

## CL-DF-ST-I-EE (Acid Solution)

PRODUCT DATA SHEET  
EDITION 01 – 11 June 2013

### PRODUCT DESCRIPTION

CL-DF-ST-I-EE Acid Solution is a cleaning solution for the decontamination of dry film resist developing and stripping machines, and rinse modules (in connection with cleaning agent CL-MDF-ST-I-EE Alkaline Solution).

The cleaning of dry film developing and stripping machines occurs in two steps:

- Cleaning of the machine with cleaning agent CL-MDF-ST-I-EE Alkaline Solution for the removal of residues in the bath and in the rinse modules.
- Cleaning of the machine with cleaning agent CL-DF-ST-I-EE Acid Solution for the decontamination and for the removal of residues in the stripping/developing bath and in the rinse modules.

CL-DF-ST-I-EE Acid Solution allows a comprehensive and thorough cleaning of resist stripping and developing machines (in connection with cleaning agent CL-MDF-ST-I-EE Alkaline Solution) and:

- Achieves an improvement of the developing/stripping quality through an optimal cleaning.
- Reduces the maintenance time of the plant to  $\frac{1}{4}$  of the previous time required.
- Removes residues and reduces the usual need to prick out the spray nozzles.
- The automatic cleaning process improves the safety and reduces accident risk during the cleaning.
- Hygiene risks for the operators and service people will therefore be reduced.
- This cleaning process, operated in a closed loop circuit eliminates pollution of the equipment's direct environment, that is unavoidable with traditional cleaning procedures.
- Traditional and well-proved waste water processes, applied in plating areas, finally guarantee a non-polluting processing of the waste solutions generated with the cleaning process.

### PHISICAL PROPERTIES

State	Liquid
pH	< 1.0
Colour	Colourless
Odour	Acrid
Boiling Point	100°C
Combustibility / Self Combustibility	Not flammable / Not self igniting
Density (at 20°C)	1.1g/cm <sup>3</sup>
Solubility in water	Completely miscible

## CLEANING PROCEDURE

CL-DF-ST-I-EE Acid Solution can be used in all standard dry film resist developing/stripping plants.

### **Cleaning process of dry film developing/stripping machines:**

1. Empty the stripping machine. It is advantageous, to pre-rinse the bath with DI-water.
2. Fill the emptied equipment to 50 % with DI-water.
3. Add carefully 16% - 20% concentrated cleaning agent CL-MDF-ST-I-EE alkaline solution, according to the state of the machine and intensity of cleaning required.
4. Fill the equipment up to 100% with DI-water.
5. Run the machine with a suitable rate between 30 and 45 minutes at a temperature of 25°C to 30°C (according to state of the machine).
6. Empty the bath and rinse with DI-water.
7. Fill emptied equipment up to 50 % with DI-water.
8. Add carefully 20 % to 30% concentrated cleaning agent CL-DF-ST-I-EE Acid Solution.
9. Fill the equipment up to 100% with DI-water.
10. Run the machine with the parameters, already used for the machine, and for a period of 30 up to 120 minutes.
11. CAUTION: Do not exceed the temperature of maximum to 30°C and the cleaning period of a maximum to 2h.
12. Empty the bath and rinse the bath with DI-water (for developing machine rinse with  $\approx$  1%  $\text{Na}_2\text{CO}_3$  is recommended).
13. Resume the production.

### **Cleaning process of the rinsing modules:**

1. Empty the rinse modules. It is advantageous to pre-rinse the bath once with DI-water.
2. Fill the rinse modules up to 50 % of it is total volume with DI-water.
3. Add carefully 20% - 30% concentrated cleaning agent (according to state of the machine).
4. Fill to 100% with DI-water.
5. Switch on the circulation of the rinse modules for a period of 30 minutes (according to state of the machine).
6. Emptying the rinse modules.
7. Filling the rinse modules and resuming production.

## CLEANING PARAMETERS

Parameters	Range	Optimum
Temperature	20 – 30°C	
Contact Time	30min – 120min	
Frequency	Developing/stripping bath: two weeks Rising modules: once a week	
All other parameters	Same as for the cleaning machine	

## CLEANING RESULTS

The cleaning result depends on contamination level of the machine and the rinse modules.

The cleaning can be repeated several times.

It is also possible to increase the concentration of the cleaning agent. Add fresh Developer K45 to maintain the Total Carbonate at make-up concentration.

## PACKAGING

25 litre or 200 litre polyéthylène drums.

## DISPOSAL

### Processing of the used cleaning agent for stripping bath and plant:

- Adjust the pH-value to 5 to 6 with caustic soda.
- Precipitation with sodium sulphide [Na<sub>2</sub>S].
- Neutralisation with Calcium Hydroxide [Ca(OH)<sub>2</sub>] or caustic soda [NaOH].
- React with Calcium Hydroxide [Ca(OH)<sub>2</sub>] and ferric-chloride [FeCl<sub>3</sub>].
- Flocculation with a flocculation amine.
- Decant off the resultant liquor.
- Adjust the pH-value with caustic soda.

### **Processing of the used cleaning agent for the rinsing bath:**

- Precipitate with sodium sulphide [Na<sub>2</sub>S].
- React with Calcium Hydroxide [Ca(OH)<sub>2</sub>] and ferric-chloride [FeCl<sub>3</sub>].
- Flocculation with a flocculation amine.
- Decant off the resultant liquor.
- Adjustment of the pH-value with caustic soda.

Dispose of spent solutions in accord with local regulations.

### **STORAGE**

Only store CL-DF-ST-I-EE Acid solution in original containers, upright, away from direct sunlight and in a dry area at 10 – 32°C.

Keep container closed when not in use.

### **HANDLING PRECAUTIONS**

Only store CL-DF-ST-I-EE Acid solution is strongly acid and can cause burns to skin and eyes.

Protective clothing such as impervious gloves, apron, boots, and chemical safety goggles should be worn when handling this product.

**READ MATERIAL SAFETY DATA SHEET PRIOR TO HANDLING THIS PRODUCT**

**In case of order please indicate this code:**

**CL-DF-ST-I-EE (Acid Solution)**

**GC2400**

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