

Technical Data Sheet

Docufluidal® EF 1xx Ball Pen Inks

Ultra Low Viscosity Ball Pen Inks

General Information

The DOCUFLUIDAL® EF 1xx inks show a minimized leaking and gooping potential especially for tips with high ink lay down despite of the low viscosity of these inks.

Without any compromises on other writing features the Docufluidal® EF 1xx series inks generate an intense, constant and almost „sliding“ writing performance if used in combination with specially adjusted tips.

Physical Data

Type	Colour	Lightfastness (ISO 12757)	TF	Viscosity at 20°C mPa s ± 200	Surface tension mN/m	pH-Value
Docufluidal® EF 100 ¹⁾	violet blue	Part I	yes	2,100	> 35	4.0 - 6.0
Docufluidal® EF 101 ¹⁾	dark blue	Part I	yes	2,100	> 35	4.0 - 6.0
Docufluidal® EF 102 ¹⁾	violet blue	Part II	no	2,100	> 35	4.3 - 6.3
Docufluidal® EF 110	black	Part II	no	2,100	> 35	5.5 - 7.5
Docufluidal® EF 120	red	Part I	yes	2,100	> 36	7.5 - 8.5
Docufluidal® EF 121	red	Part I	no	2,100	> 35	4.3 - 6.3
Docufluidal® EF 122	ruby red	Part I	yes	2,100	> 35	4.0 - 6.0
Docufluidal® EF 130	green	Part II	no	2,100	> 35	4.3 - 6.3

ISO 12757: Ball point pens and refills - Part I: General use, Part II: Documentary use, TF: Transparent Flux (clear drain in suitable refills when used in combination with Dokumental® IF 4312 ink follower) 1) contains Solvent Violet 8, will be available until Q4/2024, replacement in development

Technical Advice

General remarks:

Dokumental has tested the performance, long term stability and shelf life of the inks in the laboratory under typical terms of use in a limited number of writing systems. As there is a large variety of writing system components available on the market, Dokumental can NOT give a general guarantee for the inks in all writing systems. Therefore, it is mandatory to approve the compatibility of the inks and the components as well as the writing performance, long term stability and the shelf life of the inks in the customer's components. Important and decisive parameters are:

1. Climatic conditions: Temperature and Humidity

Especially exposure to high temperatures and high humidity may accelerate the aging of the ink in original ink drums as well as in the writing system. This may lead to reduced shelf life of the products. Therefore, long term stability and shelf life of the writing system must be tested thoroughly under those climatic conditions, which are expected during the storage time and the practical use of the writing system.

2. All materials, which get into contact (short term or long term) with the inks during processing and manufacturing of the writing instruments, like hoses, pipes, pumps, funnels, storage

Suitable Surfaces

All kind of papers

Applicable Standards & Regulations on Request

tanks, cleaning liquids etc. All such contact materials may not release any contaminations to the inks. Contamination of the inks may lead to undesirable effects like performance loss and/or reduced shelf life.

3. All materials, which get into contact (short term and long term) with the inks in the writing system like tips, tubes, sealing waxes, ink follower, etc. Long term oven test at elevated temperature (recommended is 40 to 50 °C) must be carried out to prove long term compatibility of all components and materials.

4. Narrow tip and tube dimensions like tips ≤ 0.5 mm and/or tubes with inner diameter ≤ 1,7 mm may lead to reduced shelf life of the writing system or other undesirable effects due to accelerated ink drying especially when stored at temperatures above 30 °C.

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Suitable Components:

All ball pen inks are suitable for plastic and metal refills.

The combination of Docufluidal® EF with not suitable tips will lead to undesirable results (e.g. static leakage, gooping, etc). Specially adjusted tips for ULV ball pen inks are essential to obtain the maximum writing performance.

For capillary refills, the use of ink follower Dokumental® IF 4312 colourless will increase the shelf life and will improve clear drain property. For jumbo refills, the use of ink follower Dokumental® IF 4310 white or IF 4311 white is mandatory in order to prevent back-leakage. For further information about our ink followers see the Dokumental® IF 43xx technical data sheet

It is mandatory to approve the compatibility of the ink and the components as well as the performance of the writing system.

Storage, Handling & Transportation

Store our product frost protected and avoid direct sunlight. The recommended storage temperature is between 10°C and 30°C. Storage temperatures of above 30°C for several days bear the risk of a reduced shelf life of the ink.

After usage the drums have to be closed again tightly.

Horizontal storage of the refills is recommended in order to get the maximum shelf life.

The shelf life of the inks in original sealed containers is 2 years.

Packaging

20kg plastic canister

200kg plastic drum

1,000kg IBC

Produced by

DOKUMENTAL GmbH & Co KG

Wöllnerstraße 26

D-67065 Ludwigshafen

Phone: +49(0)621/37702-321

Fax: +49(0)621/37702-391

Mail: info@dokumental.de

www.dokumental.de