

FIELD REPORT · 2026

Powderless DTF: The Wash Gap Nobody Measured

A vendor-neutral analysis of powderless architectures, specialty ink chemistry, and what adhesive-jetting does to your preflight and RIP.

~50%

of your wash life, on the suppliers' own numbers

3

different chemistries sold under one marketing label

0

independent wash tests published by anyone

Kjell Karlsson

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How to read this report

Powderless DTF is being sold as a hardware category. It is better understood as three unrelated chemistries that happen to share a marketing word, only one of which changes anything about how you prepare files.

This report separates what is shipping from what has been announced, states the durability evidence in full rather than in summary, and marks the difference between a figure somebody measured and a conclusion that follows from how the technology works. Where a claim is reasoned rather than tested, it says so in the sentence, not in a footnote.

The test applied throughout: does this change what a print shop should do on Monday? If not, it is context, and it is labelled as context.

A note on the evidence base

The entire published durability record for powderless DTF consists of two suppliers describing their own products in front of an audience. There is no ISO 105-C06 or AATCC 61 comparison, no third-party lab result, and no cross-manufacturer test of any kind. That absence is a finding in its own right and it is treated as one in Section 04.

Three claims in the research this report was built from did not survive checking. All three are corrected in the body and logged on page 23, along with the material that was left out and why.

Seven Findings That Matter

Powderless DTF is real, shipping, and four years old. What it is not is settled. These are the seven findings that survive scrutiny.

1 Powderless is three technologies wearing one label

Adhesion built into the ink, liquid adhesive jetted through a dedicated head, and pre-coated adhesive film are three different chemistries with three different failure modes, three different lock-in profiles, and three different retrofit costs. **Only the jetted-adhesive route changes anything about prepress.** A shop that compares “powderless” machines without first establishing which architecture each one uses is comparing the wrong thing.

2 The wash gap is real, and both figures came from the vendors themselves

DCC reported more than 20 washes for its powderless transfers against roughly 40–50 for powdered, at the same testing stage. Matsui separately put its own system at around 15–20 and said plainly that it is still below powder. **Two competitors independently understating their own products is the strongest evidence available in this category**, and it points the same direction: roughly half the wash life.

3 Nobody has published an independent wash test

No ISO 105-C06 or AATCC 61 comparison across manufacturers exists in the public record as of September 2026. The category’s entire durability evidence base is two booth demonstrations. **That is not enough to build a production decision on, and it is certainly not enough to build a customer promise on.** Until it exists, 15–25 washes is the honest planning assumption.

4 The two largest incumbents have no product, and that is information

Epson stated on the record in February 2026 that it does not offer a powderless solution. Roland DG has announced nothing. The category is being led by a mid-size Indian manufacturer, a Greek manufacturer partnered with an American chemical company, a Japanese ink house that admits it is not finished, and a cluster of Chinese OEMs. **Incumbents with the largest installed bases and the most to lose from a warranty problem are the ones sitting this out.**

5 This is a four-year-old technology having its second launch

Resolute shipped a powderless/powdered hybrid in 2022. MTEX NS showed a DTF Powderless machine at PRINTING United in 2024. **What happened in 2026 was not invention, it was critical mass** — enough suppliers arriving at once for the trade press to name a category. Treat “brand new, move now” sales framing accordingly.

6 UV DTF, neon, and glow-in-the-dark are three unrelated things

UV DTF is a separate process using UV-curable ink on two-part AB film for hard surfaces. Fluorescent ink absorbs ultraviolet and re-emits it as visible light. Phosphorescent ink stores light and releases it slowly. **The names overlap, the chemistries do not, and the confusion reaches your customer before it reaches you.** This is a reprint-and-refund problem hiding in your product copy, and it costs nothing to fix.

7 Powderless moves adhesive out of the machine and into your RIP

On a powdered line, adhesive is a mechanical step downstream of your file, and it forgives sloppy prepress. On an adhesive-jetting line, adhesive is a RIP-managed channel driven by your artwork. **Knockout and choke settings that only cost you white ink before can now cost you edge adhesion.** Nobody has published test data on this. The mechanism is not in dispute, and checking it costs an afternoon.

What this adds up to

Powderless solves real problems — dust, floor space, stiff hand-feel, a shaker that needs cleaning every shift. It also costs you roughly half your wash life on current evidence, locks you into one supplier's consumables, and adds a climate dependency to a process that never had one.

The defensible position is hybrid hardware with both queues validated, matching process to job rather than converting the line. That is not fence-sitting. It is the only stance that survives whichever way the durability data eventually lands.

What Powderless Actually Changes on the Floor

Traditional DTF runs four steps: print CMYK plus white onto PET film, apply loose hot-melt powder, shake off the excess and cure it in a tunnel, then heat-press onto the garment. Powderless collapses that to three — print, dry, press.

Because nothing solid needs melting, curing moves from a full-size tunnel dryer to a smaller, lower-temperature panel. You lose the shaker unit, the tunnel, the airborne adhesive dust, and a meaningful share of floor space. In a shop where the shaker is wedged between the printer and the press because there was nowhere else to put it, that alone is worth a conversation.

What you gain is a consumable that costs more and a climate sensitivity you did not previously have. Liquid adhesive thickens in cold, dry rooms and can clog heads. Powder does not care what the room is doing.

FACTOR	TRADITIONAL (POWDERED)	POWDERLESS
Process steps	Print, powder, tunnel cure, press — four stages	Print, panel dry, press — three stages
Floor footprint	Shaker unit plus tunnel dryer	No shaker; compact low-temperature curing panel
Airborne dust	Present; requires ventilation and air purifiers	Eliminated or greatly reduced
Hand-feel	Heavier and stiffer from powder build-up	Softer, lighter, more breathable
Climate sensitivity	Low — powder tolerates ambient swings	Higher — liquid adhesive can thicken and clog heads in cold, dry rooms
Wash durability	~40–50 washes (supplier demonstration)	~15–25 washes (supplier demonstration)
Consumable supply	Commoditised; many interchangeable sources	Proprietary adhesive or coated film; effectively single-source
Best current fit	Canvas, denim, workwear, high-volume wholesale	Boutique, streetwear, tight premises, hand-feel-first runs

Wash figures throughout this report are supplier demonstration data, not independent testing. See Section 04.

What powderless does not change

It does not make the print better. Nothing in any supplier’s material claims wider gamut, finer detail, or better colour accuracy from removing powder. The print is the same print. What changes is the process around it and the feel of the result.

It does not remove the heat press, the film, or the white underbase. It does not reduce your ink consumption. And it does not simplify prepress — on the jetted-adhesive route it does the opposite,

which is the subject of Section 07.

Check the room before you check the spec sheet

If your production space is unheated overnight, or shares a wall with a loading bay, or runs a dehumidifier in summer and nothing in winter, ask every supplier for the minimum ambient temperature and relative humidity for reliable jetting — in writing, with a number.

This is the constraint most likely to turn a good machine into a bad purchase, and it is the one least likely to come up on a trade show floor in a climate-controlled hall.

Three Architectures, One Marketing Label

“Powderless” describes an outcome, not a technology. At least three distinct routes reach that outcome, and they differ in every way that matters to a buyer: what you are locked into, whether a retrofit is possible, and what goes wrong when it goes wrong.

Route 1 — adhesion built into the ink

The adhesive is formulated into the ink itself. There is no separate binder pass, no extra channel, and nothing additional to meter or align. DCC Group markets this as powder-free and glue-free, using an ink platform developed with Nur Ink Innovations for its NeoFlex F-Series, and delivers it as a conversion kit on the existing platform.

This is the cleanest architecture on paper. It is also the most complete form of lock-in in the category: the adhesive and the colourant are the same product, so switching ink supplier means switching adhesion chemistry, and there is no third-party market for it.

Route 2 — jetted liquid adhesive

A dedicated printhead lays down liquid adhesive where the artwork needs it. DuPont’s Artistri JA1100 Jettable Adhesive, integrated by Polyprint, works this way. So does Matsui’s system, and so do the Chinese glue-channel machines from SUBLISTAR and others, which run dual glue channels alongside colour and white.

This is the route that matters for prepress, because adhesive placement stops being a mechanical constant and becomes a file-driven variable. It is also the only route with a plausible retrofit story — and that story needs checking carefully.

Three printheads, not three channels

Matsui has stated that its powderless ink works with existing DTF printers but requires at least three *separate printheads* — not three channels on one head. That is a hardware change, not an ink swap, and the cost difference between those two things is the whole purchase decision.

Ask any supplier pitching a retrofit which of the two they mean, and get the answer before you get a quote. “Works with your existing printer” is doing a great deal of work in that sentence.

Route 3 — pre-coated adhesive film

The adhesive lives in the film and bonds chemically with wet ink on contact. The printer stays simple, the RIP stays simple, and the entire cost moves into the consumable. Least common of the three in commercial systems today, and the one with the least published performance data.

	ADHESION IN INK	JETTED ADHESIVE	PRE-COATED FILM
Hardware change	Conversion kit or new platform	Additional printhead(s); confirm heads vs channels	None — consumable only
RIP impact	None beyond normal DTF	Adhesive becomes a managed channel	None beyond normal DTF
Lock-in	Total — ink and adhesive are one product	High — proprietary adhesive	High — proprietary film
Main failure mode	Ink formulation compromises	Head clogging in cold or dry conditions; coverage errors from prepress	Film handling and shelf life
Example	DCC NeoFlex with Nur Ink	Polyprint with DuPont Artistri JA1100; Matsui; SUBLISTAR	Various; limited commercial presence

The practical takeaway is that these are not competing products in the same category. A shop weighing an adhesion-in-ink conversion kit against a jetted-adhesive retrofit is weighing a chemistry decision against a hardware decision, and the two have almost nothing in common except the word on the brochure.

The lock-in you are actually buying

Powdered DTF runs on commodities. Hot-melt powder and PET film are made by dozens of suppliers, compete on price, and can be switched inside a week if a distributor gets greedy or a batch goes bad. That optionality is invisible until it is gone, and it is worth more than most shops account for.

Every powderless route removes it. Whether the adhesive lives in the ink, in a separate jetted fluid, or in a coated film, it is proprietary and effectively single-source. Your supplier knows you cannot switch without changing chemistry or hardware, and that is a structural fact about the technology rather than an accusation about any particular company.

The mitigation is optionality at the machine level. A conversion-kit or RIP-switched platform that still runs traditional powdered DTF keeps a commodity fallback in the building. A powderless-only machine does not, and it asks you to accept both an unmeasured durability gap and a single-source consumable at the same time.

Price the lock-in as a line item

Ask for the price-change history on the adhesive and film over the last twenty-four months, in writing. A supplier with a clean record will send it. A supplier who deflects has answered a different and more useful question.

Then ask what happens if the SKU is discontinued or the company is acquired. Consumable repricing after a supply-chain change does not arrive as an announced price rise. It arrives as a reformulation, a new part number, or a warranty condition that quietly requires the OEM product.

Who Is Shipping and Who Is Announcing

The trade show narrative and the shop floor reality diverge here more than anywhere else in this report. Powderless has been commercially available since 2022. It became a *category* in 2026 because enough suppliers arrived at once to justify the coverage.

How the category actually arrived

2022

Resolute DTF ships a powderless / powdered hybrid

The R-Jet PRO DTF NP switches between workflows through RIP software without changing film. Aimed at smaller UK operations wanting optionality rather than conversion. Four years before the category had a name.

SEPTEMBER 2024

MTEX NS shows a DTF Powderless machine at PRINTING United

Exhibited under AstroNova ownership alongside a DTF UV model, using glue in place of powder. Received modest coverage and no category framing.

JANUARY 2026

Impressions Expo Long Beach turns it into a race

DCC debuts the NeoFlex line, marketed as powder-free and glue-free. In the same month Matsui discloses its own system publicly, including the unflattering wash figure. Trade coverage begins treating powderless as a defined competitive category with named rivals.

FEBRUARY 2026

DCC and Nur Ink Innovations launch the NeoFlex F-Series

The ink platform integrates adhesion directly into the ink. Powderless is delivered as a conversion kit, so the same machine still runs traditional powdered DTF. Epson states on the record in the same month that it has no powderless solution.

MARCH 2026

DCC takes Best New DTF Printer at the Impressions Industry Impact Awards

The award citation singles out adhesive integrated directly into the ink, and notes that several other companies are working on comparable inks and adhesives.

MAY 2026

Polyprint unveils Powder-Free DTF at FESPA Barcelona

Built on DuPont Artistri JA1100 Jettable Adhesive. UK commercial availability targeted for Q3 2026, pricing unannounced at launch. Shown alongside the Filmjet Mini, a separate traditional line that still ships with a powder shaker.

AUGUST 2026

DuPont issues a positioning statement with no product in it

Three months after FESPA, the follow-up announces that the industry's next step lies in process rather than ink, and that further details will be shared in the near future. No specification, no availability date, no durability figure.

23-25 SEPTEMBER 2026

PRINTING United Expo, Las Vegas

The next opportunity to see any of this running. The Print Show follows at the NEC Birmingham on 29 September.

Supplier status, September 2026

SUPPLIER	ROUTE	STATUS
DCC Group NeoFlex F-series	Adhesion in ink	Shipping. Powderless delivered as a conversion kit, so the platform still runs powdered. Won Best New DTF Printer at the 2026 Impressions Industry Impact Awards. Ink platform developed with Nur Ink Innovations.
Polyprint + DuPont Artistri	Jetted adhesive	Launched, availability pending. Unveiled at FESPA Barcelona, May 2026. UK availability targeted Q3 2026. Pricing not published. August follow-up from DuPont contained no product detail.
Matsui	Jetted adhesive	In development. Stated January 2026 that wash fastness is around 15–20 washes and still below powder, and that the system needs at least three separate printheads. Also lists a hybrid powderless/powder option.
SUBLISTAR DTF-6004G	Jetted adhesive	Selling. Four Epson i3200-A1 heads — colour, white, and dual glue channels. Claims up to 1,800 dpi and 5 m ² /hour. Marketed on indoor air quality.
Hongjet HJ-603	Powderless ink	Selling. Claims 10–15 m ² /hour and application beyond textiles to leather and wood. No independent verification of any claim located.
Resolute DTF R-Jet PRO DTF NP	Hybrid, RIP-switched	Selling (UK). Switches between powderless and powdered through RIP software without changing film. On the market since 2022.
MTEX NS (AstroNova)	Jetted glue	Shown 2024. Exhibited a DTF Powderless machine at PRINTING United alongside a DTF UV model. Useful evidence that the technology predates the 2026 category framing.
Epson	—	No powderless product. Stated on the record, February 2026. SureColor G-series remains powdered, with automated white ink circulation as its headline reliability feature.
Roland DG	—	No powderless product announced.

What the incumbents' absence is telling you

Epson and Roland DG have the largest installed bases in this segment, the deepest service networks, and the most exposure to a warranty problem. Both have chosen to sit out a technology that has been commercially available for four years.

There are two readings and both are worth holding. The charitable one is that large manufacturers move slowly and are working on it quietly — Epson's own comment in February hinted as much without committing to anything. The uncharitable one is that they have run the wash tests, seen what the specialists are seeing, and concluded that shipping a transfer with half the durability of the current product under their brand is not worth the support cost.

Nobody outside those companies knows which reading is correct. What is observable is that the firms with the most to lose are absent, and the firms with the most to gain are publishing the numbers themselves. **That pattern is worth more than any spec sheet in this section.**

The Durability Question

This is the only number that should drive your decision, and the evidence base is short enough to state in full on one page. That is the finding.

SOURCE	CLAIM	EVIDENCE TYPE
DCC	More than 20 washes powderless; approximately 40–50 powdered, at the same testing stage	Own product demonstration
Matsui	Around 15–20 washes; explicitly stated to be still less than powder	Own public statement, January 2026
Polyprint / DuPont	Consistent and reliable wash performance. No figure published	Marketing claim
Hongjet, SUBLISTAR	No durability figure located in product documentation	—
Independent laboratories	No ISO 105-C06 or AATCC 61 comparison across manufacturers located in the public record	None exists

Why the two figures that exist deserve weight

DCC and Matsui are competitors. Neither had a commercial reason to publish a wash number that flatters powder over their own powderless product, and both did it anyway — Matsui going as far as saying the washability is not yet good enough. When two rival suppliers independently disclose the same unflattering result about their own products, the number is about as reliable as unaudited industry data gets.

Convergence is the signal. One vendor claiming 20 washes could be a bad batch, a conservative tester, or a poorly chosen blank. Two vendors, different chemistries, different continents, arriving at roughly half the wash life of powdered DTF is a property of the technology, not an artefact of the test.

The commercial translation

At 20 washes, a customer wearing a shirt weekly sees visible degradation inside five months. For a concert tee, a corporate event run, a festival drop, or a seasonal streetwear release, nobody will ever notice and nobody will ever complain.

For workwear, uniforms, hospitality, kids' clothing, or anything sold with an implied durability promise, twenty washes is a warranty claim with a delay fuse on it.

Segment your order book by expected garment life before you segment your equipment budget. The question is not whether powderless is good enough. It is which of your customers it is good enough for.

How to run the test yourself

Wash performance moves with the garment, the ink, the film, cure temperature, press settings, detergent, water temperature and the care label. A demonstration number from a trade show booth tells you very little about your blanks, and a supplier who cannot tell you which garment and which standard produced their figure has not really given you one.

If you are seriously evaluating a conversion, run this before you commit:

- **Use the blank you sell most of**, not a premium tee the supplier provided. The substrate is half the result.
- **Print the same artwork through both queues** on a hybrid machine, or against your current powdered line if you are comparing suppliers. Include a solid fill, a fine line block, a gradient, and a large knocked-out area.
- **Reference a standard.** ISO 105-C06 or AATCC 61 give you a repeatable accelerated wash protocol and a defensible number to quote a customer. Domestic laundering to a fixed cycle count is acceptable if you document temperature, detergent and dryer setting.
- **Run to failure, not to twenty.** Stopping at the number the vendor quoted tells you only that the vendor was not lying. You need to know where the cliff is.
- **Photograph every ten cycles** under fixed lighting and angle. Crack onset and edge lift are gradual, and memory is not evidence when a customer disputes a job.
- **Test edge adhesion separately** on knocked-out and choked areas — see Section 07 for why these behave differently on a jetted-adhesive system.

This costs a few hundred euros in blanks and about three weeks of elapsed time. Set against a five-figure equipment decision on a technology with no independent test data behind it, it is the cheapest risk reduction available to you.

What would change this report

A published ISO 105-C06 or AATCC 61 comparison covering DCC, Polyprint/DuPont, Matsui and at least one Chinese OEM, on a common garment, from an accredited laboratory.

That single document would settle the category. It does not exist, no supplier has commissioned it, and no trade body has stepped in. Until somebody does, every purchasing decision in this segment is being made on two booth demonstrations.

Specialty Inks and the Terminology Trap

Three unrelated technologies are sold under names that overlap badly. The confusion reaches your customer before it reaches you, which is the expensive direction for it to travel.

TERM	WHAT IT ACTUALLY IS	WHAT THE CUSTOMER SEES
UV DTF	A separate process. UV-curable ink printed on two-part AB film, cured instantly by LED, laminated, then peeled and applied. No heat press, no powder, no garment.	A durable, slightly raised sticker on glass, metal, acrylic, tumblers, phone cases. Not apparel at all.
Fluorescent (neon) DTF	Textile DTF ink using pigments that absorb ultraviolet light and re-emit it as visible light. Sold in expanded sets — CMYK plus light cyan, light magenta, fluorescent yellow and fluorescent magenta.	Unusually bright colour in daylight and a real glow under blacklight. Goes dark the instant the UV source is removed.
Glow-in-the-dark	Phosphorescent pigments that store light energy and release it slowly. A different chemistry from fluorescent, not a stronger version of it.	Continues glowing in a completely dark room with no UV source present.

Why this costs money

A customer who orders glow-in-the-dark and receives fluorescent will reject the job, and they will be right to. The garment does exactly what fluorescent ink does and nothing the customer was picturing. There is no argument to win here, only a reprint to absorb.

The fix is free. Put the distinction in your product copy, your quote template, and your artwork approval, not just in your own head. If you run a web-to-print front end, this is two lines of text that pay for themselves the first time they stop a reprint. Industry guidance on specialty DTF is explicit that these two are routinely confused by customers and should be marketed and quality-checked as separate products.

The RIP requirement nobody mentions at the point of sale

Fluorescent and metallic inks require dedicated spot channel mapping in the RIP. You define a named spot — mapping “Neon Yellow” to the physical fluorescent channel — so the RIP sends that colour to the right head.

Skip that step and the RIP does what it is designed to do: it simulates the colour using standard CMYK. The result looks broadly correct on screen and in daylight, and produces nothing at all under a blacklight, because there is no fluorescent pigment in it. **This is the single most common way a shop sells a neon job it cannot deliver**, and it is a configuration error rather than an ink problem.

Sell the effect, not the ink

Neon and glow work commercially because of where the garment gets worn: festivals, club nights, running events, Halloween, safety-adjacent novelty. Those are also environments where the garment is worn a handful of times.

That makes specialty inks an unusually good fit for powderless transfers. If a garment is going to be worn six times, twenty washes of durability is not a constraint — it is more than the job needs. Pair the two deliberately.

Chemistry Claims and the Certification That Counts

Nearly all DTF ink is already water-based pigment chemistry rather than solvent or plastisol. A supplier telling you their ink is water-based has told you nothing that distinguishes it from the ink already in your machine.

The claim is table stakes dressed as a feature, and it is worth recognising the pattern because it recurs. When an entire category shares a property, marketing that property as a differentiator is a sign that the supplier could not find a real one.

What actually differentiates a supplier

OEKO-TEX ECO PASSPORT is the meaningful third-party benchmark. It independently tests every chemical ingredient for restricted substances rather than accepting a self-declaration, and it aligns with the ZDHC Manufacturing Restricted Substances List. For anyone selling into baby-brand, school, hospitality or big-box retail channels, it is increasingly a purchase condition rather than a values choice.

The useful development is that ECO PASSPORT certification in DTF is now common. DuPont Artistri, ColDesi DigitalHeat FX, Image Armor, STS, and Mexar's Indie Ink all hold it, and some suppliers now certify the full consumable set including film and TPU powder. **Because it is common, its absence is now the signal rather than its presence.** A supplier without it in 2026 has either not bothered or has a reason.

The gap worth asking about

ECO PASSPORT coverage for conventional DTF ink, film and powder is well established. Published certification status for the *new powderless adhesives* — jettable liquid adhesives and adhesion-integrated inks — was not located for any supplier during research for this report.

That is an absence of published information, not evidence of a problem. But if you sell into a channel that requires ECO PASSPORT documentation, it is the first question to put to a powderless supplier, and you should not accept the parent ink range's certificate as an answer for a different chemistry.

Certification is not the same as harmlessness

Pigments remain industrial chemicals whatever the label says, and a certificate covers the formulation that was tested rather than the one currently in the bottle. Reformulation happens quietly and continuously, particularly in a period when the wider ink industry is reformulating under regulatory pressure.

Four questions that separate documentation from marketing:

- Ask for the **current Safety Data Sheet**, dated, for the specific product code you are buying — not the range.

- Confirm **APEO-free and formaldehyde-free status in writing** rather than accepting it from a product page.
- Check the **ECO PASSPORT certificate number against the issuing body's directory**, not against the logo on a supplier PDF. Certificates expire.
- Ask whether the **formulation has changed in the last twelve months**, and if so, what changed. Suppliers will usually answer directly. They rarely volunteer it.

Optimise before you upgrade

If air quality is the reason powderless is on your shortlist, price proper extraction and filtration on your existing line first. It is a fraction of the cost of a new platform and it does not cost you twenty-five washes.

Powderless earns its place on hand-feel and floor space. Buying it purely to solve dust is an expensive way to fix a ventilation problem, and it is the most common bad reason for this purchase.

Preflight, Knockout, and the RIP Layer

Powderless does not rewrite prepress fundamentals. White underbase generation, choke and knockout logic all survive intact. What changes on the jetted-adhesive route is that adhesive stops being a mechanical step downstream of your file and becomes a variable your file controls.

What stays the same

The documented baseline across PrintFactory, Maintop and PrintEXP is unchanged. Generate a white underbase beneath the colour layers. Apply a choke of roughly 1–5 pixels, or 0.2–0.5 mm, so white never peeks past colour edges. Knock out white under pure-white and transparent design areas. Run 80–120% white density, and print white before CMYK. Knockout alone still cuts white ink usage by 25–40% on designs with large solid areas.

None of this is affected by the adhesion-in-ink route or the pre-coated film route. If you are evaluating a DCC-style conversion kit, your prepress does not change and this section is background rather than an action item.

What changes on an adhesive-jetting system

- **Adhesive becomes a RIP-managed channel.** The RIP now drives a physical glue head rather than handing off to a shaker. Your preflight owns adhesive coverage, which means a file that was previously merely inefficient can now be defective.
- **Specialty inks need explicit spot channel mapping.** Map named spots to physical channels or the RIP will simulate the effect in CMYK. Covered in Section 05, and it applies to metallic as well as fluorescent.
- **Two validated presets, permanently.** On hybrid machines the powdered and powderless queues respond differently to ink density and coverage. Test fine lines, gradients and solid fills through both before committing production, and never assume a validated powdered preset carries across.

Two things to test yourself — mechanism, not published data

Knockout now has a second-order effect. If adhesive coverage follows ink coverage, then knocking out white also removes adhesive in that region. On a powdered line, aggressive knockout only saved you white ink, because the shaker coated the whole sheet regardless. On a jetted-adhesive line it can under-glue large knocked-out areas. Print a test file with heavy knockout, press it, and wash it before you trust your existing knockout preset.

Choke may need re-tuning per queue. On powdered DTF, a white layer that overshoots the colour edge slightly still gets powdered and still bonds — the process forgives it. On jetted adhesive, if the adhesive layer does not extend at least to the ink edge you get unglued edges and lift after the first few washes. Your 0.3 mm choke was tuned for a forgiving process and there is no reason to assume it transfers.

Neither of these is published test data and neither should be quoted as such. Both follow directly from how the systems work, and neither costs more than an afternoon to check.

What this means for prepress tooling

The wider trend is consolidation of the preflight layer. Browser-based tools are now collapsing background removal, choke and underbase calculation, and halftone simulation into a single pass that previously required Photoshop plus the RIP.

Adhesive coverage is about to join that list of file-driven variables. That makes the preflight layer more commercially valuable, not less — and it means any tool built for powdered DTF assumptions will silently produce wrong results on a jetted-adhesive line. If you build or buy prepress tooling, this is the change to design for now rather than retrofit later.

Strategic Implications

Strip out the noise and this landscape produces a short list of decisions worth making in the next two quarters.

For print service providers

- **Sort by garment life before you sort by machine.** Workwear, uniforms, industrial and denim stay powdered until independent wash data exists. Streetwear, boutique, event and specialty work can absorb twenty washes without a single complaint.
- **Buy hybrid or buy nothing.** A powderless-only machine narrows what you can quote for a durability gap nobody has measured. Conversion kits and RIP-switched hybrids both preserve optionality at negligible cost.
- **Run your own wash test before you sign, not after.** Three weeks and a few hundred euros of blanks against a five-figure decision. Section 04 has the protocol.
- **Price the consumable lock-in as a line item.** Every powderless route is effectively single-source. Ask for the price-change history over the last twenty-four months and put the answer in the payback model.
- **Fix your ventilation first if dust is the driver.** It is the cheaper solution to the problem you actually have.

For equipment buyers

- **Establish the architecture before you compare anything else.** Adhesion-in-ink, jetted adhesive, and pre-coated film are not competing products in one category.
- **Confirm heads versus channels on any retrofit claim.** “Works with your existing printer” can mean an ink swap or three new printheads.
- **Get the minimum ambient temperature and humidity in writing.** This is the constraint most likely to turn a good machine into a bad purchase.
- **Ask what happens to the adhesive channel during a two-week shutdown,** and what recovery costs. Nobody volunteers this.

For hardware OEMs and integrators

- **Publish a wash figure against a named standard.** DCC and Matsui both did and neither was punished for it. The supplier who commissions the first accredited comparative test will own the category narrative for two years.
- **Ship hybrid, not replacement.** The conversion-kit and RIP-switched approaches are the ones customers can justify. A powderless-only machine asks a shop to bet its order book on unmeasured durability.
- **Document the RIP behaviour on the adhesive channel** — specifically how knockout and choke interact with adhesive coverage. Your customers will discover this the expensive way otherwise, and they will blame the machine.

For ink and chemistry suppliers

- **Certify the adhesive, not just the parent ink range.** ECO PASSPORT coverage for jettable adhesives is the obvious gap and the obvious differentiator.
- **Lead with the process step you delete, not the environmental benefit.** Every successful chemistry launch in adjacent textile categories sells on stages removed. Powderless is the same argument and it should be made the same way.
- **Close the durability gap publicly.** It is the single objection standing between this technology and the workwear segment, which is where the volume is.

Ten questions to put to any powderless supplier

Send these in writing and keep the reply. A supplier who will not answer in writing has already told you what you need to know.

- Which route is this — adhesion in the ink, jetted liquid adhesive, or pre-coated film?
- If it is a retrofit, does it require additional physical printheads or only additional channels?
- What is your wash-fastness result, on which test standard, on which garment, at what cycle count — and will you put it in writing?
- What is the cost per square metre of adhesive and film against my current powder and film?
- What is the minimum ambient temperature and relative humidity for reliable jetting?
- What happens to the adhesive channel during a two-week shutdown, and what does recovery cost?
- Am I locked to your ink and film, and what is the price-change history over the last twenty-four months?
- Does the machine still run traditional powdered DTF, and how long does switching take?
- Which RIP is supported, and how does it handle knockout and choke on the adhesive channel?
- Does the adhesive itself hold OEKO-TEX ECO PASSPORT, and what is the certificate number?

The one thing to take from this report

Powderless DTF is a four-year-old technology having its second launch, sold under one label by three unrelated chemistries, with a durability gap that two competing suppliers have independently confirmed and nobody has independently measured.

The shops that come out ahead over the next eighteen months will be the ones that bought hybrid hardware, kept both queues validated, and matched the process to the job rather than converting the line. That is not a hedge. It is the only position that survives whichever way the data eventually lands.

Sources, Method, and What We Corrected

Method

This analysis synthesises publicly available trade reporting, manufacturer technical documentation, and industry press coverage current to September 2026. It is editorial analysis, not primary research. No wash testing was conducted, no proprietary dataset underlies it, and no vendor reviewed, sponsored, or was given advance sight of any part of it.

Durability figures are reported exactly as their sources stated them, with the source and evidence type named in every case. Throughput and resolution figures are vendor-stated and have not been independently verified on a production floor. Where a conclusion is reasoned from mechanism rather than measured, it is labelled in the sentence that makes it.

What we corrected

Three claims in the research this report was built from did not survive checking against primary trade coverage. They are corrected in the body and logged here, because a report that quietly fixes its errors is less useful than one that says what it fixed.

CLAIM AS RECEIVED	CORRECTION
The DuPont and Polyprint system is called "Filmjet Powderless DTF"	Two separate products. The powderless system is Powder-Free DTF . The Filmjet Mini is a different, traditional line that ships with an integrated powder shaker. Conflating them makes a powdered product look powderless.
Matsui's technical approach and product detail unavailable	Matsui uses jettied glue with a water-based pigment ink, requires at least three separate printheads rather than three channels, and publicly stated wash fastness of 15–20 washes in January 2026.
Powderless reached an inflection point in 2026	Resolute shipped a hybrid in 2022 ; MTEX NS exhibited a DTF Powderless machine at PRINTING United in 2024 . 2026 was the year the category acquired a name, not the year the technology arrived.

What we left out, and why

Market growth projections. Published CAGR forecasts for the DTF printer category range from 5.6% to 15.7% depending on methodology and scope. A spread that wide is not a forecast, it is a scope argument, and none of the underlying methodologies are public. Including a number from that range would have implied a precision that does not exist.

Cost-per-print modelling for powderless conversion. Consistent pricing for powderless-specific consumables — jettable adhesives and coated films — against conventional powder and film was not available across sources. Building a comparison would have required inventing at least one side of it. Section 08 tells you to ask the supplier directly instead.

A durability ranking across manufacturers. Two of the named suppliers have published a figure and three have not. Ranking five products on two data points would produce a table that looks authoritative and means nothing.

Principal sources

Awards and category coverage: Impressions Magazine, 2026 Impressions Industry Impact Awards, Best New DTF Printer; ASI, What's New in Apparel Decorating, February 2026.

DCC and Nur Ink: DecoNetwork, Neo Flex F-51350+ Pro powderless and traditional DTF printer overview, including demonstration wash figures; World Imaging News, DCC Group introduces NeoFlex F-Series printers powered by Nur Ink Innovations, February 2026; Screen Printing Magazine, DCC Group US market expansion, December 2025.

Polyprint and DuPont: Printweek, Polyprint unveils powder-free DTF printer at Fespa; Images Magazine; Large Format Review; Eye on Display; World Imaging News; TEXINTEL, DuPont Artistri leads the next evolution of industrial DTF printing, August 2026.

Matsui: Nessian Cleary, Printing and Manufacturing Journal, Matsui develops powderless DTF, January 2026; Matsui International product documentation.

Other suppliers: SUBLISTAR DTF-6004G and Hongjet HJ-603 product documentation (manufacturer claims, not independently verified); Resolute DTF powderless hybrid product page; Packaging Impressions, MTEX NS at PRINTING United, 2024.

Prepress and RIP: DTF Paper Company, DTF PrintCo and jinlongprints RIP configuration documentation covering white underbase, choke, knockout and ink limits.

Specialty inks: Iris DTF specialty inks and finishes guidance; Xcinkjet fluorescent ink documentation; UV DTF and AB film process documentation from multiple suppliers.

Certification: OEKO-TEX ECO PASSPORT programme documentation; ColDesi, Mexar/Indie Ink and Ninja Transfers certification announcements.

Events: PRINTING United Alliance; FESPA Global Print Expo 2026 exhibitor materials.

About the author

Kjell Karlsson has spent 30+ years in large format printing and 10+ years specialising in DTF, including early DTF ink experimentation at Marabu in 2012 — predating commercial DTF printers. His background is ink chemistry and manufacturing rather than the production floor, which shapes what this report is good at and what it is not: it is stronger on chemistry, supplier behaviour and formulation risk than on the lived ergonomics of running a specific machine all day. Where a claim depends on floor experience he does not have, it is attributed to the vendor rather than asserted.

He writes Printing TLDR, a vendor-neutral intelligence brand for large format and DTF printing professionals.

A standing offer

If you find an error in this report, tell me and I will correct it and say so. If you have run your own powderless wash test, I want the numbers — credited or anonymous, your choice. That is the entire basis on which vendor-neutral analysis is worth reading. hello@printingtldr.com

Run the numbers on your own floor

Reports tell you where a technology is going. They do not tell you whether your next machine pays for itself, or whether twenty washes is enough for the work you actually sell.

Free calculators for DTF ink cost, cost per square foot, DTF printer payback, and latex versus eco-solvent TCO — no account required for the free tier: **printingtldr.tools**

The DTF Printing Profit Blueprint — 122 pages and 8 Excel templates covering costing, pricing and capacity planning: **printingtldr.com/dtf-printing-profit-blueprint/**

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Vendor-neutral analysis. No sponsored placements. No vendor review. Last reviewed September 2026.