



ST-44

*Positive resist stripper*

## Overview

ST-44 positive resist stripper is the first positive photoresist stripper specifically formulated from organic solvent blends to be effective in removing hard-to-strip positive photoresists from metal and metal alloy surfaces – surfaces that are sensitive to corrosion from electrolytic or galvanic effects. In use, ST-44 is effective in stripping positive photoresists from 100% copper layers without corrosion effects.

ST-44 positive resist stripper is effective in stripping:

- Plasma-hardened positive photoresist
- Positive photoresist cured using high temperature baking, up to 180°C (356°F)
- Deep UV-treated positive photoresist
- Ion implanted positive photoresist

ST-44 is completely water soluble; contains no phenols, no chlorinated hydrocarbons, or other toxic materials. In addition, ST-44 is formulated for ease of disposal.

## Benefits

- Contains no phenols or chlorinated hydrocarbons
- Strips hard-to-remove positive photoresist
- Non-corrosive to copper films and most copper alloys
- Water soluble
- Low in metal ions
- Low in particles

## Bath Make-Up

ST-44 positive resist stripper is supplied as a ready-to-use solution. A two-bath system is recommended; the first bath to remove the bulk of the photoresist, and the second to remove any remaining traces of the resist.

## Process

ST-44 process times and temperature may vary depending upon the photoresist processing history. The steps below outline a typical process for its use. Customers should, however, consult with Entegris technical personnel for process requirements specific to their application.

### Set-up for a One Bath System

1. Heat one bath of ST-44 according to the following recommendations:

Resist Bake Temperature	ST-44 Bath Temperature
Up to 135°C (275°F)	Ambient to 100°C (212°F)
135°C–150°C (275°F–302°F)	60°C–100°C (140°F–212°F)
150°C–180°C (302°F–356°F)	85°C–100°C (185°F–212°F)
Above 180°C (356°F)	100°C–125°C (212°F–257°F)

2. Immerse dry wafers into the ST-44 and mildly agitate for 10–15 minutes.

**NOTE: Always load dry wafers into the ST-44 as moisture may decrease its effectiveness or cause metal corrosion.**

3. Transfer wafers to a DI water rinser for 15 minutes.
4. Spin rinse dry the wafers.

### Set-up for a Two Bath System

1. Heat two baths of ST-44 according to the temperature recommendations given above.
2. Immerse dry wafers into the first bath and mildly agitate for 5–10 minutes.
3. Transfer the wafers to second bath of ST-44 and mildly agitate for 5–10 minutes.
4. Transfer wafers to a DI water rinser for 15 minutes.
5. Spin rinse dry the wafers.

ST-44 is also effective in automatic strip equipment. In these systems, ST-44 should not be heated above the equipment manufacturer's maximum recommendation. Typically, in automatic spray equipment, ST-44 is used at a temperature 10°C–15°C (50°F–59°F) lower than the recommended temperature for a bath system.

## Bath Life

ST-44 positive resist stripper will clean a minimum of 1,500 5-inch wafers with 1.5 microns of resist when using a two-bath system. This number may vary depending upon resist thickness, thermal history, pre-treatment (Deep UV, ion implant, etc.) and bath temperature. ST-44 should be changed every eight hours or when the stripping effectiveness begins to degrade.

ST-44 should always be kept free of water to avoid a decrease in stripping effectiveness and attack of metal layers.

## Quality Control

ST-44 is manufactured utilizing strict quality controls to maintain Entegris' high standards and to ensure batch-to-batch consistency.

## Storage And Handling

ST-44 has a shelf life of one year from date of manufacture if stored in its original, unopened container at 10°C–32°C (50°F–90°F), out of direct sunlight. Refer to Entegris' material safety data sheet for additional precautions on storage and handling.

## Equipment Compatibility

**CAUTION:** ST-44 will attack many plastic materials used in piping and other process equipment. The chart below should serve as a guide for selecting materials compatible with its use. For information on materials not listed, contact Entegris' technical staff.

### INCOMPATIBLE MATERIALS

BUNA-N rubber	Neoprene	Polyacrylate
PVDC	Hypalon®	CPVC
PVC	Tygon® (some types)	Acrylics
Viton®-A	Polyurethane	

### COMPATIBLE MATERIALS

Teflon® (PTFE)	Pyrex®	Quartz	PVDF
316 Stainless steel	Kalrez®	PFA	

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## Disposal

All waste materials must be disposed of in accordance with local, state, and federal regulations. Refer to Entegris' material safety data sheet for additional data.

## For More Information

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit [www.entegris.com](http://www.entegris.com) and select the Customer Service link for the center nearest you.

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