

Technical Data Sheet: Terragene® Chemink®

Order Code IK28F

Flexography

Purple to Green

Reliable quality: Each lot is consistent in color and sensitivity.

Properties apply to ink that has been properly mixed prior to use (See Mixing Instructions).

PHYSICAL PROPERTIES

Visual	Purple liquid (requires mechanical mixing)
pH 25 °C	10,0 - 12,0
Viscosity (Ford Cup Method) 25 °C	30 - 50 seconds (orifice size N° 6) Viscosity: isopropyl alcohol up to 10% Delay drying: 2-butoxyethanol (butyl glycol) Cleaning: isopropyl alcohol or ammonia solution (2,8%)
Signal color evident at	121 °C, 10 minutes. Type 1
Solids	27.0%
VOC 's (ASTM D 2369-87)	23.0%

GUIDELINES FOR USE

Application Method	Flexographic. Recommended Anilox: 70 to 200 line/cm. Print to below 25 °C in dry environments (less than 60%RH).
Drying Temperature	Ambient to 60 °C with air flow.
Substrate Compatibility	Tested on Kraft paper. Other substrates may be used (Papers, Tyvek, Film), although due to ink-substrate interactions, TERRAGENE® highly recommends validation of ink performance with each substrate upon which it is intended to be used.
Mixing	1. Mix IK28F Part A thoroughly using mechanical means (e.g.: drill with mixing blade) for a period of at least five (5) minutes. 2. Mix IK28F Part B thoroughly using mechanical means (e.g.: drill with mixing blade) for a period of at least five (5) minutes. 3. Add the IK28F Part B to IK28F Part A mixing continuously. Mix thoroughly for a period of at least ten (10) minutes using mechanical means. Note: The ratio of IK28F Part B to IK28F Part A is 1:1 (w/w). It can be calculated on a weight to weight basis if a different final volume of ink is desired. NOTE: to obtain the functional ink, mix 50% of IK28F Part A and 50% of the corresponding Part B. E.g.: for 1 kg of functional ink, add 0,50 kg of Part B to 0,50 kg of Part A. Within twelve (12) hours after combining IK28F Parts A and B, discard any remaining ink per local, state and federal regulations.
Important Considerations	Darker colours can be obtained with the increasing of the charge of the printed ink. Dilutions are not recommendable in the beginning of the printing process. Long time of printing permits evaporation of some components of the ink that can affect the result. The effect can be compensated by the addition of isopropyl alcohol up to 10%. Pouches and rolls production does not need adding any release coating. For labels or stickers we recommend protecting the printed ink with Chemink® coating releases. For testing the ink performance, dry the ink 5 days before testing it in a dark place. The recirculation pump system is recommendable during the printing
Coverage (approximate)	105 m ² /gallon
Press Speed	18 - 40 m/min.

STORAGE REQUIREMENTS

Keep at room temperature (protect from extremes). Avoid exposure to acids or bases.

CLEAN-UP / DISPOSAL

Do not re-use the ink. Follow standard clean-up procedures using ethyl acetate. Ink disposal should be performed in accordance with applicable Federal, State and Local regulations for solvent-based inks and coatings. Reference MSDS for details.

IMPORTANT

Ink performance is dependent upon application thickness and the substrate used. Ink application and performance is the sole responsibility of the customer.

Test the ink in the sterilization process before production process. The result is sole responsibility of the customer.

It is recommended that no additions be made to the ink either before or during the printing process.

GENERAL IMPORTANT CONSIDERATIONS**THE CRITERIA:**

- 1- Sterilization inks are not regular printing inks.
- 2- The inks are not chemical indicators. The indicators have to be fixed and developed selecting the ink, the substrate, the machine and the printing conditions.

CONSIDERATIONS FOR PRINTING:

- 1- During the printing, the inks have to be maintained in similar original conditions of those at the beginning of the process: all the inks have volatile components that change the ink composition and ration of components. Volatile components are all the solvents: water, isopropyl alcohol, ethyl acetate, ethanol, ammonium, etc. For this reason, Chemink provides different additives to reduce the evaporation effect and ink dried on meshes and aniloxes.
- 2- The inks have to be mixed during the printing, and regular additions of solvent (see the data sheet) have to be made. The quantity of solvent depends on the process, room conditions (temperature, wind, and humidity), size of the ink container machine, and printing speed, among others. Controlled room printing conditions is important to predict the timing for the addition of solvent.
- 3- Viscosity measures can be used to know the state of the ink: high viscosity need to be diluted with the correct solvent. The ink transferring can be affected during the process due to the evaporation.
- 4- Closed container inks in Flexography systems are recommended.
- 5- In Flexography systems, mixing pumps helps to maintain the ink homogeneously.
- 6- The inks have to be well mixed. If the ink has two components, both parts should be mixed separately before joining the parts. The junction of the parts has to be done slowly and with continuous shaking. Parts B have to be added on parts A container. Please, mix the parts according to the quantity needed and store the remaining original ink in good conditions (containers with no more than 50% of air, well sealed, in a dark place, and with temperatures between 15° C to 25° C.
- 7- Generally, parts B catalyze the chemical color changes. For this reason, the regulation of parts B could be of help to fix the exposure conditions to obtain the signal color.
- 8- We recommend joining the parts 10 minutes before the beginning of the production process.
- 9- If you detect precipitate salts, do not join the parts. Exp: CCAS4 can precipitate. You can heat at 30° C and shake until the salt is dissolved.
- 10- Many inks improve the performance in sterilization process when the printed quantity is high. We recommend, for flexo systems 80 lines/cm axilox or lower, and for serigraphy systems, meshes between 60 and 165 lines/ cm.
- 11- For Flexography systems, to increase the quantity of ink, more than 1 layer could be used (pellicles of ink can be necessary).
- 12- The inks need to be cured. We recommend a good air drying at 60° to 80° C.

- 13- For real results, the inks have to be tested in sterilization conditions 7 days after printing.
- 14- We recommend recording all room variables and printing conditions: temperature, humidity, speed, air flow, etc.
- 15- Speed: Flexography: generally, 30 mts/ min would be appropriate but it may vary according to the result. Exp: if the ink does not dry, you can either reduce the speed, or increase the power or length of the dry tunnel or air flow. Serigraphy: between 50 to 300 sheets/ min.
- 16- Protection coating can be used to increase the shelf life of indicators, to avoid washed effect or ink transferring. Chemink provides excellent coatings releases and varnishes.
- 17- Many inks can react or turn inactivate with lamination, polyester sealed or coating process. Testing is highly recommended.
- 18- The inks have to be well stored.
- 19- Mixed two component ink or inks with additives might be non-stable and the shelf-life could be short. Low temperatures conditions (15°C) could increase the shelf life. Two component system could be better to fix the exposure conditions to obtain the signal color and to increase the self-life of inks in the original container.
- 20- Chemical indicator types (1, 2, 4, 5 and 6) can be obtained with special formulation or by fixing the printing process.
- 21- Use only Chemink special additives.

CHEMICAL INDICATORS NEED SPECIAL TECHNICAL EXPERIENCE.

CALL CHEMINK TEAM TECHNICAL ASSISTANCE IF THE RESULT IS NOT THE EXPECTED ONE. YOUR FEEDBACK WILL BE HIGHLY APPRECIATED TO ENSURE YOU SUCCESFULL RESULTS.

CERTIFICATE OF ANALYSIS

Product Name: Steam Sterilization Process Indicator Ink

Lot Number: IK28Fxxxxxx

Product Code: IK28F

Date of Manufacture: xxxx-xx

Expiration Date: 1 year

SPECIFICATIONS TESTED

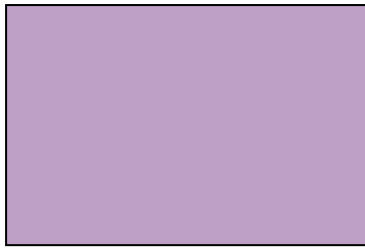
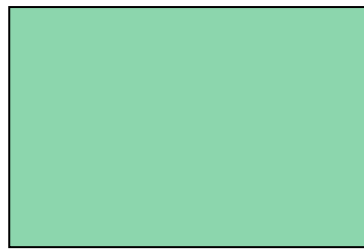
pH: xx

Viscosity: xx seconds (Ford Cup Method, orifice size N° 6) 25 °C

Appearance: Dark Purple Liquid

Performance Characterization: Green Transition (121 °C, 10 minutes) (*)

Date Verified: xx-xx-xxxx

Unexposed
Approximated pantone: 522Exposed
Approximated pantone: 344(1*)**IMPORTANT:**

*Color transition is dependent upon ink's thickness and may vary.

*(1) The color of the ink after printing depends upon the pH of the substrate used for printing.

**TERRAGENE S.A.**Lic. Adrián Rovetto
DIRECTOR TÉCNICO