

PE Wax Textile Processing Lab Qualification & Procurement Checklist

For raw PE wax, oxidized PE wax (OPE) and ready aqueous wax emulsions used in yarn/thread lubrication, sewability and fabric finishing. Define the process objective before comparing supplier numbers.

1. Define the textile application

- Substrate defined: cotton / polyester / polyamide / acrylic / blend / aramid / other.
- Stage defined: spin finish / yarn or thread lubrication / sizing support / padding / exhaust / coating / spray / other.
- Primary objective defined: lower friction / fewer yarn breaks / better sewability / smoother hand / abrasion support / hydrophobicity support.
- Downstream risks identified: dyeing, printing, coating adhesion, absorbency, wicking, laundering, heat curing and shade control.
- Production water hardness, conductivity, pH, bath temperature and major auxiliaries documented.

2. Select the correct PE wax form

Form	Use when	Critical controls	Selected
Non-oxidized PE wax	Hot-melt, solvent-compatible or dedicated in-house emulsification route	Drop point, viscosity, hardness, powder size, emulsification procedure	■
Oxidized PE wax (OPE)	Aqueous emulsification and polar finishing systems	Acid value, drop point, viscosity, density, color, emulsifiability	■
Ready PE wax emulsion	Direct textile-mill dosing into water-based bath or finish	Solids, particle size, charge, pH, viscosity, stability	■

3. Chemical and physical specification

Parameter	Limit / target	Method / temperature	COA result	Pass
Product identity / wax chemistry				■
Appearance / color / physical form				■
Drop point / thermal method				■
Acid value (oxidized wax)				■
Melt viscosity at defined temperature				■
Density / hardness / penetration				■
Powder particle size / sieve residue				■
Emulsion nonvolatile solids				■
Emulsion particle size				■
Emulsion ionic charge				■
pH and viscosity				■

4. Bath compatibility screening

- Real production water used at intended hardness/conductivity.
- Actual addition order reproduced with softener, binder/resin, catalyst, dye/pigment, salt and pH adjustment.
- No immediate flocculation, oiling-out, sediment or excessive foam.
- Stable after intended process temperature and 30-60 minute hold.
- Acceptable filter residue / screenability after stress test.
- If charge is anionic/cationic, opposite-charge auxiliaries have been explicitly evaluated.

5. Active-solids dosing and trial design

- Commercial-emulsion dose converted to active wax solids before comparison.
- Blank plus low / target / high active-wax treatments prepared.
- Pad pickup or exhaust conditions measured and recorded.
- Dry add-on confirmed where performance is highly dosage-sensitive.
- All trial fabrics/yarns use the same lot, conditioning and process history.

Core calculation: Product dose (g/L) = required active wax (g/L) / emulsion solids fraction. For padding, first approximation: product concentration (g/L) $\approx$ 1000 x desired dry wax add-on (% owf) / [wet pickup (%) x solids fraction].

6. Textile performance qualification

Performance check	Blank	Low	Target	High	Requirement / result	Pass
Yarn/fabric coefficient of friction						■
Yarn breaks / wear / package behavior						■
Sewability / needle-hole damage						■
Hand / bending / drape						■
Shade / whiteness / yellowing						■
Absorbency / wicking						■
Abrasion / pilling						■
Wash durability						■
Coating / print adhesion if downstream						■

7. Supplier, compliance and change control

- Current TDS, SDS and representative COA received; batch-specific COA required for supply.
- Manufacturer, production site, grade code and lot traceability confirmed.
- Supplier must notify changes to wax feedstock, oxidation/acid value, emulsifier, particle size, solids, preservative or manufacturing site.
- Customer RSL/MRSL, ZDHC/OEKO-TEX or other brand requirements checked where contractually applicable.
- EU REACH synthetic-polymer-microparticle applicability reviewed where relevant to the market and product form.

8. Receiving and release

Check	Acceptance evidence	Status
Identity / lot	Product, grade and batch documents match the purchase order	■
Packaging	Dry/intact for raw wax; no leakage, swelling or separation for emulsion	■
Appearance	No abnormal color, odor, hard caking, sediment or contamination	■
Risk-based QC	Critical chemical/physical parameters meet the approved control range	■
Reference textile test	Target friction/hand/sewability result is within the approved range	■
Retention sample	Representative batch sample sealed, labeled and retained	■

9. Red flags - stop and investigate

Red flag	Why it matters
Supplier offers 'textile grade' without wax type or emulsion charge	The name does not define chemistry, compatibility or performance.
Two emulsions compared only by kg/L product	Different solids levels make the comparison technically and commercially misleading.
Bath becomes cloudy or develops specks after cationic softener	Possible charge incompatibility can become fabric deposits at production scale.
Friction improves but absorbency or hand becomes unacceptable	The optimized result must balance process benefit with final-fabric requirements.
COA omits key parameters or test methods	Batch numbers are not comparable without defined methods and conditions.
Supplier changes emulsifier or production site without notice	Particle size, charge, stability and fabric deposition can change even if the wax name stays the same.

Approval record: Supplier _____ Grade _____ Lot / trial _____ Selected active-wax dose _____ Reviewer _____
Date _____