixing, continuous feeding to a regenerative high-temperature furnace, fusion at approximately 1,350-1,450°C, combustion and flue-gas control, molten-glass discharge, enclosed air or water quenching, crushing and sizing, chemistry/modulus testing and bulk or bag packing. This is a furnace project, not a workshop mixer.

Why this project fits Afghanistan

- Afghan silica may provide local feed value after chemical and mineralogical qualification.
- Sodium silicate serves detergents, foundry binders, construction chemicals and other industry.
- High furnace temperature makes fuel, refractory life and emissions decisive.
- A 10 t/day project needs assured buyers and specialist engineering before machinery purchase.

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

Do not publish a low-cost workshop offer. Begin only with a bankable pre-feasibility study for a 10 t/day dry-process furnace tied to independently characterized Afghan silica, reliable soda-ash supply, continuous fuel, cooling water, refractory service, emission permitting and a confirmed detergent, foundry or construction-chemical buyer. Require a complete installed-cost and guaranteed mass/energy balance before commitment.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Solid sodium silicate cullet or granules	Declared SiO ₂ /Na ₂ O modulus, solids, insolubles, iron, density, particle size and moisture	Qualified detergent, foundry or construction-chemical buyers

Dry sodium-silicate manufacture is energy-intensive glass melting. The EPC bidder must guarantee feed analysis window, output modulus, fuel consumption, yield, refractory campaign, stack emissions and safe quench. Commissioning tests raw silica impurities, soda-ash assay, batch ratio, furnace profile, cullet chemistry, insolubles, iron, particle size, bulk density and packing moisture.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Silica and soda-ash silos with batching	Meters controlled furnace batch	One modulus
2	Intensive mixer and enclosed furnace feeder	Homogenizes and delivers batch	10 t/day basis
3	Regenerative reverberatory furnace	Fuses silica and soda ash	1,350-1,450°C
4	Burner, heat recovery and flue-gas system	Controls energy and emissions	Guaranteed balance
5	Enclosed air/water quench and crusher	Solidifies and sizes glass	Safe molten handling
6	Chemical laboratory and packing line	Releases modulus and purity	Bulk or bags

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 solid sodium-silicate production line equipment.



Made-in-China supplier reference: second real machine configuration for solid sodium-silicate production line.

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Chemically qualified low-iron silica sand
- Certified dense soda ash
- Refractory, burner and filter consumables
- Bulk bags or moisture-resistant sacks

Utilities & infrastructure

- Stable three-phase electricity with verified connected load
- Guarded machinery, lockout, ventilation and fire protection
- Covered segregated raw-material and finished-goods storage
- Maintenance tools, safe lifting and critical spare parts
- Continuous contracted furnace fuel and backup power
- Industrial cooling/quench-water system with treatment
- Environmental permit, stack monitoring and refractory maintenance capability

Quality, safety and environmental controls

- Characterize silica mineralogy, iron and moisture
- Verify soda-ash assay and batch weights
- Log furnace temperature, pressure, fuel and pull rate
- Monitor stack gases, dust and quench safety
- Test SiO₂/Na₂O modulus, insolubles, iron and solids
- Verify particle size, moisture, pack mass and lot traceability

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

There is no responsible under-US\$50k version. The lowest publishable basis is a 10 t/day engineered furnace with emissions, laboratory and refractory support; final range follows a complete EPC proposal.

Component	Indicative range	Notes
Storage, batching and feed preparation	US\$180k-420k	10 t/day basis
Furnace, burners, refractory and heat recovery	US\$700k-1.7m	Installed hot section
Quench, crushing, emission control and laboratory	US\$280k-720k	Product and environmental systems
Freight, civil works, utilities and commissioning	US\$350k-900k	EPC study required
Indicative project-screening total	US\$1.51m-3.74m	Land, finance and working stock 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

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Research and image references

- https://www.alibaba.com/product-detail/Solid-Sodium-Silicate-Production-Line-Industrial_1601605601305.html
- <https://www.meibaotech.com/sodium-silicate-production-line/solid-sodium-silicate-process-production/solid-sodium-silicate-production-line-with.html>