



Inks for XJ500 printhead

High Performance Ink Jet Printhead

XJ500/180



Xaar Crystal UFX Ink and Printhead User Guide

Xaar Crystal UFX / XJ500 / 180 Printhead User Guide

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Xaar Crystal UFX pigmented UV based ink is suitable for use on a range of flexible and semi-flexible substrates when used in combination with a suitable light source. Formulated for web printing, packaging and graphic arts markets.

1. Part Numbers

The information in this document is relevant to the Xaar Crystal UFX UV ink when used in the Xaar XJ500 180 printhead. The part numbers associated with the inks and printheads are:

1.1 Ink Part Numbers:

Crystal UFX Cyan:	IK7200100
Crystal UFX Magenta:	IK7200200
Crystal UFX Yellow:	IK7200300
Crystal UFX Black:	IK7200400
Crystal UFX Flush:	IK7209900

A suffix which describes the pack size is added to the part number to form the order code.

1 litre bottle:	03A
5 litre bottle:	04A

1.2 Printhead Part Numbers:

XJ500 180 Printhead, PN 6660473.

2. Printhead Requirements

The printhead requires the use of the files outlined below for optimal operation with the Xaar Crystal UFX UV ink.

Initialisation File: 500180720A.txt

Waveform file for CM: Not applicable

Waveform ID:
Pixel (Position 0): E022
Cycle (Position 1): E023

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3. Operating Conditions

The following information has been obtained during evaluation of the ink at Xaar and should be used as a guide only.

3.1 Recommended Filling/Priming Procedure

1. Flush the printhead using Xaar Crystal UFX Flush, (Part No. IK7209900). Do not exceed 0.5 bar pressure.
2. Flush the remaining test solution out of the printhead using clean air.
3. Introduce the Xaar Crystal UFX ink by vacuum filling, keeping the pressure in the range of -0.6 to -0.8 bar.
4. Purge and wipe the printhead ready for printing.

3.2 Recommended Operating Temperature (range)

Optimum printing conditions are achieved at temperatures typically 35 - 45°C.

3.3 Optimum Ink Head Height / Pressure & Window

The optimum ink head height:

-10 to -40 mm liquid head height, (\equiv -1 to -4 mbar pressure) relative to the nozzle plate.

The maximum tube length required for reliable printing:

0.5 meters, 3mm ID, black or UV opaque tubing as recommended by Xaar.

3.4 Recommended Maintenance Procedure – operational

The recommended maintenance regime is to stop printing and apply a pressure purge, followed by a wipe. Refer to the Xaar XJ500 Guide to Operations for further information.

Before introducing ink into a printhead it is essential that the ink is filtered through a primary filter. It is recommended that a 5µm, (nominal value) primary filter should be used with low shedding characteristics. Contact your Xaar sales engineer for further recommendations.

3.5 Recommended Maintenance Procedure – shutdown/startup

Start up requires pressure purge, followed by a wipe before printing. Ensure you have stopped printing before maintaining the printhead.



Printheads filled with ink for a prolonged period should always be protected from light during printing and shutdown. This can be done by capping the printhead.

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3.6 Materials Required for Maintenance

Xaar recommend the use of a lint-free polyester cloth for blotting and soft (Shore A ~30) elastomer (e.g. Butyl Rubber) for wiping.

3.7 MTBF Results and Recommendations

Xaar results indicate that maintenance (wipe or purge and wipe) should be carried out at 60 minute intervals. Please note that this will be application and environment specific.

4. Print Properties

The following results were obtained during the evaluation of the ink at Xaar and should be used as indicators only.

4.1 Drop Mass*

The average drop mass has been measured as \cong 69ng

4.2 Dot Size on Specified Substrate*

Dot diameters in the range of 110 to 150 μ m can be obtained on Fascal 500 Permanent Vinyl.

4.3 Colour Gamut

Typical colour gamut characteristics of the ink on PVC self-adhesive vinyl, at 6 μ m drawdowns, using D65 / 2° measuring conditions are shown below. Optical density was measured using a densitometer with a status T filter.

Colour	L*	a*	b*	OD
Crystal UFX Cyan	50.23	-24.90	-51.52	2.06
Crystal UFX Magenta	47.90	65.57	9.11	1.36
Crystal UFX Yellow	87.48	-16.82	80.23	0.80
Crystal UFX Black	24.81	1.63	6.14	1.33

Table 1: Xaar Crystal UFX Colour data on PVC.

The recommended print order is C, M, Y, K.

* Drop mass and size measured under laboratory conditions and are environmentally sensitive.

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5. Materials Compatibility Information

Xaar Crystal UFX is compatible with the materials used in construction of the printhead.

Additional materials have been tested by Xaar.

The following materials are fully compatible: FEP, PTFE, Stainless Steel 304, PP, Nalgene 489 LDPE tube, Nylon 66 (Minlon), PEEK, PETP (Ertalyte), PVDF, HDPE, Hifluor V3819-75, Tygon SE-200.

The following materials have been tested and are NOT suitable for use: Viton B, Nalgene 280 tube, ABS, Perspex, Isoversinic tube, Silicone RTV 3140.

Butyl rubber may be suitable for use in some applications. It is recommended that UV inks are not used in conjunction with copper or copper containing alloys or with iron as these materials can cause premature polymerisation, (curing) of the material.

6. Additional Information

6.1 Printing Information

Maximum firing frequency 4Khz
Maximum duty cycle 100%

6.2 Recommended Curing Information

Recommended lamp for curing: Fusion 'D' Bulb or Integration Technology 'D' bulb – minimum power 200 W/cm. Actual power to be determined for application.

6.3 Shelf life

9 months from date of manufacturing.

6.4 Ink Storage

The ink should be stored in its original packaging between 5° and 40°C.