



MACHINES PLUS ACADEMY | PRACTICAL PRINTING GUIDE

Why White Ink Causes Problems in DTF Printing

A practical guide to white ink settling, circulation, nozzle reliability, maintenance and the habits that help keep a DTF printer productive.

FREE TO READ. FREE TO DOWNLOAD. NO PAYWALL.

We share practical knowledge because better information leads to better decisions, better operators and better print businesses.

Prepared by Machines Plus

Australian printing equipment, installation, training and support
machinesplus.com.au/academy

Updated October 2026 | Edition 1 | Guide MPA-DTF-003

The short answer

White ink is one of the hardest parts of DTF printing to keep stable. The reason is not that white ink is "bad". It is that the ink contains opaque pigment that can settle out of suspension, while the printer must still jet that ink through extremely small nozzles with consistent density.

Modern DTF printers use circulation, agitation, automatic cleaning and nozzle-monitoring features to reduce the risk. But those systems still depend on correct maintenance, good operating habits and a suitable environment.

Machines Plus field note

When a customer says "the white ink is giving me trouble", the cause is often a combination of factors: ink that has been sitting, poor circulation, a dirty cap or wiper, missed maintenance, unsuitable room conditions, expired or poorly stored ink, or a printer being switched off when it expects to perform automatic maintenance.

Why white ink is more demanding

1

Pigment can settle

White pigment particles can settle when ink remains still. Epson specifically notes that white pigment particles can settle in the ink pack and discharge tubes, which is why its DTF maintenance routine includes regular white-ink agitation and circulation.

2

The printer still has to jet it through tiny nozzles

The ink must move through the ink delivery system and fire through microscopic printhead nozzles. Any loss of flow, dried residue or poor capping can quickly show up as missing nozzles or uneven white density.

3

White is used as an underbase

On coloured garments, white is often the foundation beneath the colour image. A weak or inconsistent white layer can make the entire transfer look dull, patchy or uneven.

4

Maintenance matters every day

White-ink circulation and automatic maintenance help, but they do not remove the need for nozzle checks, cap/wiper care and the maintenance schedule specified by the printer manufacturer.

Settling, circulation and agitation

White pigment does not behave like a dye dissolved completely in liquid. It is a pigment suspension. If the ink sits for long enough, pigment can settle. The printer then has to bring that pigment back into a consistent suspension before it reaches the printhead.

This is why dedicated DTF printers commonly include white-ink circulation. Mimaki, for example, uses a white-ink circulation system on the TxF series to stabilise white ink discharge, while Epson specifies regular agitation of the white ink pack and automatic white-ink circulation on the SureColor G6070.

What happens	What it can look like	What to do
Pigment settles	Weak white, uneven density, heavier sediment in the ink pack or delivery path.	Follow the manufacturer procedure for agitation/circulation. Do not invent your own shaking routine.
Printer sits unused	More nozzle loss on start-up, longer recovery, inconsistent first prints.	Follow standby and long-term storage procedures. Keep power on if the machine requires automatic maintenance.
Circulation is interrupted	Uneven white discharge or repeated nozzle problems.	Check the printer for alerts, ink level, line condition and the maintenance procedures specified by the manufacturer.
Ink is poorly stored or old	Inconsistent behaviour that does not improve with normal maintenance.	Check expiry, storage history and whether the ink is genuine or approved for the printer.

Do not over-shake ink

More is not automatically better. Follow the printer instructions. Some ink packs are designed to be moved in a specific way and excessive shaking can cause leaks, aeration or other problems.

The goal is consistency

You want the white pigment evenly suspended, the ink path full, the circulation system working and the printhead seeing the same ink condition from the first job to the last.

Why nozzles go missing

A missing nozzle is not automatically a failed printhead. In DTF, nozzle loss can be caused by several different things. Good troubleshooting means finding the cause instead of repeatedly running heavy cleans.

- **Poor capping:** the cap must seal correctly so the head can be maintained and cleaned. Ink residue, lint or damage can reduce that seal.
- **Dirty wiper or cap area:** dried ink and contamination around the maintenance station can be transferred back towards the printhead.
- **Air or flow problems:** interrupted ink delivery can affect nozzle performance.
- **Ink drying at exposed surfaces:** unsuitable temperature, low humidity or strong airflow can make an already sensitive system harder to keep stable.
- **Printer left outside the manufacturer standby procedure:** switching a machine off can prevent automatic circulation or maintenance on some models.
- **Contaminated or incompatible consumables:** use the ink and maintenance liquids approved for the machine.

Before you run another heavy clean

Heavy cleaning can use a significant amount of ink and does not fix a dirty cap, poor environment, expired ink, failed circulation or a damaged maintenance component. Start with the basics.

- 1 Print a nozzle check**
Record the pattern rather than guessing from a production print.
- 2 Inspect the maintenance area**
Follow the manufacturer procedure for checking and cleaning the cap, wiper and surrounding areas.
- 3 Check the room**
Look at temperature, humidity and airflow. Machines Plus commonly works around 19-27 deg C and 40-60% RH unless the manufacturer specifies otherwise.
- 4 Check ink condition and date**
Confirm storage, expiry and that the correct ink is installed.
- 5 Then use the correct cleaning routine**
Use the light/medium/heavy or targeted cleaning procedure specified for your machine rather than repeatedly choosing the strongest option.

The five habits that protect white ink reliability

A stable DTF printer is usually the result of boring, repeatable habits. The operators who keep records and do the small jobs consistently tend to have fewer expensive surprises.

- 1 Keep the printer in its intended standby state**
If the printer requires power for automatic circulation or maintenance, do not switch it off at the wall just to save a small amount of electricity. Follow the manufacturer shutdown procedure.
- 2 Do a nozzle check before production**
A 30-second check can save metres of film, powder, curing time and reprints.
- 3 Agitate white ink only as specified**
When the printer asks for agitation, do it properly. Do not ignore prompts for days and then try to recover everything with aggressive cleaning.
- 4 Keep the cap, wiper and maintenance area clean**
The printhead cannot maintain itself properly if the parts responsible for sealing and wiping it are dirty or worn.
- 5 Keep the room stable**
Control temperature, humidity, dust and direct airflow. The printer may be technically inside range while still suffering from large daily swings.

Machines Plus field note

If the same white channel loses nozzles every day, do not normalise it. A healthy production routine should not depend on repeated heavy cleans just to start work. Track the pattern and investigate the underlying cause.

Use production records

A simple log of nozzle condition, room temperature, humidity, maintenance completed and any unusual print behaviour can turn troubleshooting from guesswork into a pattern you can actually diagnose.

Common white-ink problems and what they may mean

Symptom	Possible causes	First checks
Weak or grey-looking white	Settling, poor circulation, wrong print mode, missing nozzles, incorrect profile.	Nozzle check, agitation/circulation, RIP mode, ink condition.
White density changes during the day	Environmental swing, circulation/flow issue, nozzle deterioration, ink condition.	Log room conditions, repeat nozzle checks, inspect maintenance alerts.
Repeated missing white nozzles	Cap/wiper condition, poor seal, dried residue, flow problem, maintenance missed, environment.	Maintenance station, nozzle pattern, room, approved cleaning routine.
White banding	Missing/deflected nozzles, feed settings, ink density or profile.	Nozzle check first, then feed/print settings.
Printer recovers after cleaning but fails again	Underlying maintenance, capping, circulation, ink or environmental issue not solved.	Stop treating the symptom. Inspect the system and records.

Three myths worth dropping

- **"White ink always clogs."** No. White ink is more demanding, but modern DTF systems are designed around circulation and maintenance. Reliability depends heavily on the machine design and how it is operated.
- **"A heavy clean fixes everything."** No. Cleaning cannot repair a poor cap seal, bad storage, unsuitable room conditions or a failed component.
- **"If the printer is not printing, it is safer to turn it off."** Not necessarily. Some printers rely on automatic maintenance while powered. Follow the exact manufacturer procedure for idle periods and shutdown.

Daily white-ink checklist

- Printer is powered and in the correct standby/operating state for the model.
- White ink has been agitated or circulated when the printer requires it.
- Nozzle check is acceptable before production starts.
- Cap, wiper and maintenance areas are clean according to the service schedule.
- Room temperature and humidity are stable and within the printer specification.
- No strong heater, fan or air-conditioning outlet is blowing directly at the printhead or media path.
- Ink is within date, correctly stored and approved for the printer.
- Any recurring nozzle loss or white-density change is recorded and investigated.

When to ask for help

If white nozzles repeatedly disappear, circulation alarms appear, the cap will not seal, ink density changes unexpectedly, or the printer requires frequent heavy cleaning to remain usable, stop treating it as normal. Record what you are seeing and get the system checked before the problem becomes more expensive.

How Machines Plus helps

Machines Plus helps customers with DTF printer selection, installation, operator training, colour and RIP setup, genuine or approved consumables, maintenance routines, heat pressing and ongoing production support. We do not just drop a box at the door.

Tell us what you want to produce.

We will help you work out what you actually need.
machinesplus.com.au/academy | 1300 167 587

About this guide

This guide was prepared by Machines Plus from practical experience working with professional DTF equipment and production environments. It is general information only. Always follow the current manufacturer instructions for your specific printer, ink and maintenance system.

Free knowledge. No paywall. We share practical information openly because we trust our experience, judgement, training and support - not information barriers.

Machines Plus Academy: machinesplus.com.au/academy

Manufacturer references consulted

Epson SureColor G6070 Maintenance Guide - white pigment settling, daily white-ink agitation, circulation and nozzle-check maintenance. files.support.epson.com/docid/cpd6/cpd66261.pdf

Mimaki TxF150-75 / TxF300-75 / TxF330-800 product information - white-ink circulation (MCTv2), nozzle check and nozzle recovery technologies. mimaki.com/product/inkjet/dtf/