

Recycled PET Polyester Staple Fibre Line

Complete Turnkey Business Proposal



Made-in-China supplier reference: real recycled pet polyester staple fibre line equipment.

15-20 t/day strategic entry screen	1 fibre grade controlled launch	washed PET flakes approved feed	55-95 three-shift 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 large strategic plant converting qualified, washed PET flakes into one polyester staple-fibre grade through flake receipt and contamination control, crystallisation and vacuum drying, extrusion, melt filtration, metering and spinning, quenching, spin finish, tow collection, drawing, crimping, heat setting, cutting, baling and fibre laboratory release. It is not a bottle-washing line and cannot accept mixed or poorly washed PET feed.

Why this project fits Afghanistan

- Afghan PET recovery can feed higher-value fibre only after rigorous sorting and washing.
- Nonwoven and filling grades are more realistic at launch than fine textile fibre.
- Moisture, PVC, polyolefin, colour and intrinsic viscosity govern spinning stability.
- The project needs continuous utility supply, water control, fire protection and committed fibre buyers.

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 only after a bankable feedstock study and downstream customer qualification. The entry strategic screen is one nonwoven or filling grade at roughly 15-20 t/day, supplied by a defined washed-flake specification. Include flake laboratory, crystalliser/vacuum dryer, one extrusion-spinning line, filtration, quench and finish system, drawing/crimp/cutting, baler, water/thermal-oil systems, dust control and a fibre laboratory. Do not promise textile-grade fibre before customer trials.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Recycled polyester staple fibre for nonwoven or filling use	Denier, cut length, tensile properties, elongation, crimp, moisture, colour, contamination, intrinsic-viscosity window and bale mass	Qualified Afghan or regional nonwoven, filling and insulation buyers

A PET-fibre plant is only as stable as its flakes. The supplier must state allowable PVC, polyolefin, metals, glue, moisture, colour and IV range, then run an agreed flake trial. Acceptance measures flake quality, dryer dew point, melt pressure and filtration, filament breaks, denier, strength, elongation, crimp, cut-length distribution, moisture, contamination, bale density and customer conversion trials. Use separate engineering for food-contact recycled polymer or bottle-to-bottle claims.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Flake laboratory, crystalliser and vacuum dryer	Qualifies and dries PET before melting	Defined IV and moisture window
2	Extruder and continuous melt-filtration train	Melts and cleans qualified recycled polymer	15-20 t/day strategic screen
3	Spin beam, quench and finish system	Creates controlled filament tow	One denier/grade family
4	Drawing, crimping, heat-setting and cutter	Builds staple-fibre properties and cut length	Buyer-approved specification
5	Baler, fibre laboratory and utilities	Releases traceable fibre bales	Downstream trial approved

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 recycled pet polyester staple fibre line equipment.



Made-in-China supplier reference: second real machine configuration for recycled pet polyester staple fibre line.

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Washed PET flakes to a written contaminant, moisture, colour and IV specification
- Spin finish, filters, quench water-treatment chemicals and packaging bales
- Critical spinneret, filter, cutter and drive spares

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 cooling water, thermal oil, compressed air and high-capacity drying vacuum
- Fire protection, polymer fume extraction and flake/fibre dust control
- Secure flake warehouse, wastewater control and qualified maintenance team

Quality, safety and environmental controls

- Analyse every flake lot for PVC, polyolefin, metals, moisture, colour and IV
- Record dryer dew point, melt pressure, temperature and filter changes
- Track filament breaks, waste and line yield
- Test denier, tensile strength, elongation, crimp and cut length
- Verify moisture, contamination, colour and bale density
- Approve downstream nonwoven or filling conversion before expansion

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 project makes one nonwoven or filling fibre grade from a strict washed-flake specification. Fine textile, bottle-to-bottle and multiple denier grades are separate investment phases.

Component	Indicative range	Notes
Flake preparation, laboratory and drying	US\$1.2m-3m	15-20 t/day basis
Extrusion, filtration, spinning and quench	US\$3m-8m	Core polymer conversion
Draw, crimp, cutting, baling and testing	US\$1.5m-4m	One staple grade
Utilities, civil works, freight and commissioning	US\$2m-6m	Continuous strategic plant
Indicative strategic project total	US\$7.7m-21m	Land, finance 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

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Research and image references

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