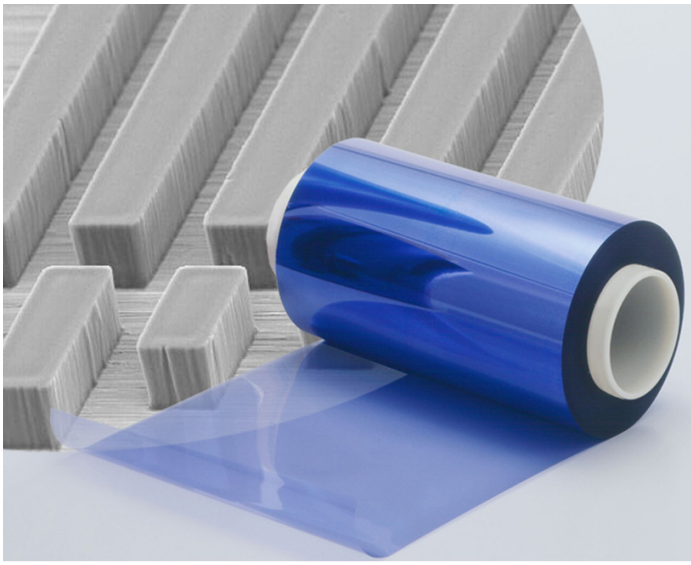
Totalimage

Dry Film Primary Photo-Imaging Systems

System Compatibility. Reliability. Highest Yields.

Totalimage is comprised of high reliability, PHOTEC dry film photoresists and ENPREP chemistry that has been specially formulated for primary photo-imaging. Used as an integrated system, Totalimage is production-proven to increase yields and productivity, while reducing rejects and rework. Due to this combination of highly compatible process chemistry and dry film technologies, Totalimage enables full control of all process steps while maintaining and improving high loading process capabilities and fast operation, increasing process and final yields.

Especially formulated for fine line circuitry and high-density PCB manufacturing, Totalimage reduces cost for maintenance and total cost of ownership while backed by MacDermid Alpha expertise.



KEY FEATURES

- Reduced cost of ownership
- Equipment maintenance is more effective, contributing to higher yields
- High resolution for fine line and dense circuitry
- Superior adhesion with high film strength and conformity
- Supported by MacDermid Alpha expertise

MacDermid Enthone

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PHOTEC: DRY FILM PHOTORESIST

PHOTEC dry film photoresists provide high reliability in a diverse range of process conditions. The PHOTEC Series offers superb conformity on all commonly used substrates and ensuring the highest PCB yields at the lowest possible cost. PHOTEC dry film photoresists are manufactured by Showa Denko Materials (Japan), exclusively marketed and distributed by MacDermid Alpha throughout Europe and supported by MacDermid Alpha's European technology team. PHOTEC dry film photoresist rolls are custom slit at certified facilities.

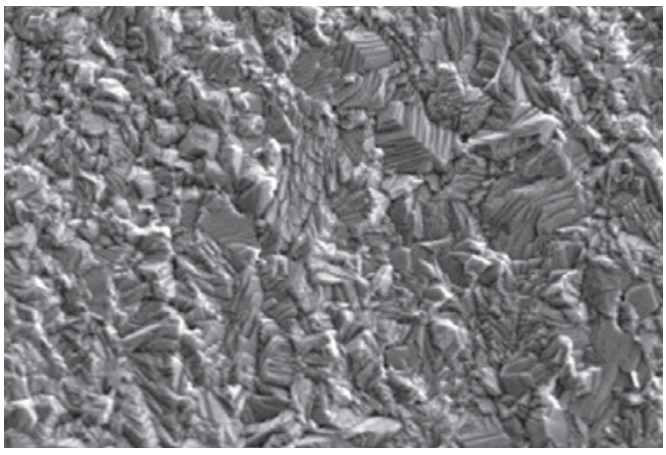
PHOTEC series dry film photoresists provide highest first pass yields, due to high resolution enabling fine line structures, good adhesion, tenting properties and excellent substrate conformance. PHOTEC series dry film resists are easy to strip with controlled particle sizes, significantly reducing clogged equipment and nozzles, and have no or very low sensitivity for sludge formation. Their extremely strong tenting capabilities can be used to overcome obstacles encountered by challenging layouts.

PHOTEC H series for conventional and DI exposure, R-R applications, electrolytic nickel/gold and metal etching
PHOTEC HM series for thick resist layers, metal etching
PHOTEC RD series for fine line DI applications
PHOTEC RY series for PKG boards and ultra-fine line
PHOTEC H-W series for electroless Ni/Au applications

SURFACE PREPARATION

Chemical cleaning is the preferred method for cleaning the copper surface prior to resist application. Compared to mechanical cleaning, chemical cleaning eliminates the possibility of leaving particulate matter on the surface that may become entrapped under the laminated resist. This provides increased substrate stability and minimizes copper surface damage by mechanical load.

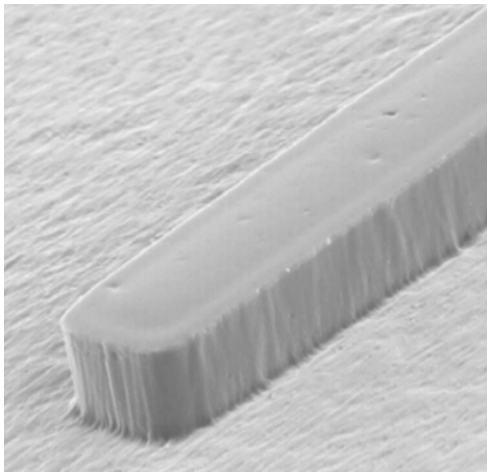
The ENPREP Ti-1000 /1200 surface preparation is a two or one stage pretreatment. Both achieve excellently cleaned, micro-roughened surfaces. ENPREP Ti-1000 /1200 processes provide the optimum surface technology for the most optimal adhesion of PHOTEC dry film.



Two or one stage process:

- ENPREP Ti-1000 CL — Cleaner
- ENPREP Ti-1000 ME — Microetch
- ENPREP Ti-1200 — Cleaner/Microetch

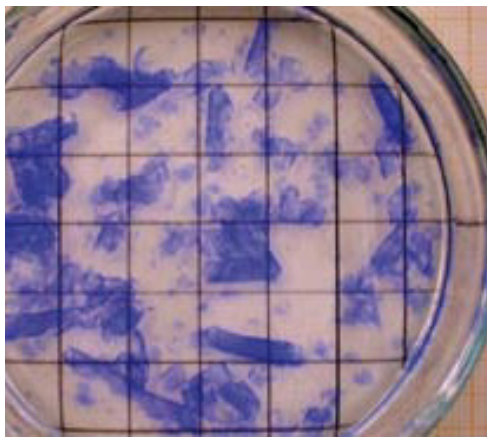
DEVELOPMENT



Development is the removal of unexposed portions of the negative working resist, a critical stage as it determines the quality of the resist remaining on the surface in terms of track profile, adhesion, etc. As circuit density increases, the track width becomes smaller and more closely packed. A highly-pure developer solution can provide significant benefits in maintenance and major improved yields.

ENPREP Ti-1300 DS is a liquid development process providing superior conditions for improved adhesion and straight side walls during the development stage for fine line circuitries. Depending on the type of PHOTEC resist or other resist used, a MacDermid Enthone brand defoamer may be needed.

RESIST STRIPPING



The objective of resist stripping is to remove the resist from the copper panel (including fine lines and spaces), while ensuring a non-oxidised surface. The stripping mechanism depends not only on the cross-link density of the resist but also on the number of carboxylic acid groups in the polymer chain. Therefore, the type of stripping solution should be optimized for each resist.

ENPREP Ti-1400 RS resist stripper allows the stripping solution to penetrate the resist and break the polymer chain before the resist-to-copper bond is broken. This is most important for removing resist between high density fine lines. This stripper chemistry can be used in outer and inner layer production and has a low resist swelling characteristic. Resist particle size can be adjusted. This makes the ENPREP Ti-1400 RS very effective in stripping resist out of fine line structures.

The UltraStrip product line represents our most advanced, high-performance photoresist strippers. The UltraStrip RS-215 resist stripping system is designed to strip fully-aqueous dry film photoresists. Its unique blend of components promotes a high strip rate, easily filterable particles, and complete removal of dry film residues and adhesion promoters. UltraStrip RS-215 resist stripping chemistry contains no caustic, glycol ethers or any other solvents, so it will not attack copper, tin, or tin-lead.

EQUIPMENT CLEANER

ENPREP Ti-1500 EC is an acidic, solvent based, soluble (vertical/horizontal) equipment cleaner designed for use in dry film resist developer and dry film stripper equipment. It is effective in removal of dry film resists, antifoam residues and hard water scale residues. ENPREP Ti -1500 EC thoroughly cleans residues found inside of nozzles, pumps, pipes and other machine parts that come in contact with the solution.

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PRODUCT	TYPE	MAKE-UP	ADVANTAGES
Surface Preparation			
ENPREP Ti-1000 CL cleaner	Sulfuric	12-14% 30-35°C	• Spray and dip applications • Potentially versatile when used with peroxide • Prevents oxidation
ENPREP Ti-1000 ME microetch	Sulfuric / Caroate	75-140 g/L 25-35°C	• For spray and dip applications • Consistent etch rates over bathlife • Uniform surface topography • Prevents oxidation
ENPREP Ti-1200 cleaner/microetch	Sulfuric / Caroate	10-25% 100-200 g/L 25-35°C	• For spray and dip applications • Consistent etch rates over bathlife • Uniform surface topography • Prevents oxidation
Dry Film Resist			
PHOTEC	Primary Image	Rolls	• High resolution enables fine line structures • Good adhesion and tenting properties • Excellent substrate performance
Development			
ENPREP Ti-1300 DS	Carbonate	7-21 mL/L	• Enables high-density structures • Supports wide range of exposure settings • Ease of replenishment (bleed/feed) • Improves straight resist side walls
Stripping			
ENPREP Ti-1400 RS	Amine	7-15% 25-55°C	• Fast speed • Suited for fine line structures • Ease of replenishment (bleed/feed) • Optimized for use with PHOTEC • Particle size becomes optimum for filtration
Equipment Cleaner			
ENPREP Ti-1500 EC	Acidic / Soluable (Vertical/ Horizontal)	N/A	• Ready-to-use • Use multiple times • Improves yields • 30-60 minute cleaning cycles

MacDermid Alpha ELECTRONICS SOLUTIONS

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