

# DuPont™ ImageMaster™ Diazo IMD-XT

## DATA SHEET & PROCESSING INFORMATION

ImageMaster™ IMD-XT is a premium diazo film designed for all PCB applications - soldermask, outer layers, inner layers, etc.

- Slow contact speed
- Positive working diazo film
- Possesses a micro matte surface

DuPont™ ImageMaster™ IMD-XT designed for producing same-size diazo phototools from good quality silver masters. The emulsion provides excellent scratch resistance, and resistance to attack from soldermasks and solvent cleaners. In many cases the need for protective laminates is eliminated.

IMD-XT consists of a very thin, light-sensitive layer containing diazo salts, color dye couplers, and an acid stabilizer, coated on a 178µm (7-mil) polyester base. During exposure with ultraviolet radiation, the diazo salt is decomposed. Subsequent development of unexposed areas with hot ammonia vapor neutralizes the acid stabilizer and triggers a reaction with the dye couplers. This results in a transparent, colored image with high UV density.

### Applications

ImageMaster IMD-XT is suited for making high-quality, visually transparent phototools that are scratch and chemical resistant for use in exposing liquid and dry film photoresists (including solder mask) employed in the manufacture of printed wiring boards.

### Features and Benefits

- Excellent scratch resistance to reduce defects caused by rough handling of the phototool.
- Excellent resistance to attack from LPI solvents for longer phototool life.
- Excellent visual transparency for fast and accurate registration.
- High ultraviolet density to prevent “burn-through”.
- May be handled under bright yellow fluorescent lamps.
- Excellent line edge sharpness to maintain proper feature dimensions.
- Stable 7-mil polyester support for stiffness and excellent dimensional stability.
- High UV transmission in non-imaged areas for short resist exposure times.
- Micro-matte surface for rapid vacuum drawdown without image distortion.



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## EXPOSURE

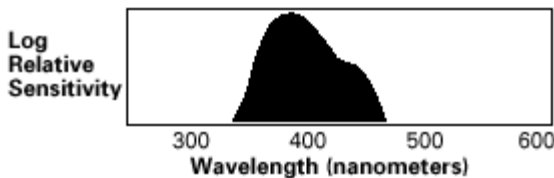
ImageMaster IMD-XT is sensitive to the near UV and blue portion of the spectrum, with peak sensitivity at about 400 nm. Exposure sources, such as metal halide lamps, that have peak output in this region are recommended. The optimum exposure is determined by exposing a standard 21-step tablet so that Step 2 is completely clear and there is some density remaining on Step 3.

### Typical Exposure

2kW Metal Halide (Diazo) 50 seconds

## Spectral Response

Spectral Response is the response of a photographic material to light of different wavelengths (colors).



## Safelights

The film can be handled in bright yellow fluorescent lighting or other yellow safelights (100 footcandles). It can also be handled for shorter periods in subdued room light (about 20 footcandles) typical of that found in inspection and touch-up areas where indirect illumination is provided by light tables. A test should be conducted to determine safe handling times under actual working conditions.

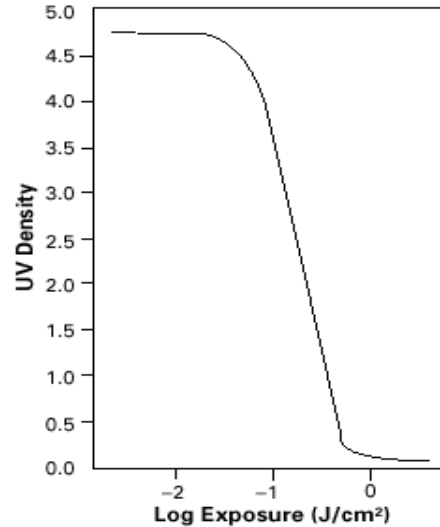
Yellow (or gold) and red fluorescent lamps to fit standard fixtures are available in various sizes from most manufacturers.

## PROCESSING

ImageMaster Diazo film can be developed in most diazo processors. An aqueous ammonia solution of 26° Baumé is recommended. Speed should be adjusted to achieve a film surface temperature of 60 – 70°C (140 – 160°F). Films should be passed through the processor at least twice to ensure complete development. Overdevelopment is not possible. No washing or drying is required.

## Sensitometric Characteristics

ImageMaster Diazo film combines outstanding visual transparency with high UV density. UV density must be measured with a densitometer designed specifically to meet the needs of the printed circuit industry for diazo films.



## DIMENSIONAL STABILITY

The thermal coefficients of expansion listed below are expressed as percent change in length for each one degree change in temperature. The humidity coefficients below are expressed as percent change in length for each one percent (1%) change in relative humidity. Humidity coefficients are the average of rising and falling humidity over the range 35 to 65% at 70°F. All coefficients have a reliability of  $\pm 0.0002$ .

### Coefficients of Expansion

	Temperature (% $\Delta$ / °F) (% $\Delta$ / °C)	Humidity (% $\Delta$ / % RH)
Unprocessed	0.0010 0.0018	0.0010
Processed	0.0010 0.0018	0.0009

## Effects of Processing Conditions

The coefficients of expansion are used to predict film size changes due to environmental conditions. They cannot be used to predict size changes due to processing conditions. The after-processing size change of preconditioned film that has been processed under optimum conditions can be too small to measure. However, if the film is not conditioned or has been processed at temperatures in excess of 80°C (175°F), the after-processing size change can be more than 75mm in 25cm (3mil in 10in.).

For more information on DuPont™ ImageMaster™ or other Printed Circuit Materials, please contact your local representative.

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*Silver halide and diazo photographic films are considered "articles" under the OSHA Hazard Communication Regulation 29 CFR [1910.1200], and therefore are exempt from the reporting requirements of that regulation and the EPA Toxic Substances Control Act (TSCA) [40 CFR 704.5]. As such, no Material Safety Data Sheet (MSDS) is required for this product.*



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