

Work Instructions: Surface Coating and Paint-Off Repair

SF;PO - classify, prepare, touch-up, and document coating loss

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Audience: Blade technicians, coating specialists, inspection technicians

Scope: Vendor-neutral guidance for common surface coating loss and superficial repairs

Key outputs (what this manual enables)

- Severity-based decision table for SF;PO
- Surface preparation workflow
- Two repair paths: minor paint touch-up and gelcoat/filler patch
- QA checks and reporting fields

Document control

Revision	Date	Change summary
v1.0	2026-01-16	Initial synthetic release for academic RAG baseline
v1.1	2026-01-16	Expanded procedures, checklists and reporting templates

How to use this document

This manual is designed for fast field use: identify the defect, assign a severity level, execute the minimal viable corrective action, and produce a standardized report for downstream systems.

It is intentionally vendor-neutral. Whenever a step references torque, curing, material spec or acceptance values, treat these as placeholders and verify with OEM or site procedures.

Quick start

- Confirm access, weather, and stop/run status (safety gate).
- Capture evidence: overview photo, close-up, and scale reference.
- Classify defect using the provided taxonomy and severity rubric.
- Select action: monitor, protect, repair, or stop turbine.
- Create a report using the provided template and attach photos.

Scope

This manual targets SF;PO: surface paint-off, coating loss, and superficial surface layer repairs (paint/gelcoat).

Failure modes

- Localized paint flaking due to poor adhesion or impact.
- Coating loss after leading edge protection system degradation.
- UV and weathering leading to chalking and progressive loss.

Safety and environmental limits

- Control dust: composite particles are hazardous.
- Do not coat in rain, fog, or on wet substrate.
- Record temperature, humidity and dew point margin.

Procedure A - classify paint-off

Severity	Field cues (examples)	Action
S1	Small scuff; coating intact around	Record
S2	Paint missing in small patch; no substrate exposure	Touch-up
S3	Substrate exposed; edges lifting	Repair within weeks
S4	Large area; multiple patches; water ingress risk	Urgent repair
S5	Coating loss with laminate damage or delam	Stop and escalate

Procedure B - surface preparation

- Clean with mild detergent; rinse and dry.
- Remove loose coating; feather edges to sound adhesion.
- Sand to specified grit progression; vacuum and wipe.
- Mask boundaries; avoid sharp paint edges.

Procedure C - minor touch-up (paint system)

- Apply primer if substrate is exposed (per coating system).
- Apply topcoat in thin layers; maintain recommended film thickness.
- Allow flash-off and full cure per product instructions.
- Measure wet film thickness (WFT) if available and record.

Procedure D - gelcoat / filler patch (surface layer repair)

- Cut back damaged gelcoat to sound boundary.
- Apply filler to restore surface level; sand smooth.
- Apply gelcoat/topcoat; cure and finish sand/polish if required.

Quality checks

- No pinholes, fisheyes, or unsealed edges.
- Smooth transition with no step change.
- Adhesion check per site method (tape pull) if required.

Reporting fields

- Area size (cm²), location and side.
- Coating system used (primer/topcoat names, batch/lot).
- Environmental conditions at application.
- Before/after photos.