

Polyferric Sulfate Water-Treatment Chemical Line

Complete Turnkey Business Proposal



Real industrial chemical-process installation used as a reference for the contained reaction and transfer scope; final PFS equipment must come from the licensed process provider.

10-20 t/day liquid PFS screening basis	1 grade controlled launch	jar tested buyer validation	12-20 trained workforce
--	---	---	---

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, licensed process line producing liquid polyferric sulfate (PFS) water-treatment coagulant from qualified iron salts, sulfuric acid and an approved oxidant through contained raw-material storage, controlled acid addition, staged oxidation and polymerisation, maturation, fine filtration, laboratory release, corrosion-resistant storage and controlled filling. It is not a small chemical mixing workshop and must be engineered around local chemical, transport, air and wastewater permits.

Why this project fits Afghanistan

- Municipal and industrial water treatment requires reliable, tested coagulant supply.
- PFS performance must be proved by jar tests on actual source water.
- Acid, oxidant and corrosion risks require contained engineered equipment.
- Chemical permits, fume treatment and batch traceability are core scope, not add-ons.

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

Proceed only with a licensed process provider and pilot jar-test demand from named municipal or industrial water-treatment buyers. A conservative 10-20 t/day liquid-PFS screening basis needs bunded chemical tanks, corrosion-resistant reactors, approved oxidant dosing, heat removal, maturation tanks, fume scrubbing, filtration, laboratory, compliant packaging and trained chemical operators. Final chemistry and investment must follow a provider-guaranteed process package.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Liquid polyferric sulfate coagulant	Total iron, ferrous iron, basicity, density, pH, insolubles, heavy metals, stability and jar-test dose	Qualified municipal, industrial and wastewater-treatment buyers

Do not publish or copy an unverified reaction recipe. The selected licensed process provider must define chemical concentrations, order of addition, oxidation conditions, heat removal, materials of construction, fume treatment, hazard controls and acceptance limits. Commissioning uses a documented pilot batch and tests total iron, ferrous iron, basicity, density, pH, insolubles, arsenic, lead and other relevant metals, storage stability and performance in representative water jar tests.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Bundled raw-chemical storage and transfer	Receives acid, iron salts and approved oxidant safely	Segregated corrosion-resistant duty
2	Closed reaction and heat-removal train	Controls licensed oxidation and polymerisation stages	10-20 t/day basis
3	Maturation tanks and fume scrubber	Stabilises product and controls corrosive vapours	Permit-specific design
4	Fine filtration and PFS storage	Removes insolubles and protects released product	One controlled grade
5	Chemical laboratory and filling station	Releases chemistry and packages safely	Jar-test and retained sample

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



Real industrial chemical-process installation used as a reference for the contained reaction and transfer scope; final PFS equipment must come from the licensed process provider.



Real industrial reactor configuration used as a reference for corrosion-resistant reaction engineering; it is not a claim that this exact plant produces PFS.

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Qualified iron salt feedstock
- Certified sulfuric acid and supplier-approved oxidant
- Treated process water, compatible drums/IBCs, labels and spill materials

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
- Chemical permit, acid/oxidant segregation and emergency shower/eyewash
- Fume scrubbing, corrosion-resistant drainage and wastewater-neutralisation route
- Hazard training, spill response and compliant chemical transport

Quality, safety and environmental controls

- Verify certificate and identity of every raw chemical
- Record exact mass, addition sequence, temperature and reaction time
- Monitor heat removal, fume-scrubber performance and corrosion condition
- Test total/ferrous iron, basicity, density, pH and insolubles
- Test relevant metals, storage stability and actual water jar-test performance
- Verify fill mass, compatible packaging, code and transport documentation

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 low-cost workshop version. The lowest publishable basis is one permitted liquid grade built around a licensed process and actual buyer jar tests.

Component	Indicative range	Notes
Chemical storage, transfer and containment	US\$160k-420k	Acid and oxidant segregation
Licensed reactor, heat management and maturation	US\$350k-900k	10-20 t/day liquid basis
Scrubber, filtration, laboratory and filling	US\$190k-520k	Permit and quality scope
Civil, safety, freight and commissioning	US\$220k-650k	Licensed process provider required
Indicative project-screening total	US\$920k-2.49m	Land, permits 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

- <https://www.rbepchem.com/product/poly-ferric-sulfate>
- <https://patents.google.com/patent/CN205187900U/en>