

# Orgacon™

## Orgacon IJ-1005

### Product information

## Jetting instructions for ORGACON™ IJ-1005

### [1] INTRODUCTION

Agfa has introduced its "ORGACON™ IJ-1005", a water based ink for use with ink jet piëzo printhead technology. Orgacon IJ-1005 can be purchased in 1kg bottles at Agfa (order code: 4M54Q) or in smaller quantities via Sigma Aldrich ([www.sigmaaldrich.com](http://www.sigmaaldrich.com)).

In this leaflet, the handling and printing instructions for Orgacon IJ-1005 in different printers is described.

### [2] ORGACON IJ-1005

Typical properties are:

Visual appearance	Dark blue liquid
Solid Content	0,8 wt%
Viscosity	7 – 12 mPas
Surface Tension	31 – 34 mN/m
pH	1,5 – 3,0
Surface resistance	110 Ohm/sq
%T (550nm)*	90% (excl PET)
Shelf life*	6 months

\* stored between 4°C – 25°C

### [3] PREPARATION OF THE INK – FILTER RECOMMENDATIONS

It is recommended to filter the ink. Typical filters that can be used are hydrophilic type filter such as a syringe filter FP030/3 (0.2µ) obtained from Schleicher and Schuell) or Millipore Millex-HV, hydrophilic PVDF

0.45µm. After formulation, product was filtered over 0,4µm glass fibre filter (Macherey-Nagel MN85/200).

### [4] PRINTING ON DIMATIX DMP2831

#### Cartridge filling:

Start with homogenizing the ink by gently shaking, followed by degassing. This degassing step is very important and crucial to obtain good printing with all nozzles. Fill a 10 pl (DMC-11610) cartridge with a 5 or 10 ml plastic syringe. Fill the syringe with 3-5 ml of Orgacon IJ-1005. Adapt a hydrophilic syringe filter of 0.8µm or preferably 0.45µm and adapt the needle supplied with the cartridge to the filter. Fill the cartridge with approximately 3-4 ml of Orgacon IJ-1005, while moving the syringe somewhat making it possible for air to leave the cartridge. Mount the jetting head to the cartridge. Now take an empty syringe and adapt a clean and dry needle, fill the syringe with air, inject the needle into the rubber sleeve at the side of the ink cassette and push air into the cartridge until drops of ink are emerging from nozzles of the jetting head. Wipe the nozzle plate with a lint free clean room cloth. The printhead is now ready for use.

Preferably use the cartridge as soon as possible after filling. Sometimes for proper operation some waiting time of 30-90 minutes is needed, to dissolve tiny air bubbles in the print head.

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Filled cartridges should not be stored for a prolonged time in the ambient, because water from the ink evaporates, PEDOT gels upon drying and nozzles get clogged due to this process. If storage of the cartridge is needed for a short time (1–2hrs) in the printer, put the print head on a wet ink pad and keep the device under tickle control. Storing the cartridge up-side down with nozzle plate on a wet cloth, allows printing after 5 d storage.

### Initializing the print head:

Mount the print head to the printer and start the software. Select an appropriate cartridge setting, cleaning cycle and wave form. Use the cleaning cycle to purge the nozzles and open the Drop Watcher module to check whether all nozzles are operational.

### Print head settings:

Firing Voltage: 20V -25V

Firing Frequency : 5 kHz

Cartridge Temperature: 24°C

The driving voltage can be used to increase drop speed; do not use a too high jetting frequency because drop formation may not be capable of keeping up. A temporary increase of the driving voltage can also be applied to initialize 'doubting' nozzles to start printing.

Also important is the printer table temperature, which must be set between 30-40°C to obtain sufficient contact line pinning. It is advised to set the table at 38°C for printing.

### Substrates:

Different substrates can be used. Normal 152 mm square soda-lime glass substrates have been used. Cleaning of the glass is crucial to get optimal results. The average dry layer thickness  $T_d$  can be calculated according to:

$$T_d = \frac{V_d}{DP^2} f_{solids}$$

where  $V_d$  is the drop volume,  $DP$  is the drop pitch and  $f_{solids}$  is the volume fraction of solids in the ink.

### **[5] PRINTING WITH MICRODROP**

Dispenser head: MD-K-130 or MD-K-140.



MD-K-130 / MD-K-140

Nozzle diameter should be not smaller than 50  $\mu\text{m}$ . Smaller nozzle diameters are not recommended because Orgacon IJ-1005 can dry fast causing nozzle clogging. In our experience this is getting worse with smaller nozzles. The reduction in droplet diameter from 70 $\mu\text{m}$  is achieved with the standard rectangular pulse shape to 30 $\mu\text{m}$  with pulse modulation from the same 50 $\mu\text{m}$  nozzle. The nozzle temperature is set at 25°C. Pulse parameters are: 142V / 32 $\mu\text{s}$  / 1-1800 Hz.

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### [6] MORE INFORMATION

Please, contact Agfa Gevaert NV.

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