

Direct Product Traceability with In-Field Authentication

Sustainable Leather Foundation

January 2021



Direct Product Marking for Traceability

- Enables Brands to make demonstrative sustainability and intangible characteristic claims: Environmental, Social, Governance, Fair Trade, Export Region, etc.
- Simplifies identification: instant, reliable, repeatable, non-destructive, in-field results - no lab testing required
- Inseparable from the product itself (unlike tags or paperwork)
- Physically links products and raw materials with Certification Documents
- Easily integrated – avoids additional (often costly) manufacturing steps
- Offers court-admissible evidence for liability, warranty, brand protection, and contract enforcement
- Establishes Direct Supply Chain Traceability



Stardust Benefits

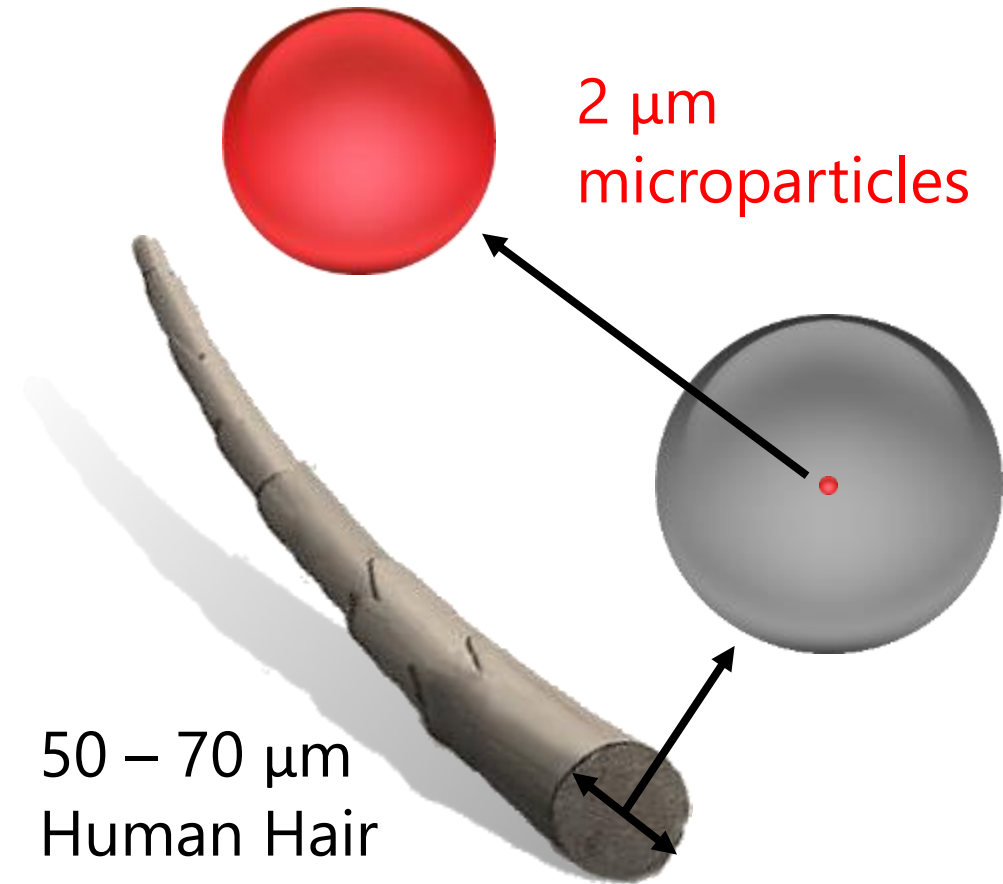
Stardust[®] Taggants

1) Inorganic, Optical markers

- Proprietary
- Multiple markers

2) Detection devices

- Instant authentication
- Non-destructive
- Universal and Custom-built



 **Stardust**
Secured.

IRIS™ - InfraRed (IR) Investigation Sensor

- Hand-held field detection device
- Immediate, unambiguous results
- Non-destructive testing
- No laboratory testing –
no added wait for results or cost
- Ease of use
- Multi-taggant capability
- Audio, Visual, Tactile feedback result



 Stardust
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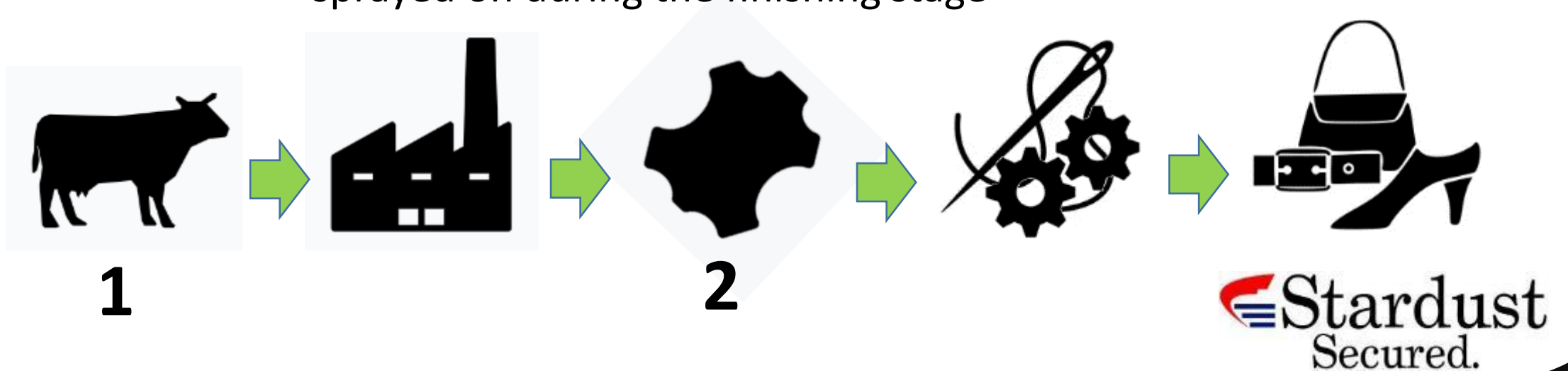
IRIS™ - InfraRed (IR) Investigation Sensor



Tracer Detection Demonstration

Integration Points and Application

- 1) Stardust integrated into non-toxic paint (covert or overt)
applied @ the Farm
sprayed directly onto the Animal
- 2) Stardust integrated into finishing stage chemicals
applied @ the Tannery
sprayed on during the finishing stage



Tracer Embedding

Points of Entry for Stardust[®] Taggants

- Liming Bath: agitation and swell aid in tracer embedding
- Stuffing: included in waxes/oils to penetrate surface
- Pre-Roller: compression under rollers enhances lock-in



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Tracer Embedding

Stardust[®] Advantage

- ✓ Exceptional stability
- ✓ No additional process steps
- ✓ Totally covert
- ✓ Reliable, robust security
- ✓ Inextricable from marked product
- ✓ Traceability: 1) Farm to Tannery
2) Tannery to Retail
- ✓ Brand protection: anti-counterfeiting, demonstrative traceability
- ✓ Field vs. lab testing: immediate, repeatable, non-destructive results.



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Stardust Benefits

Case Study – Goose Down

- Leading outdoor brand
- RDS down
- Overseas Manufacturing
- Tracer introduced in washing stage
- Brand wants:
 - 1) Dilution detection
 - 2) Contract enforcement
 - 3) Anti-counterfeiting
 - 4) Customer engagement



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Case Study – Goose Down (continued): Customer Engagement



Case Study

Case Study – Upcycled Ocean Plastic®

- Recovered Ocean Plastic® upcycled → pellets & yarn → clothing, bags, credit cards, etc.
- Worldwide environmental effort
- Brand wants:
 - 1) Traceability to regional source
 - 2) To create Closed Loops
 - 3) To promote Avoid, Intercept, and material Redesign of plastic
 - 4) To tell their story to customers



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Case Study – Viscose

- New tracer developed in less than three months
- Taggant integrated into dope stage
- Survives reconstitution in H_2SO_4
- Brand wants:
 - 1) To demonstrate sustainability
 - 2) To detect dilution
 - 3) Downstream traceability to vendors
 - 4) To tell their story to customers



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Case Study – Upcycled Cotton

- On-going successful Pilot
- Brand wants to demonstrate:
 - 1) Sustainable Materials
 - 2) Sustainable Values
 - 3) Best Quality



E.g. Commitment to sustainability - Annual Savings



73440000 KL Water



50% Energy



50% CO₂ Emission



5040 KG Chemicals




80% Waste

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Case Study

Stardust Secured.

- 22 years in document security, brand protection, and direct supply chain traceability
- \$45 billion of revenue protected annually
- R&D/manufacturing facility located near Portland, Oregon
- ISO 9001:2015 certified 



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About