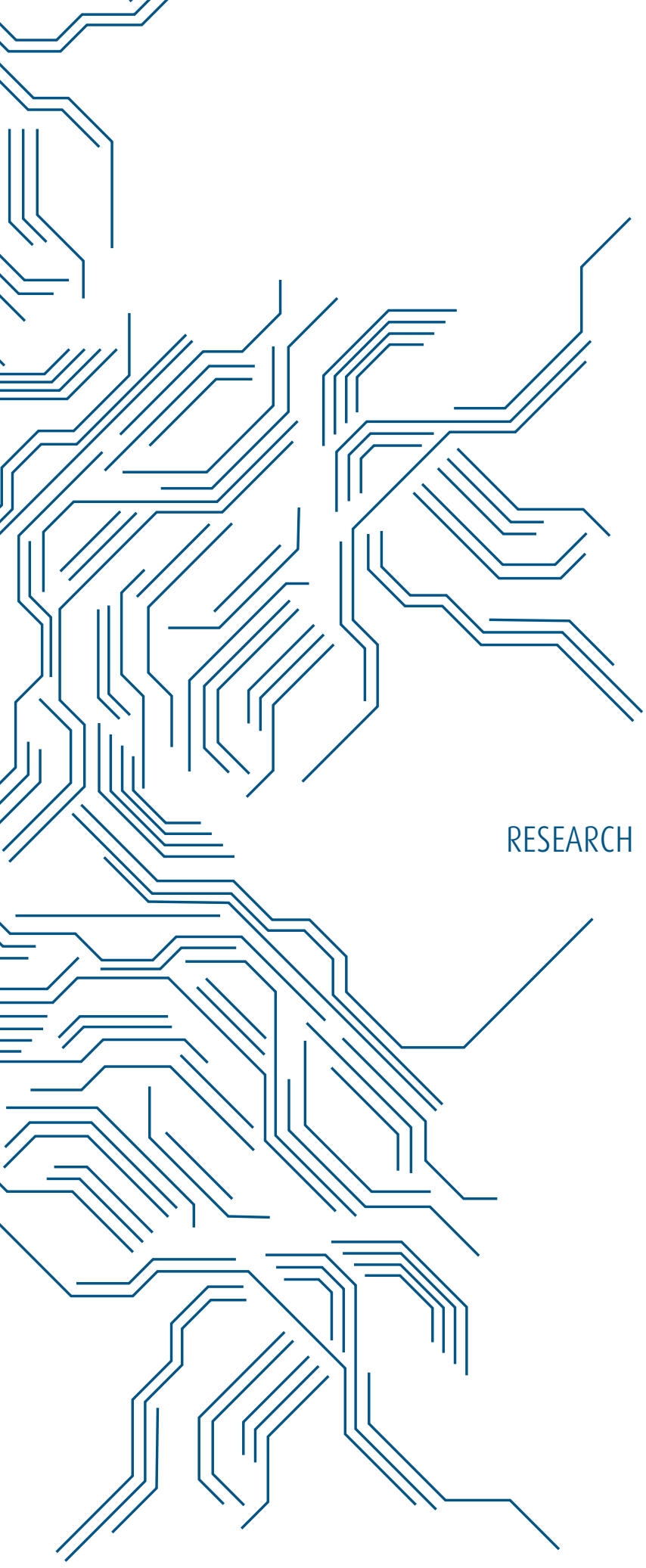


Living inside technology

RESEARCH • DEVELOPMENT • MANUFACTURE

DRY FILMS PRODUCTS

DRY FILMS

LDI DRY FILMS

DRY FILMS SUITABLE FOR 405nm EXPOSURE

NEW GENERATION OF HIGH-PERFORMANCE DRY FILMS

ULTRA-HIGH RESOLUTION DRY FILM

DRY FILM FOR PACKAGING - ELECTROFORMING

DRY FILMS FOR CHEMICAL MILLING

WET RESIST

PERMANENT DRY FILM FOR MEMS AND BIOCHIPS

CHEMISTRY PRODUCTS

AUXILLIARY DRY FILM CHEMISTRY

SURFACE PREPARATION CHEMISTRY

PLATING PROCESS CHEMISTRY

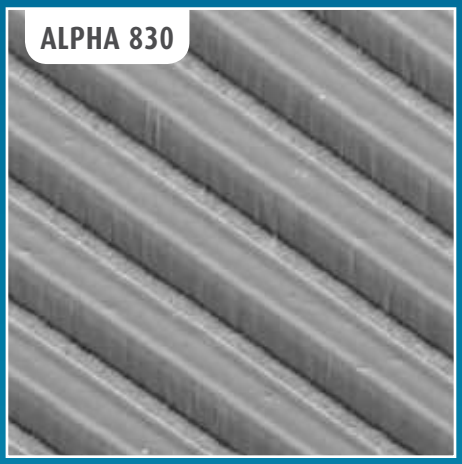
TIN AND TIN/LEAD STRIPPER

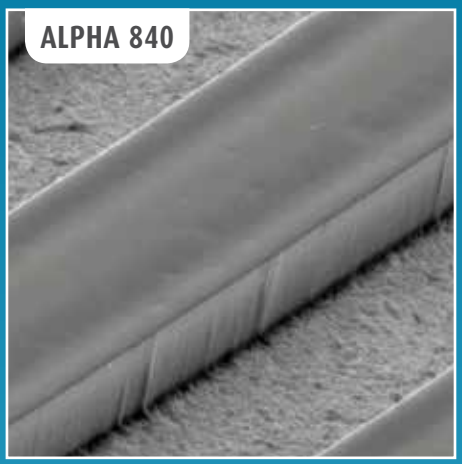
CLEANING SOLUTIONS

COPPER FOIL

ABQ SOLDERMASK

DRY FILMS
ORDYL ALPHA 800





PRODUCT DESCRIPTION

ORDYL ALPHA 800 is a negative, aqueous universal dry film designed to be used for the most common PCB applications.
Alpha 800 can be exposed with LDI or with standard UV lamps and is developable and strippable in mildly alkaline solutions.
It offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl Alpha 800 is particularly recommended for innerlayers thanks to excellent developing properties that leaves the copper surface very clean and ready for the black oxide process.
This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Extremely flexible and high conformability
- Easy stripping with small flake size

TYPICAL APPLICATION

- Acid etching
- Tenting process
- Copper, tin, tin/lead plating

AVAILABLE THICKNESS

- 25 µm (1.0 mils) and 30 µm (1.2 mils) for Innerlayer process
- 40 µm (1.6 mils) and 50 µm (2 mils) for standard application

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
7-9 Solid STEP of SST21
10-18 Solid STEP of RST25

	Alpha 825	Alpha 830	Alpha 840	Alpha 850
Energy (mJ/cm²)	25-30	30-35	35-45	40-50
Resolution	20 µm (0.8 mils)	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)

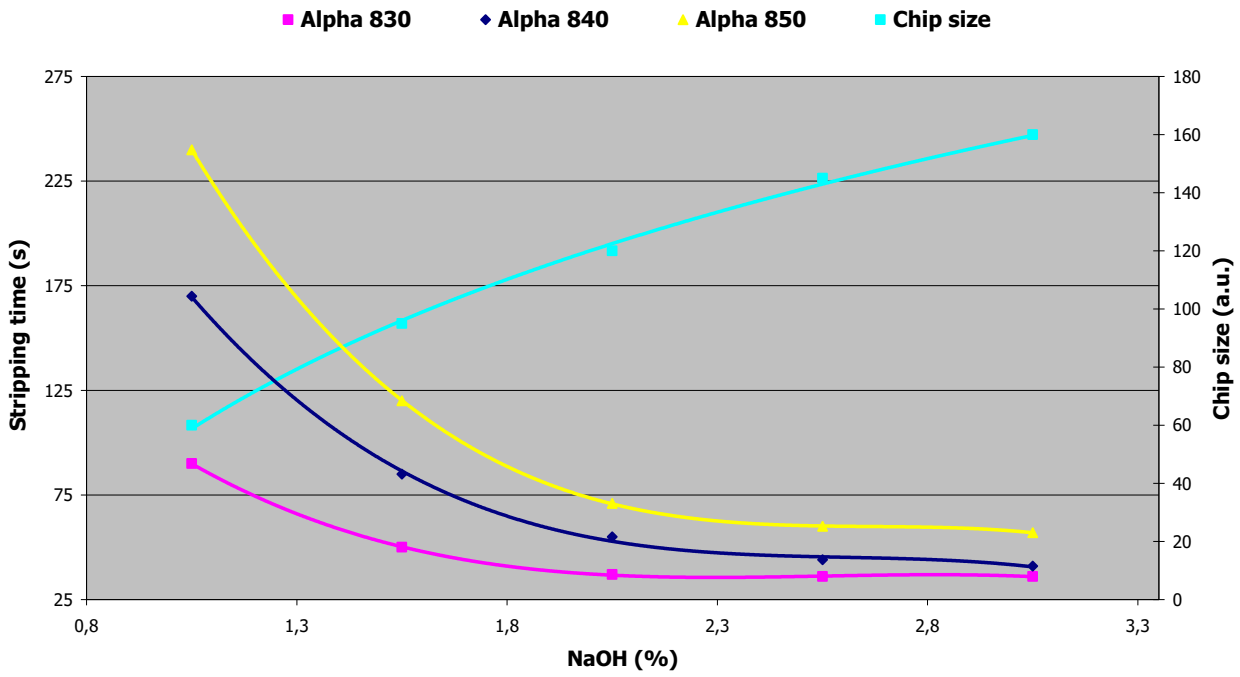
DEVELOPING (B.P. 60%)

	Alpha 825	Alpha 830	Alpha 840	Alpha 850
Developing time	20 sec.	25 sec.	35 sec.	50 sec.
Dry Film load 1g/l	0.05 m²/l	0.03 m²/l	0.025 m²/l	0.017 m²/l

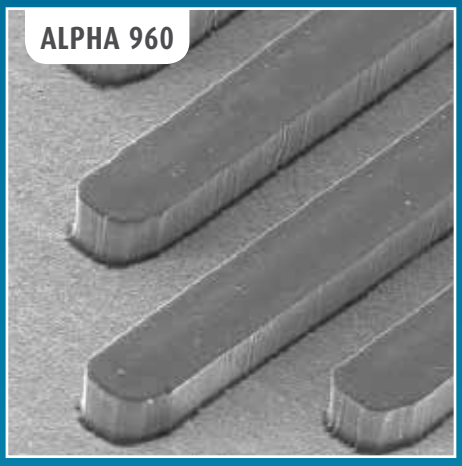
We recommend a maximum Dry Film load of 5 g/l.

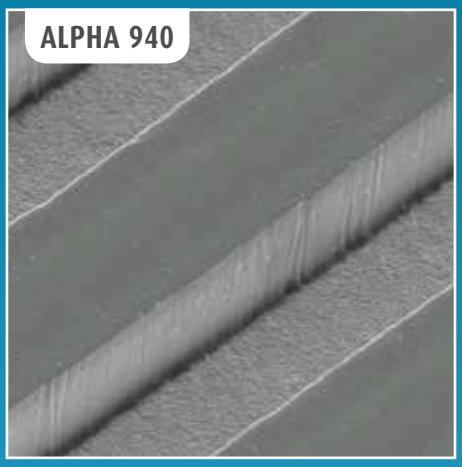
STRIPPING

Stripping Time/Chip Size with different NaOH Concentration



DRY FILMS
ORDYL ALPHA 900





PRODUCT DESCRIPTION

ORDYL ALPHA 900 is a negative, aqueous universal dry film designed to be used for the most common PCB applications.
Alpha 900 can be exposed with LDI or with standard UV lamps and is developable and strippable in mildly alkaline solutions.
It offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl Alpha 900 guarantee very good adhesion on copper surface.
This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Extremely flexible and high conformability
- Good through cure polymerization
- Easy stripping with small flake size

TYPICAL APPLICATION

- Acid etching
- Tenting process
- Copper, tin, tin/lead plating

AVAILABLE THICKNESS

- 20 µm (0.8 mils) for Ultra Fine Line
- 30 µm (1.2 mils), 40 µm (1.6 mils), 50 µm (2 mils) and 60 µm (2.4 mils) for standard application

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
7-9 Solid STEP of SST21
10-18 Solid STEP of RST25

	Alpha 920	Alpha 930	Alpha 940	Alpha 950	Alpha 960
Energy (mJ/cm²)	20-25	25-30	30-35	35-40	45-50
Resolution	20 µm (0.8 mils)	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)	60 µm (2.4 mils)

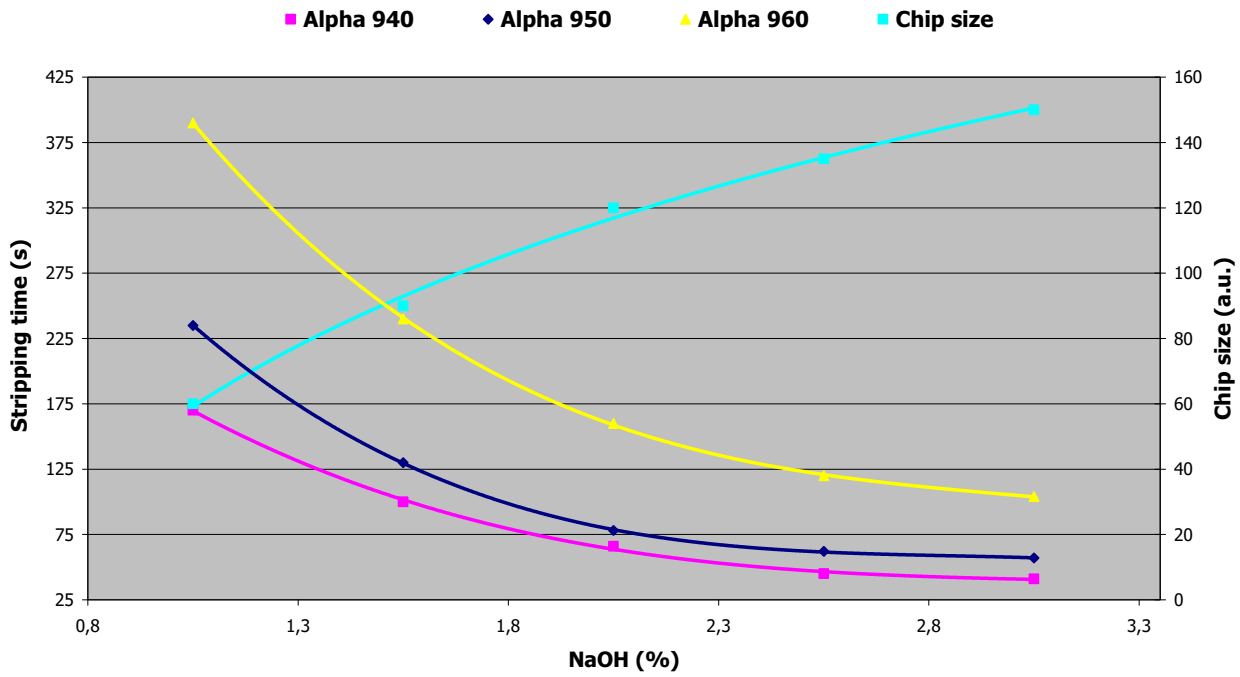
DEVELOPING (B.P. 60%)

	Alpha 920	Alpha 930	Alpha 940	Alpha 950	Alpha 960
Developing time	15 sec.	25 sec.	35 sec.	50 sec.	65 sec.
Dry Film load 1g/l	0.05 m²/l	0.03 m²/l	0.025 m²/l	0.017 m²/l	0.012 m²/l

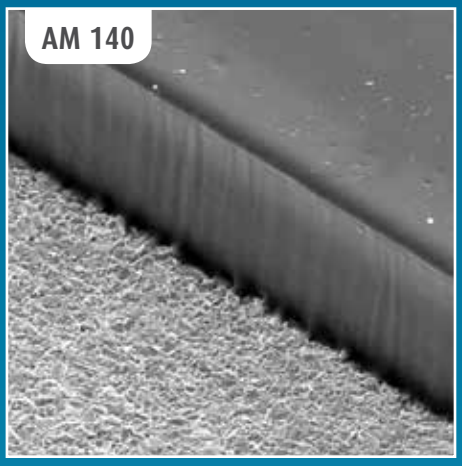
We recommend a maximum Dry Film load of 3 g/l.

STRIPPING

Stripping Time/Chip Size with different NaOH Concentration



DRY FILMS
ORDYL AM 100



PRODUCT DESCRIPTION

ORDYL AM 100 is a negative, aqueous processable dry film specifically designed to be exposed with LDI but usable also with standard UV lamps. AM 100 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl AM 100 has good adhesion on copper surface and for this reason is indicated for direct plating process and in case of surface preparation is not good. This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Excellent through cure polymerization also with LDI exposure machine
- Good adhesion properties
- High Photospeed
- High flexibility and conformability

TYPICAL APPLICATION

- Acid and alkaline etching
- Tenting process
- Copper, tin, tin/lead plating
- Nickel and Gold plating

AVAILABLE THICKNESS

- 30 µm (1.2 mils), 40 µm (1.6 mils) and 50 µm (2 mils) for standard application
- 75 µm (3 mils) specific for Nickel and Gold plating

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
7-9 Solid STEP of SST21
10-18 Solid STEP of RST25

	AM 130	AM 140	AM 150	AM 175
Energy (mJ/cm²)	20-25	25-30	30-35	50-60
Resolution	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)	75 µm (3 mils)

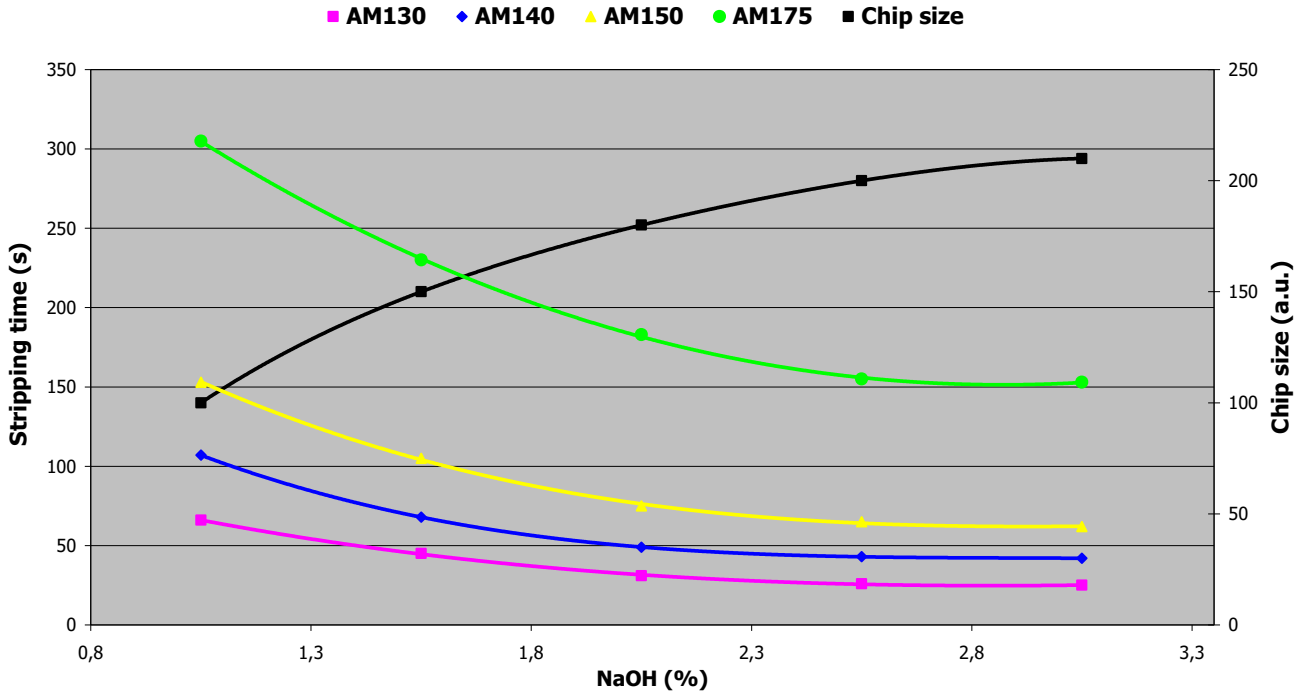
DEVELOPING (B.P. 60%)

	AM 130	AM 140	AM 150	AM 175
Developing time	30 sec.	40 sec.	60 sec.	95 sec.
Dry Film load 1g/l	0.03 m²/l	0.025 m²/l	0.017 m²/l	0.008 m²/l

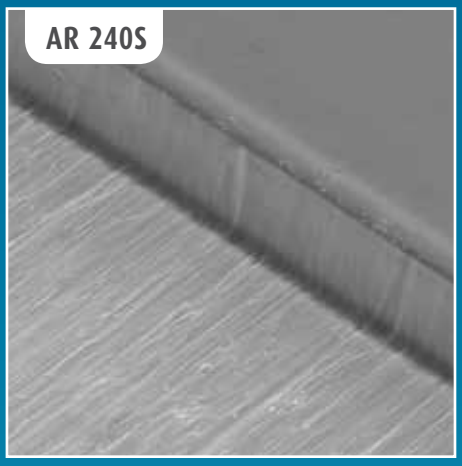
We recommend a maximum Dry Film load of 5 g/l.

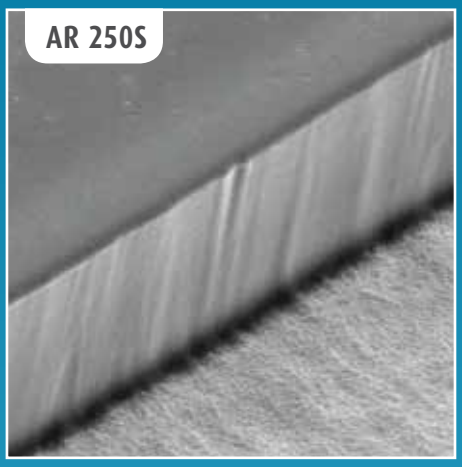
STRIPPING

Stripping Time/Chip Size with different NaOH Concentration



DRY FILMS
ORDYL AR 200S





PRODUCT DESCRIPTION

ORDYL AR 200S is a negative, aqueous processable dry film designed to be exposed with UV and LDI exposure machine.
AR 200S is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl AR 200S has good adhesion on copper surface and for this reason is indicated for direct plating process.
This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- High flexibility and conformability

TYPICAL APPLICATION

- Acid and alkaline etching
- Tenting process
- Copper, tin, tin/lead plating
- Nickel and Gold plating

AVAILABLE THICKNESS

- 40 µm (1.6 mils) and 50 µm (2 mils)

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
7-9 Solid STEP of SST21
10-18 Solid STEP of RST25

	AR 240S	AR 250S
Energy (mJ/cm²)	25-30 (30-35)	30-35 (35-40)
Resolution	40 µm (1.6 mils)	50 µm (2 mils)

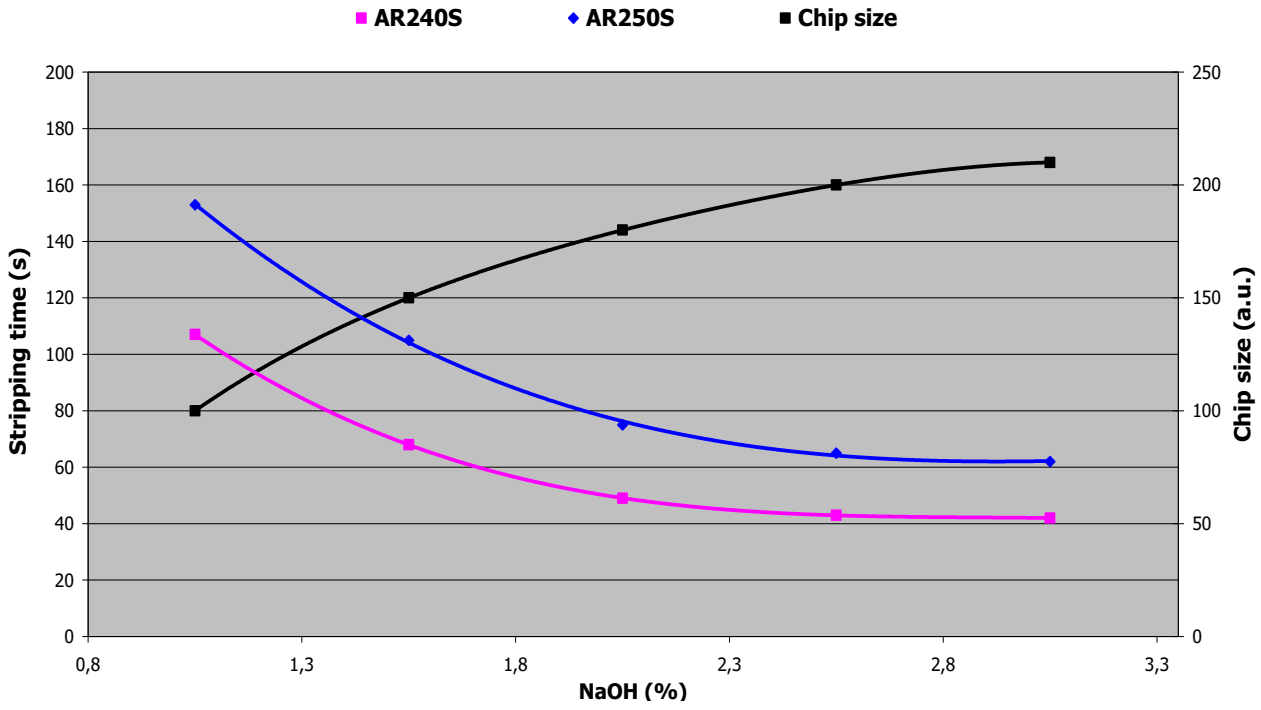
DEVELOPING (B.P. 60%)

	AR 240S	AR 250S
Developing time	40 sec.	60 sec.
Dry Film load 1g/l	0.025 m²/l	0.017 m²/l

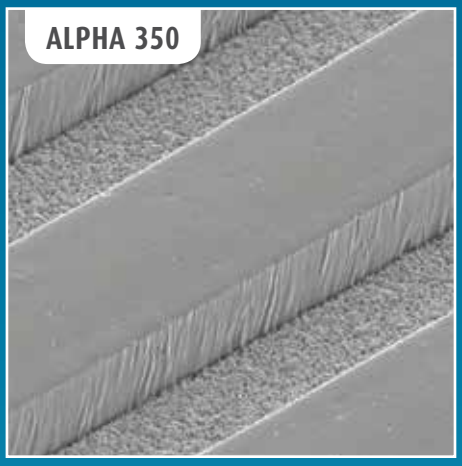
We recommend a maximum Dry Film load of 3 g/l.

STRIPPING

Stripping Time/Chip Size with different NaOH Concentration



DRY FILMS
ORDYL ALPHA 300



PRODUCT DESCRIPTION

ORDYL ALPHA 300 is a negative, aqueous dry film specifically designed to have extremely high resistance in alkaline solutions and galvanic Nickel/Gold. It can be exposed both with LDI and standard UV lamps.
Alpha 300 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl Alpha 300 guarantee good adhesion on copper surface.
This type of dry film has a good flexibility and ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Extreme resistance in alkaline solutions
- High resistance in Ni-Au Plating

TYPICAL APPLICATION

- Acid and alkaline etching
- Tenting process
- Copper, tin, tin/lead plating
- Ni-Au Plating

AVAILABLE THICKNESS

- 30 µm (1.2 mils) for acid and alkaline etching
- 40 µm (1.6 mils) and 50 µm (2mils) for standard application and Ni-Au Plating
- 75 µm (3 mils) for standard application, Ni-Au Plating and tin/leads stripping mask

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
7-9 Solid STEP of SST21
10-18 Solid STEP of RST25

	ALPHA 330	ALPHA 340	ALPHA 350	ALPHA 375
Energy (mJ/cm²)	40-60	50-70	80-100	100-120
Resolution	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)	75 µm (3 mils)

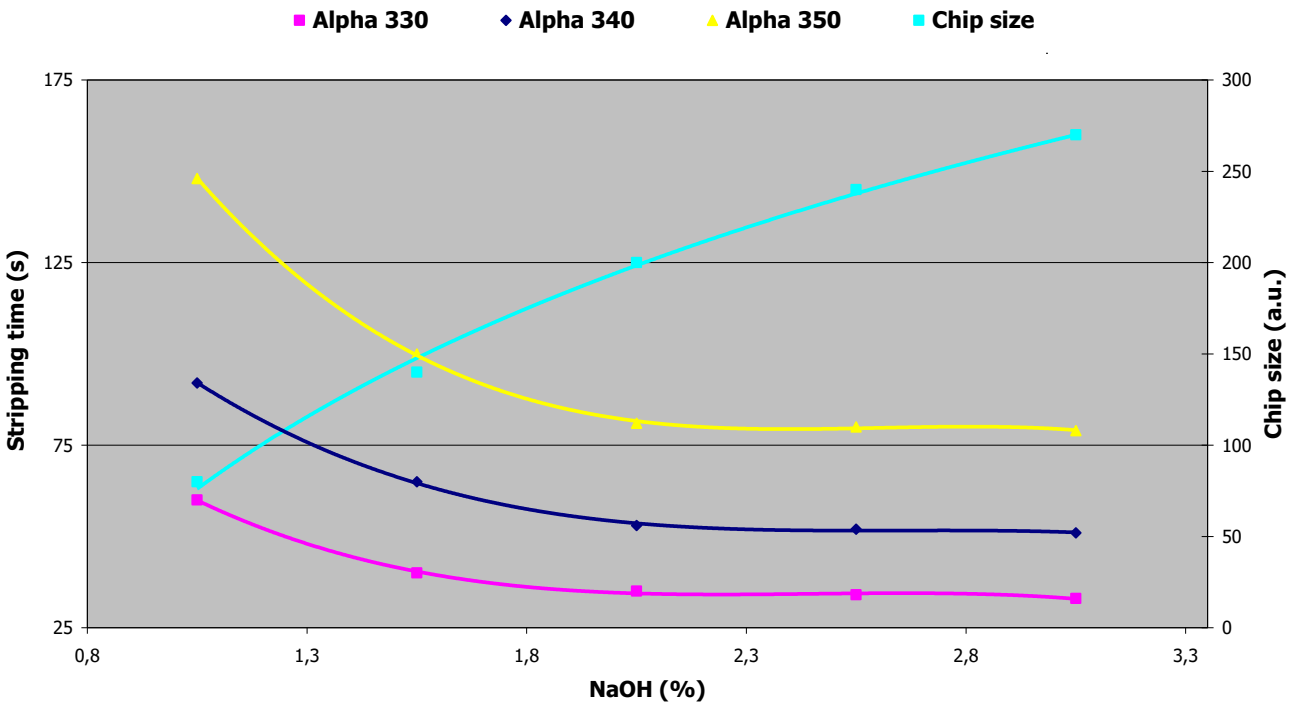
DEVELOPING (B.P. 60%)

	ALPHA 330	ALPHA 340	ALPHA 350	ALPHA 375
Developing time	40 sec.	55 sec.	75 sec.	120 sec.
Dry Film load 1g/l	0.03 m²/l	0.025 m²/l	0.017 m²/l	0.012 m²/l

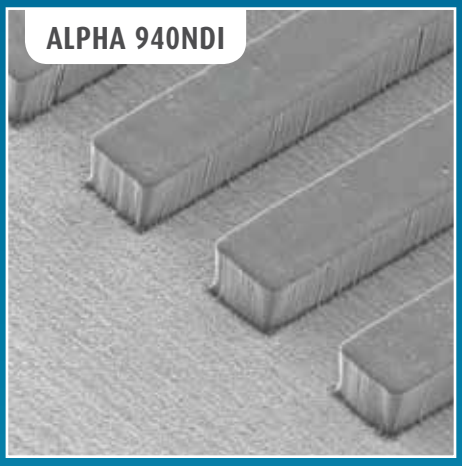
We recommend a maximum Dry Film load of 3 g/l.

STRIPPING

Stripping Time/Chip Size with different NaOH Concentration



LDI DRY FILMS
ORDYL ALPHA 900NDI



PRODUCT DESCRIPTION

ORDYL ALPHA 900NDI is a negative, aqueous processable dry film specifically designed to be exposed with LDI but usable also with standard UV lamps. Alpha 900NDI is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl Alpha 900NDI guarantee very good adhesion on copper surface thanks to a combination of particular photoinitiator and adhesion promoter. This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Especially developed for UV and LASER exposure machine
- Very good through cure polymerization also with LDI exposure machine over 50 µm resist thickness
- Easy stripping with small flake size

TYPICAL APPLICATION

- Acid etching
- Tenting process
- Copper, tin, tin/lead plating

AVAILABLE THICKNESS

- 30 µm (1.2 mils), 40 µm (1.6 mils), 50 µm (2 mils) and 60 µm (2.4 mils) for standard application

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
7-9 Solid STEP of SST21
10-18 Solid STEP of RST25

	Alpha 930NDI	Alpha 940NDI	Alpha 950NDI	Alpha 960NDI
Energy (mJ/cm²)	20-25	30-40	35-45	40-60
Resolution	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)	60 µm (2.4 mils)

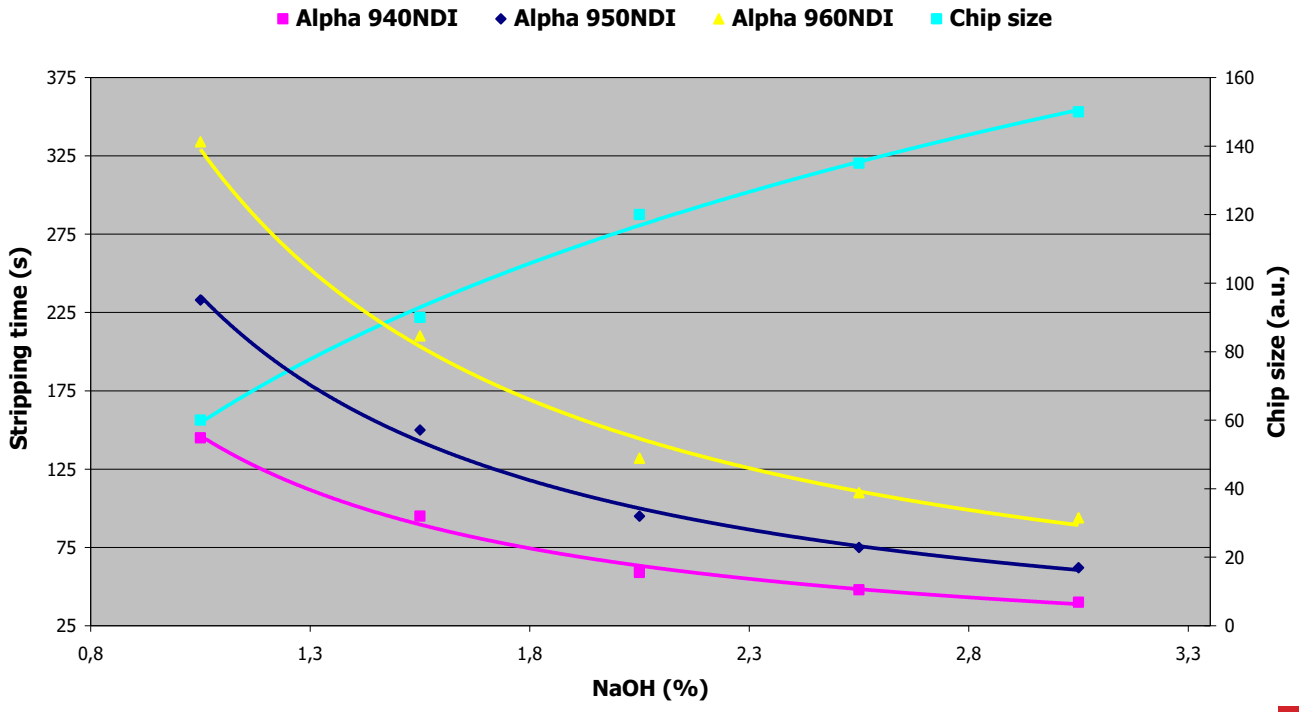
DEVELOPING (B.P. 60%)

	Alpha 930NDI	Alpha 940NDI	Alpha 950NDI	Alpha 960NDI
Developing time	25 sec.	35 sec.	50 sec.	65 sec.
Dry Film load 1g/l	0.03 m²/l	0.025 m²/l	0.017 m²/l	0.012 m²/l

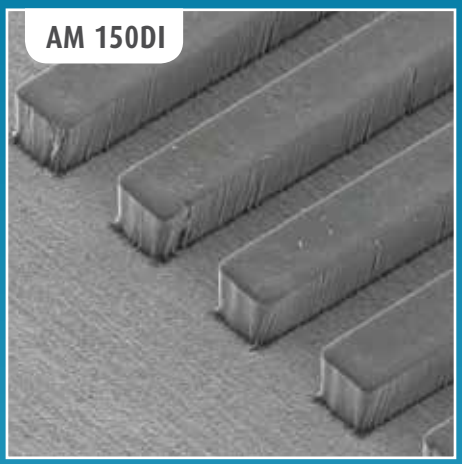
We recommend a maximum Dry Film load of 5 g/l.

STRIPPING

Stripping Time/Chip Size with different NaOH Concentration



LDI DRY FILMS
ORDYL AM 100DI



PRODUCT DESCRIPTION

ORDYL AM 100DI is a negative, aqueous processable dry film specifically designed to be exposed with LDI but usable also with standard UV lamps. AM 100DI is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl AM 100DI has strong adhesion on copper surface and for this reason is indicated for direct plating process and in case of surface preparation is not good.
This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Excellent through cure polymerization also with LDI exposure machine over 50µm resist thickness
- Excellent adhesion properties due to special adhesion promoter
- Very High Photospeed
- High flexibility and conformability

TYPICAL APPLICATION

- Acid and alkaline etching
- Tenting process
- Copper, tin, tin/lead plating
- Nickel and Gold plating

AVAILABLE THICKNESS

- 20 µm (0.8 mils) for Ultra Fine Line
- 30 µm (1.2 mils), 40 µm (1.6 mils), 50 µm (2 mils) and 60 µm (2.4 mils) for standard application

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
7-9 Solid STEP of SST21
10-18 Solid STEP of RST25

	AM 120DI	AM 130DI	AM 140DI	AM 150DI	AM 160DI
Energy (mJ/cm²)	12-18	15-25	20-30	25-35	25-40
Resolution	20 µm (0.8 mils)	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)	60 µm (2.4 mils)

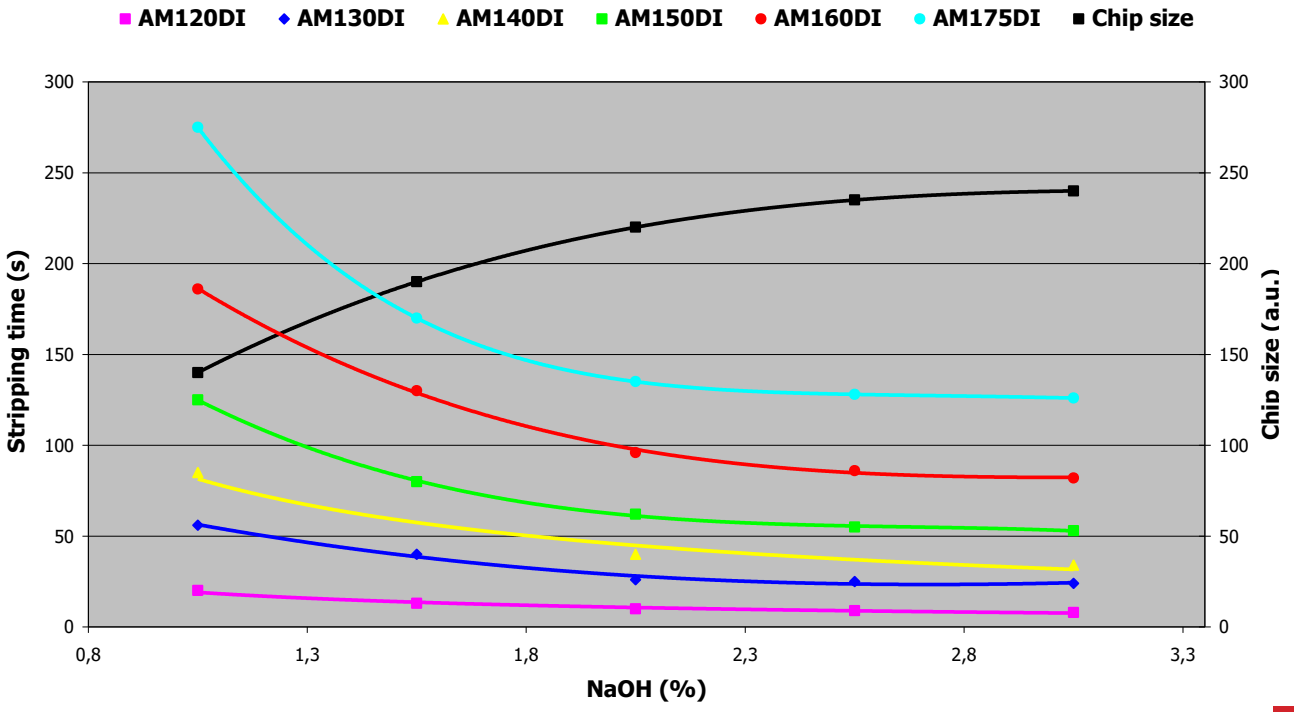
DEVELOPING (B.P. 60%)

	AM 120DI	AM 130DI	AM 140DI	AM 150DI	AM 160DI
Developing time	20 sec.	30 sec.	40 sec.	60 sec.	80 sec.
Dry Film load 1g/l	0.05 m²/l	0.03 m²/l	0.025 m²/l	0.017 m²/l	0.012 m²/l

We recommend a maximum Dry Film load of 3 g/l.

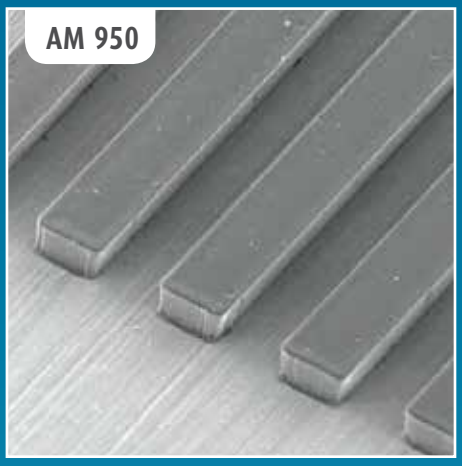
STRIPPING

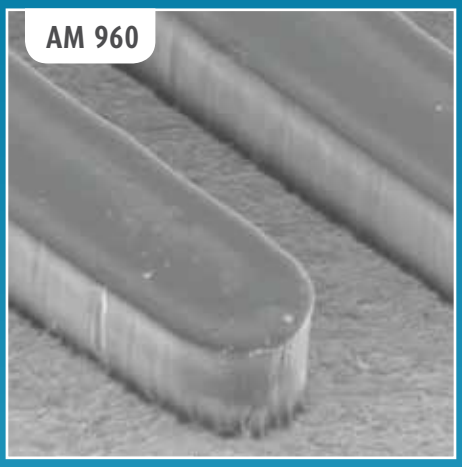
Stripping Time/Chip Size with different NaOH Concentration



DRY FILMS SUITABLES FOR 405nm EXPOSURE

ORDYL AM 900





PRODUCT DESCRIPTION

ORDYL AM 900 is a negative, aqueous processable dry film designed to be exposed both with sources at 405nm wavelength, double wavelength systems (when one is 405nm) and standard UV sources.
AM 900 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl AM 900 has good adhesion on copper surface and for this reason is indicated for direct plating process and in case of surface preparation is not good.
This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Excellent through cure polymerization
- Good adhesion properties
- Very High Photospeed
- High flexibility and conformability

TYPICAL APPLICATION

- Acid etching
- Tenting process
- Copper, tin, tin/lead plating

AVAILABLE THICKNESS

- 30 µm (1.2 mils), 40 µm (1.6 mils), 50 µm (2 mils), 60 µm (2.4 mils)

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 405 nm
The following parameters are referred to:
6-7 Solid STEP of SST21
16-21 Solid STEP of SST41
7-12 Solid STEP of RST25

	AM 930	AM 940	AM 950	AM 960
Energy (mJ/cm²)	14-20	16-22	18-24	22-28
Resolution	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)	60 µm (2.4 mils)

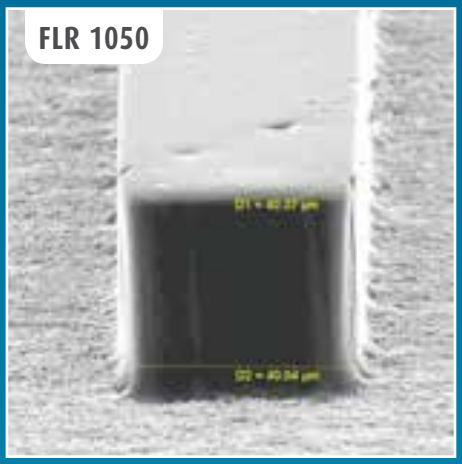
DEVELOPING (B.P. 60%)

	AM 930	AM 940	AM 950	AM 960
Developing time	25 sec.	35 sec.	50 sec.	65 sec.
Dry Film load 1g/l (0.13 oz/gal)	0.03 m²/l (1.2 ft²/gal)	0.025 m²/l (1.0 ft²/gal)	0.017 m²/l (0.7 ft²/gal)	0.012 m²/l (0.5 ft²/gal)

We recommend a maximum Dry Film load of 5 g/l.

NEW GENERATION OF HIGH-PERFORMANCE DRY FILM

FLR 1000



PRODUCT DESCRIPTION

ORDYL FLR 1000 is a negative, aqueous processable dry film specifically designed to be exposed with LDI, but usable also with standard UV lamps. FL 1000 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl FLR 1000 has strong adhesion on copper surface and for this reason is indicated for direct plating process and in case of surface preparation is not good. This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Excellent through cure polymerization also with LDI exposure machine over 50 µm resist thickness
- Excellent adhesion properties due to special adhesion promoter
- Very High Photospeed
- High flexibility and conformability

TYPICAL APPLICATION

- Acid etching
- Tenting process
- Copper, tin, tin/lead plating

AVAILABLE THICKNESS

- 30 µm (1.2 mils), 40 µm (1.6 mils), 50 µm (2 mils), 60 µm (2,4 mils) for standard application

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
Optimal exposure at 8 Solid STEP of SST21 (13 - 15 Solid STEP of RST25).
We recommend to stay between 7-9 Solid STEP of SST21 (10-18 Solid STEP of RST25).
The following parameters are referred to:
8 Solid STEP of SST21

	FLR 1030	FLR 1040	FLR 1050	FLR 1060
Energy (mJ/cm²)	15-25	20-30	25-35	35-45
Resolution	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)	60 µm (2 mils)

DEVELOPING (B.P. 60%)

	FLR 1030	FLR 1040	FLR 1050	FLR 1060
Developing time	25 sec.	35 sec.	50 sec.	65 sec.
Dry Film load 1g/l (0.13 oz/gal)	0.03 m²/l (1.2 ft²/gal)	0.025 m²/l (1.0 ft²/gal)	0.017 m²/l (0.7 ft²/gal)	0.012 m²/l (0.5 ft²/gal)

We recommend a maximum Dry Film load of 3 g/l.

STRIPPING

STRIPPING TIME (B.P. 50%)

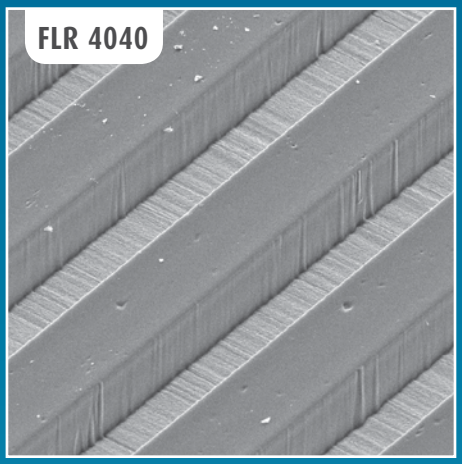
	FLR 1030	FLR 1040	FLR 1050	FLR 1060
Stripping time	20 sec.	30 sec.	45 sec.	60 sec.

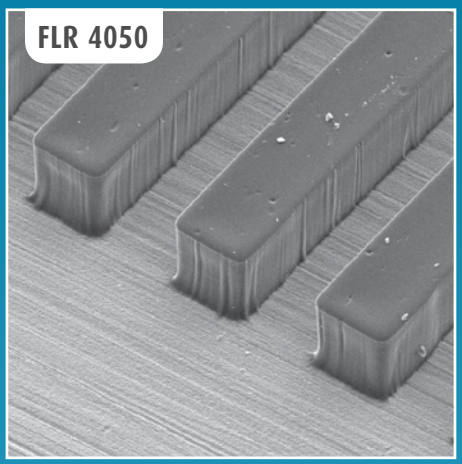
STRIPPING FLAKES

The picture represents stripping flakes of **FLR 1050** obtained with dipping test in a beaker under laboratory conditions with NaOH 3%.

NEW GENERATION OF HIGH-PERFORMANCE DRY FILM

FLR 4000





PRODUCT DESCRIPTION

ORDYL FLR 4000 is a negative, aqueous processable dry film specifically designed to be exposed with LDI but usable also with standard UV lamps. FL 4000 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl FLR 4000 has good adhesion on copper surface and for this reason is indicated for direct plating process and in case of surface preparation is not good. This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Excellent through cure polymerization also with LDI exposure machine
- Good adhesion properties
- High Photospeed
- High flexibility and conformability

TYPICAL APPLICATION

- Acid etching
- Tenting process
- Copper, tin, tin/lead plating

AVAILABLE THICKNESS

- 30 µm (1.2 mils), 40 µm (1.6 mils), 50 µm (2 mils), for standard application

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
Optimal exposure at 8 Solid STEP of SST21 (13-15 Solid STEP of RST25).
We recommend to stay between 7-9 Solid STEP of SST21 (10-18 Solid STEP of RST25).
The following parameters are referred to:
8 Solid STEP of SST21

	FLR 4030	FLR 4040	FLR 4050
Energy (mJ/cm²)	20-25	25-35	30-40
Resolution	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)

DEVELOPING (B.P. 60%)

	FLR 4030	FLR 4040	FLR 4050
Developing time	25 sec.	35 sec.	50 sec.
Dry Film load 1g/l (0.13 oz/gal)	0.03 m²/l (1.2 ft²/gal)	0.025 m²/l (1.0 ft²/gal)	0.017 m²/l (0.7 ft²/gal)

We recommend a maximum Dry Film load of 5 g/l (0.65 oz/gal).

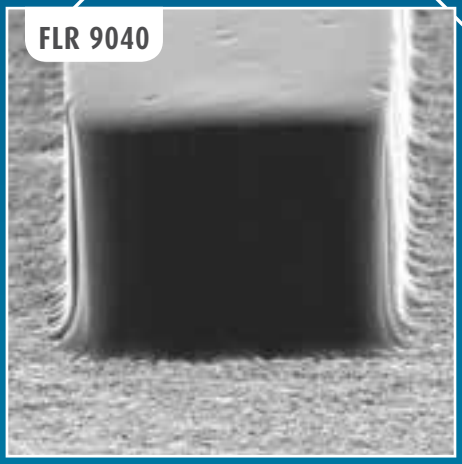
STRIPPING

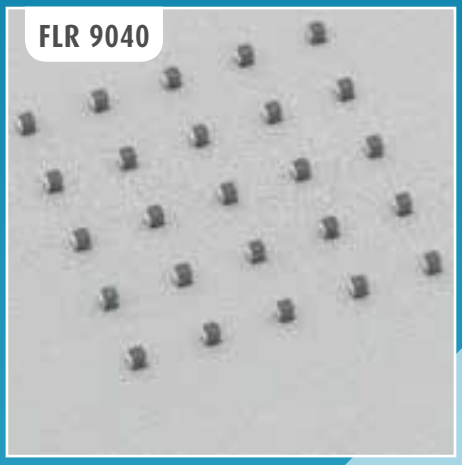
STRIPPING TIME (B.P. 50%)

	FLR 4030	FLR 4040	FLR 4050
Stripping time	25 sec.	45 sec.	60 sec.

STRIPPING FLAKES

The picture represents stripping flakes of **FLR 4050** obtained with dipping test in a beaker under laboratory conditions with NaOH 3%.





NEW GENERATION OF HIGH-PERFORMANCE DRY FILM

FLR 9000

PRODUCT DESCRIPTION

ORDYL FLR 9000 is a negative, aqueous process able dry film designed to be exposed both with sources at 405 nm wavelength, double wavelength systems (when one is 405 nm) and standard UV sources.
FLR 9000 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl FLR 9000 has good adhesion on copper surface and for this reason is indicated for direct plating process and in case of surface preparation is not good. This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Excellent through cure polymerization
- Good adhesion properties
- Very High Photospeed
- High flexibility and conformability

TYPICAL APPLICATION

- Acid etching
- Tenting process
- Copper, tin, tin/lead plating

AVAILABLE THICKNESS

- 30 µm (1.2 mils), 40 µm (1.6 mils), 50 µm (2 mils), and 60 µm (2.4 mils) for standard application

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 405 nm
The following parameters are referred to:
6-7 Solid STEP of SST21
16-21 Solid STEP of SST41
7-12 Solid STEP of RST25

	FLR 9030	FLR 9040	FLR 9050	FLR 9060
Energy (mJ/cm²)	14-20	16-22	18-24	22-28
Resolution	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)	60 µm (2.4 mils)

DEVELOPING (B.P. 60%)

	FLR 9030	FLR 9040	FLR 9050	FLR 9060
Developing time	25 sec.	35 sec.	50 sec.	65 sec.
Dry Film load 1g/l (0.13 oz/gal)	0.03 m²/l (1.2 ft²/gal)	0.025 m²/l (1.0 ft²/gal)	0.017 m²/l (0.7 ft²/gal)	0.012 m²/l (0.5 ft²/gal)

We recommend a maximum Dry Film load of 5 g/l (0.65 oz/gal).

STRIPPING

STRIPPING TIME (B.P. 50%)

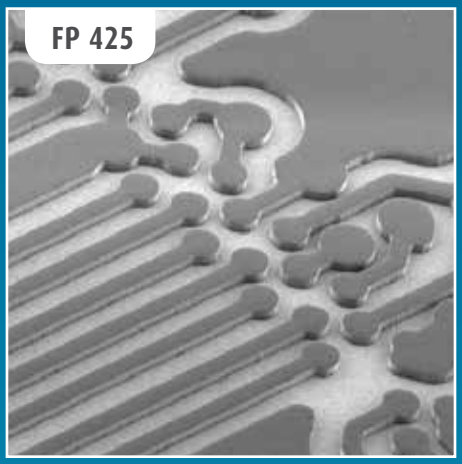
	FLR 9030	FLR 9040	FLR 9050	FLR 9060
Stripping time	20 sec.	30 sec.	45 sec.	70 sec.

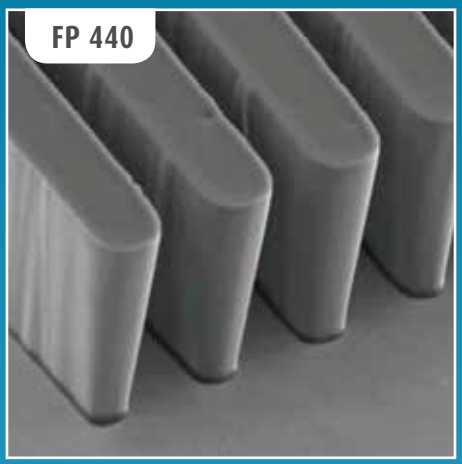
STRIPPING FLAKES

The picture represents stripping flakes of **FLR 9050** obtained with dipping test in a beaker under laboratory conditions with NaOH 3%.

ULTRA-HIGH RESOLUTION DRY FILM

ORDYL FP 400





PRODUCT DESCRIPTION

ORDYL FP 400 is a negative, aqueous processable dry film designed to be exposed with LDI and standard UV lamps.
FP 400 is a special Dry Film specifically designed to obtain Ultra-Fine Line pattern. FP 400 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40 µm thickness.

MAIN FEATURES

- Excellent resolution up to 1:2 (i.e. with 40 µm thickness it can be obtained 20 µm of resolution)

TYPICAL APPLICATION

- Acid etching
- Tenting process
- Copper, tin, tin/lead plating

AVAILABLE THICKNESS

- 15 µm (0.6 mils), 25 µm (1.0 mils), 40 µm (1.6 mils) and 50 µm (2 mils) for Ultra Fine Line

EXPOSURE

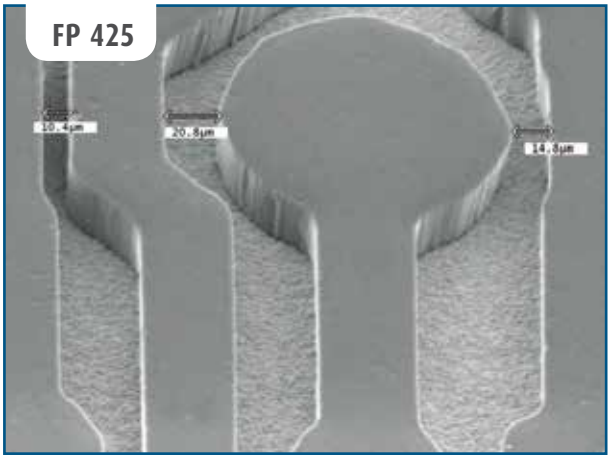
We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
5-8 Solid STEP of SST21
4-15 Solid STEP of RST25

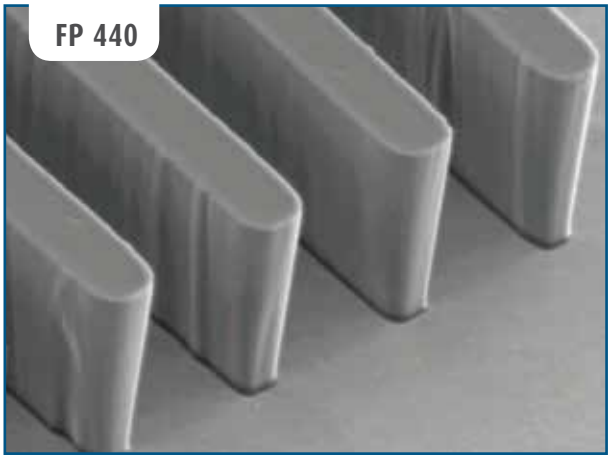
	FP 415	FP 425	FP 440	FP 450
Energy (mJ/cm²)	150-200	180-250	200-400	300-500
Resolution	< 10 µm (<0.4 mils)	15 µm (0.6 mils)	20 µm (0.8 mils)	25 µm (1.0 mils)

DEVELOPING (B.P. 60%)

	FP 415	FP 425	FP 440	FP 450
Developing time	20 sec.	30 sec.	45 sec.	65 sec.
Dry Film load 1g/l	0.06 m²/l	0.085 m²/l	0.025 m²/l	0.017 m²/l

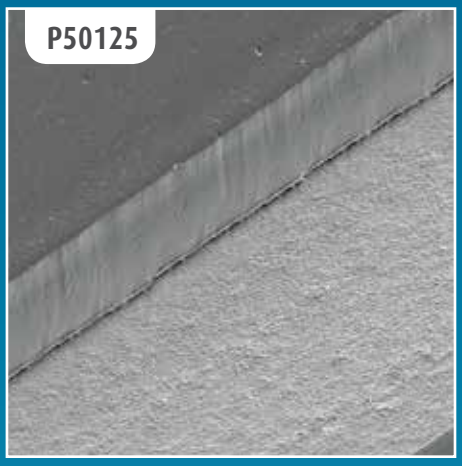
We recommend a maximum Dry Film load of 3 g/l.

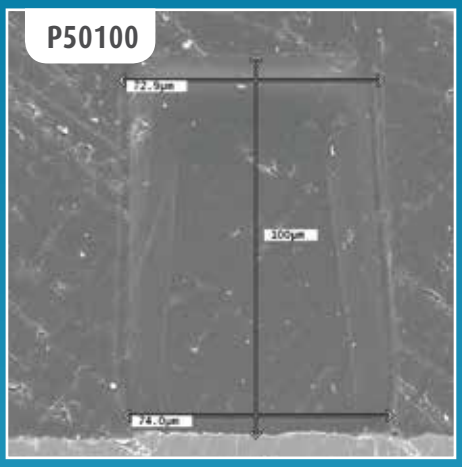




DRY FILM FOR PACKAGING ELECTROFORMING

ORDYL P50000





PRODUCT DESCRIPTION

ORDYL P50000 is a negative, aqueous processable dry film designed to be exposed with standard UV lamps and usable also with LDI.
Ordyl P50000 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing.
Ordyl P50000 is available in minimum thickness of 100 µm to avoid double lamination of standard dry film. It is indicated for direct plating process where high thickness depositions are required thanks to the excellent through-cure polymerization due to special photoinitiator system.

MAIN FEATURES

- Excellent through cure polymerization also over 100 µm thickness

TYPICAL APPLICATION

- Copper, tin, tin/lead plating
- Packaging
- Electroforming

AVAILABLE THICKNESS

- 100 µm (4.0 mils) and 125 µm (5.0 mils)

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
7-9 Solid STEP of SST21
10-18 Solid STEP of RST25

	P50100	P50125
Energy (mJ/cm²)	120-150	150-180
Resolution	100 µm (4 mils)	125 µm (5 mils)

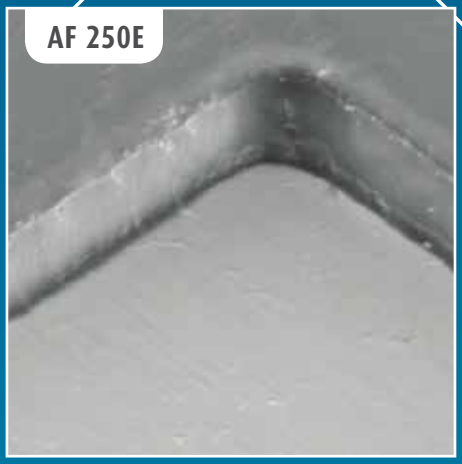
DEVELOPING (B.P. 60%)

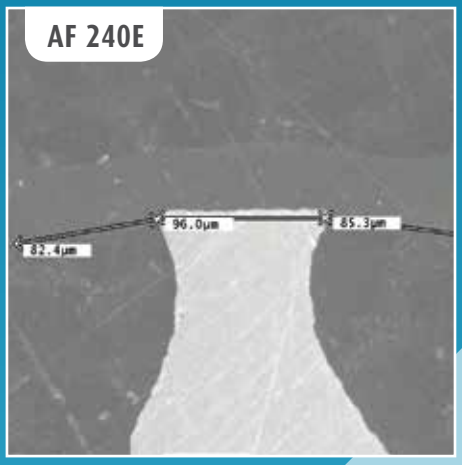
	P50100	P50125
Developing time	120 sec.	150 sec.
Dry Film load 1g/l	0.008 m²/l	0.006 m²/l

We recommend a maximum Dry Film load of 3 g/l.

DRY FILMS FOR CHEMICAL MILLING

ORDYL AF 200E





PRODUCT DESCRIPTION

ORDYL AF 200E is a negative, aqueous processable dry film specifically designed for chemical milling application to be exposed with standard UV lamps.

AF 200E is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to extreme conditions of use in strongly acid solutions.

Ordyl AF 200E has excellent adhesion on stainless steel and the most common metallic alloys.

MAIN FEATURES

- Excellent adhesion performance on stainless steel

TYPICAL APPLICATION

- Chemical Milling
- ENIG

AVAILABLE THICKNESS

- 20 µm (0.8 mils), 30 µm (1.2 mils), 40 µm (1.6 mils), 50 µm (2 mils)

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
6-9 Solid STEP of SST21
7-18 Solid STEP of RST25

	AF 220E	AF 230E	AF 240E	AF 250E
Energy (mJ/cm²)	20-40	30-50	40-60	50-70
Resolution	30 µm (1.2 mils)	40 µm (1.6 mils)	50 µm (2 mils)	60 µm (2.3 mils)

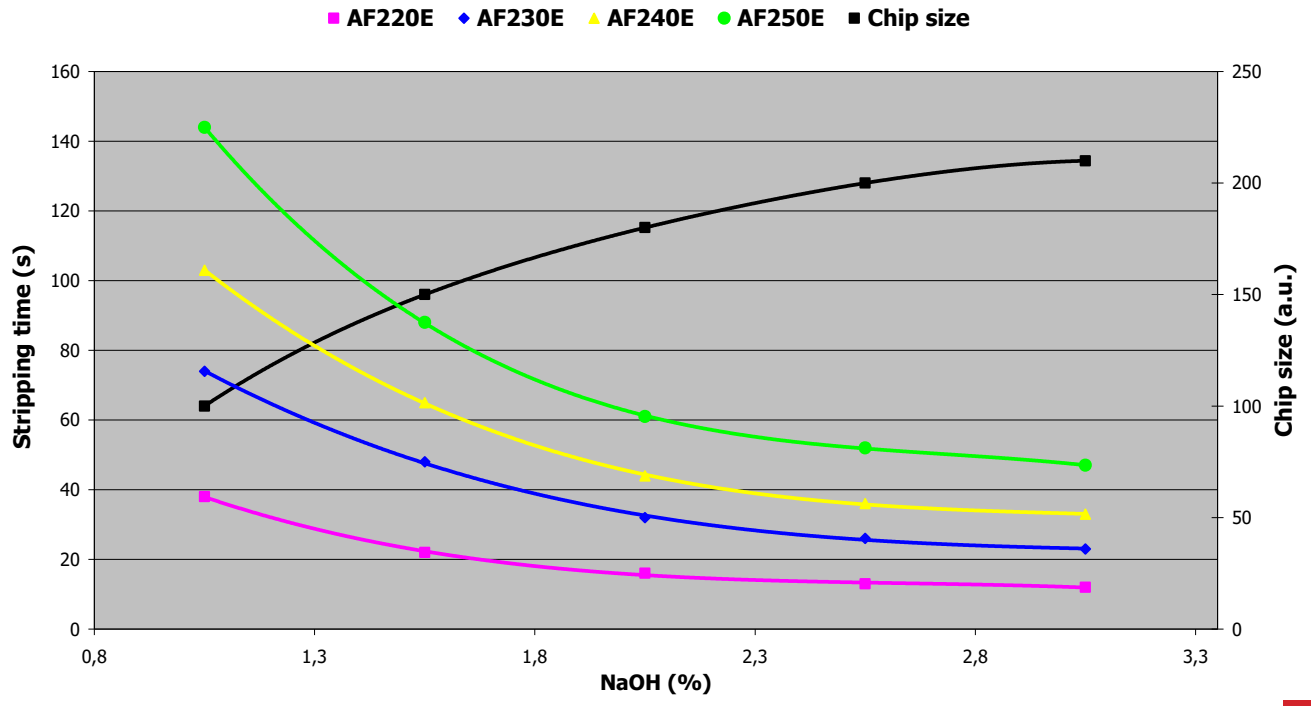
DEVELOPING (B.P. 60%)

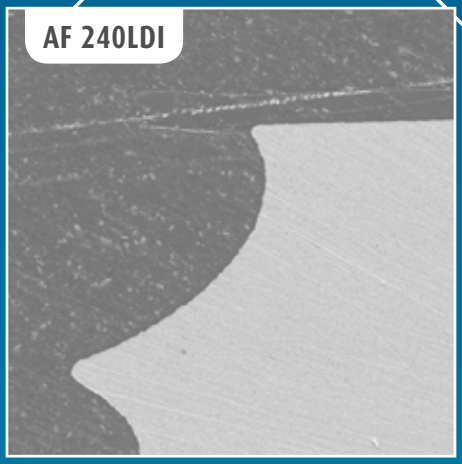
	AF 220E	AF 230E	AF 240E	AF 250E
Developing time	35 sec.	55 sec.	70 sec.	90 sec.
Dry Film load 1g/l	0.05 m²/l	0.03 m²/l	0.025 m²/l	0.017 m²/l

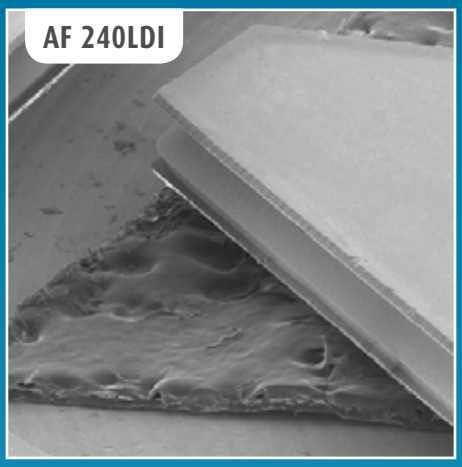
We recommend a maximum Dry Film load of 3 g/l.

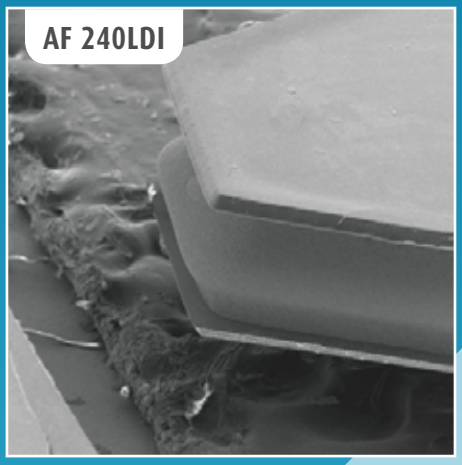
STRIPPING

Stripping Time/Chip Size with different NaOH Concentration









DRY FILMS
ORDYL AF 200LDI

PRODUCT DESCRIPTION

ORDYL AF 200LDI is a negative, aqueous processable dry film specifically designed for chemical milling application to be exposed both with standard UV lamps and laser/LED sources.
AF 200LDI is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to extreme conditions of use in strongly acid solutions.
Ordyl AF 200LDI has excellent adhesion on stainless steel and the most common metallic alloys.

MAIN FEATURES

- Excellent adhesion performance on stainless steel

TYPICAL APPLICATION

- Chemical Milling

AVAILABLE THICKNESS

- 40 µm (1.6 mils) and 50 µm (2 mils)

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
Optimal exposure at 8 Solid STEP of SST21 (13-15 Solid STEP of RST25).
We recommend to stay between 6-9 Solid STEP of SST21 (7-18 Solid STEP of RST25).
The following parameters are referred to:
8 Solid STEP of SST21

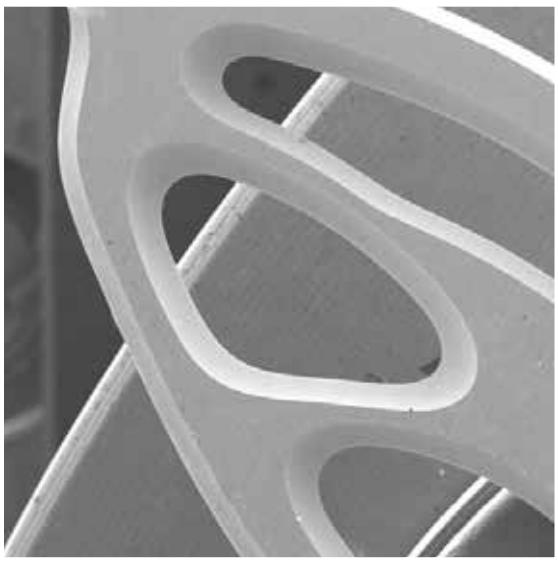
	AF 240LDI	AF 250LDI
Energy (mJ/cm²)	20-40	30-50
Resolution	50 µm (2 mils)	60 µm (2,3 mils)

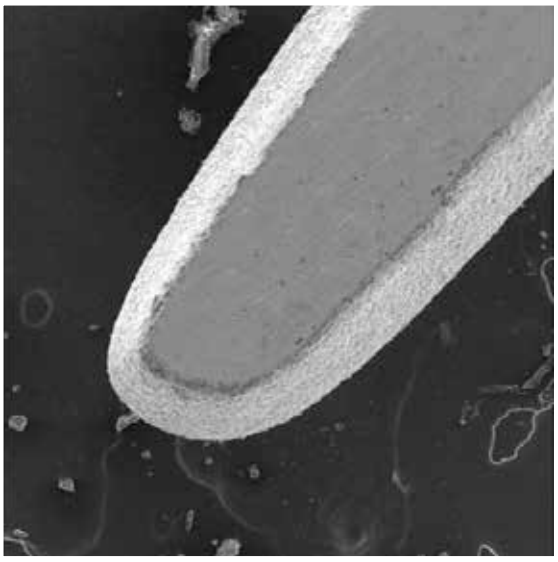
DEVELOPING (B.P. 60%)

	AF 240LDI	AF 250LDI
Developing time	70 sec.	90 sec.
Dry Film load 1g/l	0.025 m²/l	0.017 m²/l

We recommend a maximum Dry Film load of 5 g/l.

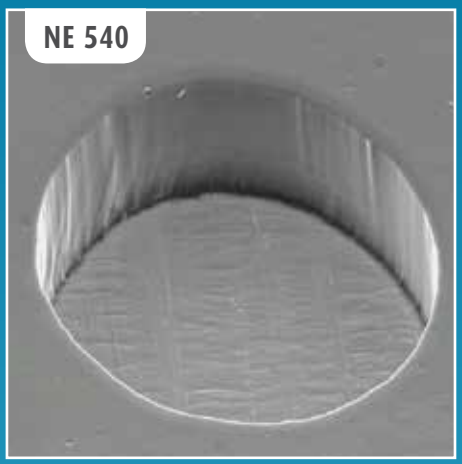
AF 200LDI – ETCHING DETAILS





DRY FILMS FOR CHEMICAL MILLING

ORDYL NE 500



PRODUCT DESCRIPTION

ORDYL NE 500 is a negative, aqueous processable dry film specifically designed for ENIG and chemical milling application to be exposed with standard UV lamps.

NE 500 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to extreme conditions of use in strongly acid solutions.

Ordyl NE 500 has good flexibility and high adhesion on copper, stainless steel and the most common metallic alloys.

MAIN FEATURES

- High adhesion performance on stainless steel
- Very good resistance in ENIG process

TYPICAL APPLICATION

- Chemical Milling
- ENIG

AVAILABLE THICKNESS

- 15 µm (0.6 mils), 25 µm (1.0 mils), 40 µm (1.6 mils) and 50 µm (2 mils)

EXPOSURE

We recommend using UV lamps or laser source with emission peak at 360-405 nm.
The following parameters are referred to:
7-9 Solid STEP of SST21
10-18 Solid STEP of RST25

	NE 515	NE 525	NE 540	NE 550
Energy (mJ/cm²)	90-110	100-120	150-180	200-250
Resolution	15 µm (0.6 mils)	25 µm (1.0 mils)	40 µm (1.6 mils)	50 µm (2.0 mils)

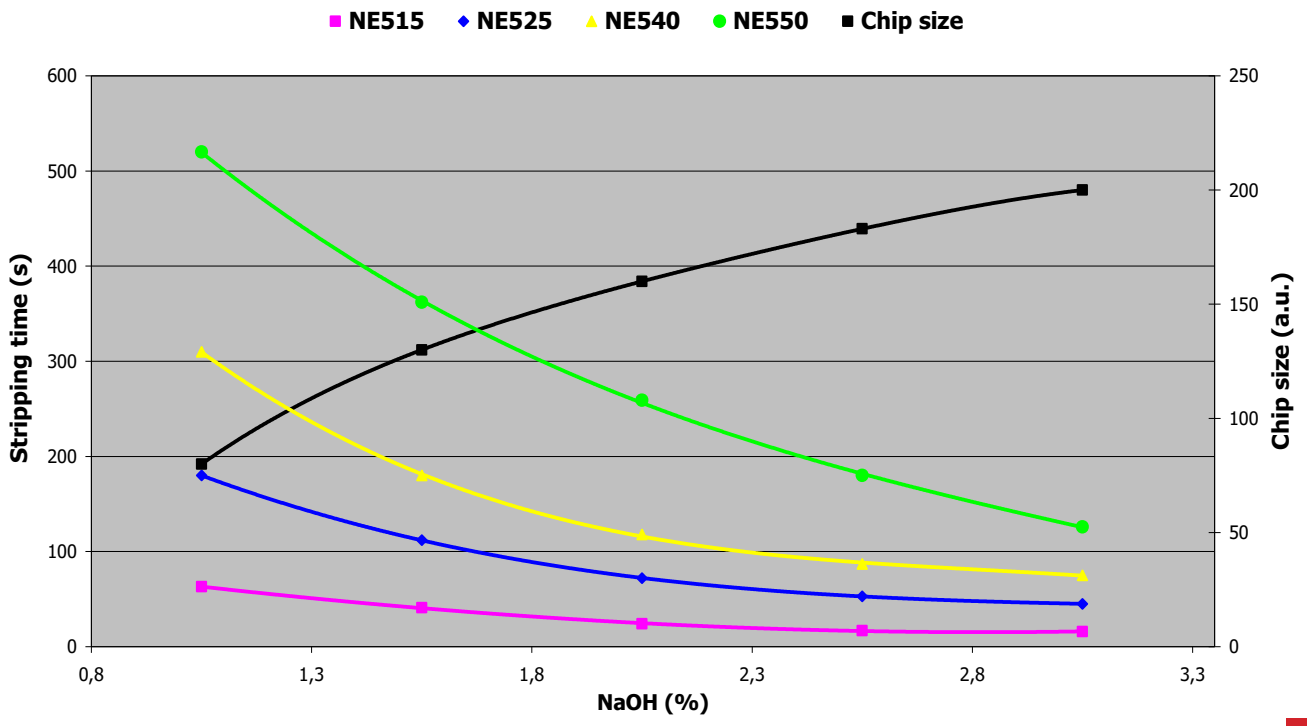
DEVELOPING (B.P. 60%)

	NE 515	NE 525	NE 540	NE 550
Developing time	20 sec.	30 sec.	65 sec.	80 sec.
Dry Film load 1g/l	0.06 m²/l	0.04 m²/l	0.025 m²/l	0.017 m²/l

We recommend a maximum Dry Film load of 5 g/l.

STRIPPING

Stripping Time/Chip Size with different NaOH Concentration



WET RESIST
ELGA LR 3600H

PRODUCT DESCRIPTION

ELGA WET RESIST LR 3600H is a blue color, negative-working, UV imageable liquid photo polymer. It is designed for Horizontal Type Gravure Roller Coater in mass production of fine line PCBs.
Elga Wet resist LR 3600H is applicable to acidic etching process.

MAIN FEATURES

- Excellent resolution
- Excellent adhesion and conformability
- Wider operation window in development
- High image contrast
- Easy stripping
- Good chemical resistance
- Good for board stacking

PHISICAL - CHEMICAL PROPERTIES

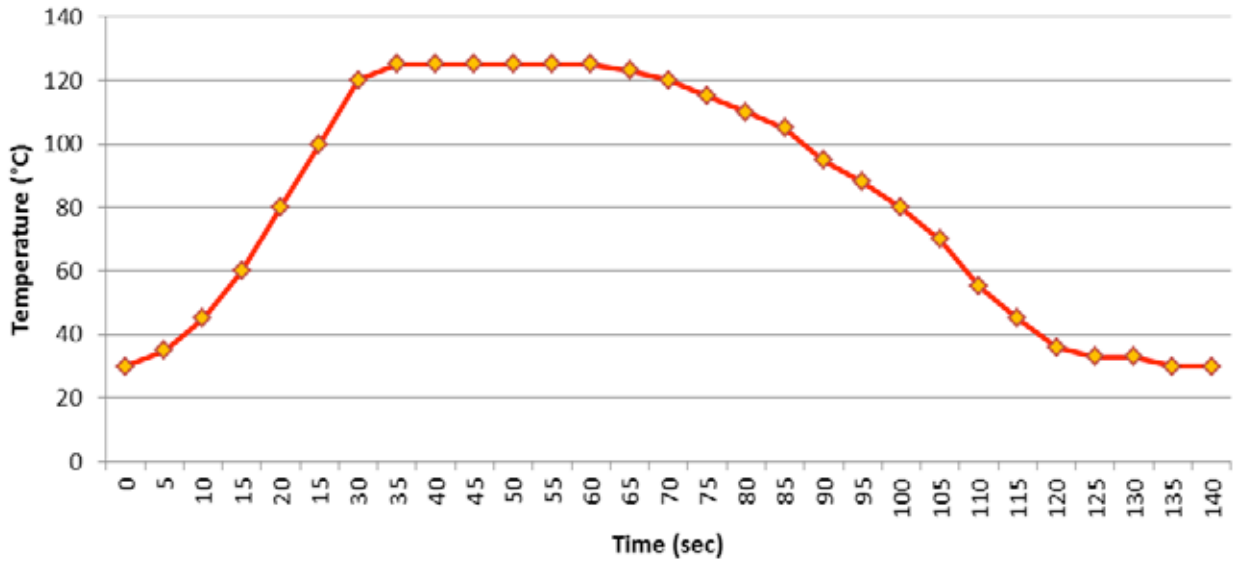
PROPERTIES	VALUE
Shape	Clear Blue
Chemical Composition	UV sensitive acrylic resin composite
Diluent	PMA Thinner
Viscosity	1900 ± 200 cps (25°C, Brookfield viscometer DVI+ n°3 spindle)
Solid Content	39 ± 2% at 105°C * 1h
Shelf Life	6 months

EXPOSURE PERFORMANCE

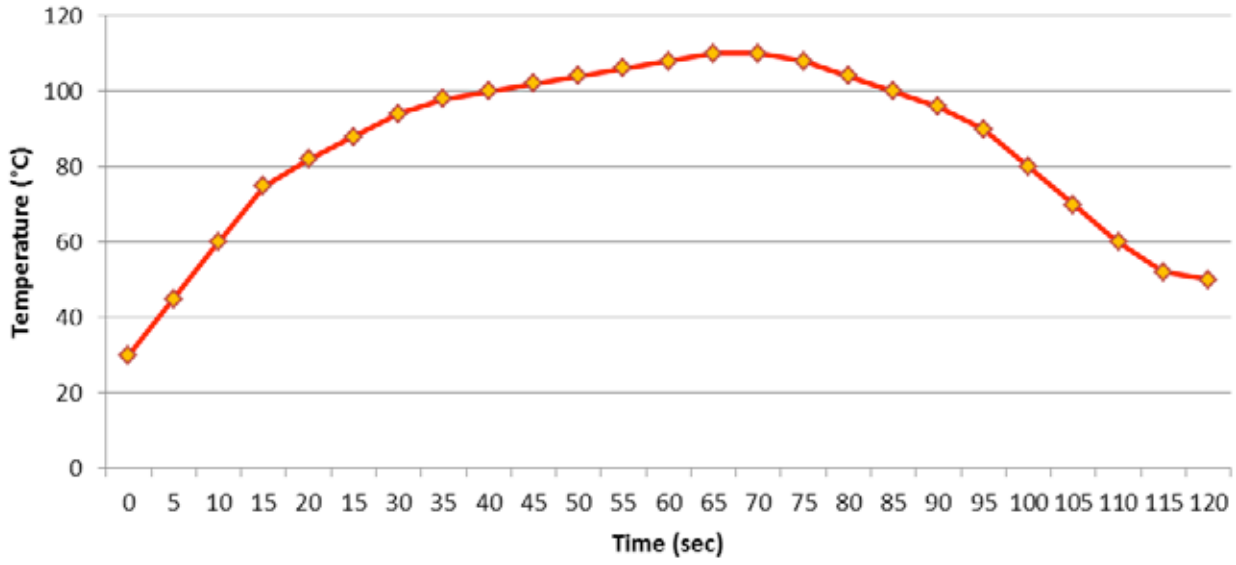
EXPOSURE ENERGY	SENSITIVITY (SST 21)	RESOLUTION (SPACE)	ADHESION (LINE)
50 mJ	4	30 µm	30 µm
60 mJ	5	30 µm	30 µm
70 mJ	6	30 µm	30 µm
80 mJ	7	30 µm	30 µm
90 mJ	8	30 µm	30 µm
100 mJ	8	30 µm	30 µm

BAKING

8 mil Board (100°C min 45 sec.)



40 mil Board (95°C min 60 sec.)



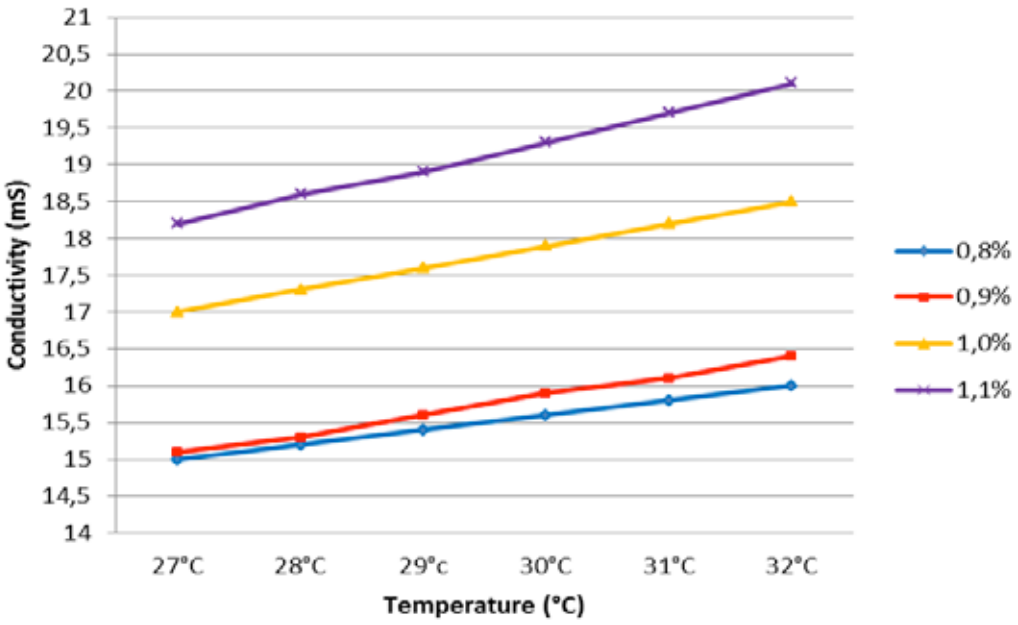
AUXILLIARY DRY FILM CHEMISTRY

DEVELOPER K45 - K70

PRODUCT DESCRIPTION

DEVELOPER K45 and **DEVELOPER K70** are a highly concentrated solutions of potassium carbonate designed for development of all aqueous dry film resists and photoimageable solder masks. Developer K45 and Developer K70 are economical to use and easy to handle.

Wide operational parameters and high dry film capacity (1 litre of concentrate of Developer K45 will develop 12 sq mtrs with and 1 litre of concentrate of Developer K45 will develop 18 sqm with of 40 micron thick film) provide good development latitude. Consistent developing times are obtained throughout the recommended operating life of the solution.



*: *the developing solution has been made with DI water.*

AUXILLIARY DRY FILM CHEMISTRY

ORDYL STRIPPER 5600

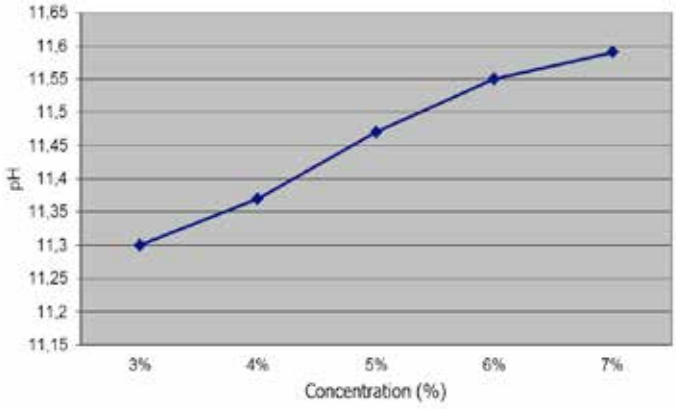
PRODUCT DESCRIPTION

ORDYL STRIPPER 5600 is an alkaline, fully aqueous solvent free dry film stripper concentrate designed to strip all commercially available aqueous dry film resist products. Ordyl Stripper 5600 with filtration system will strip approximately 15 - 20m² of 50 µm aqueous resist per litre of strip solution. Ordyl Stripper 5600 can be used in conveyorized spray or immersion stripping systems.

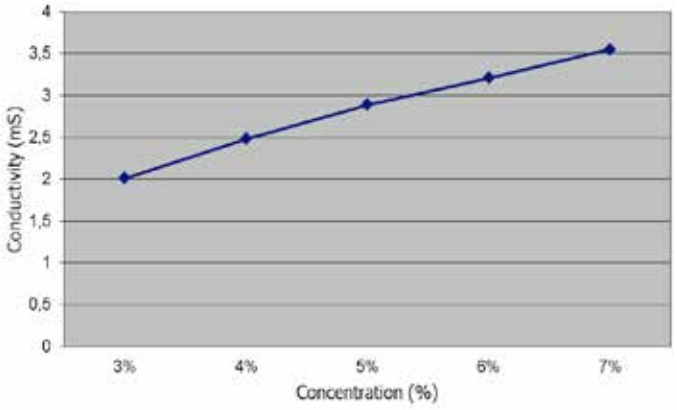
OPERATING PARAMETERS

PARAMETERS	RANGE	OPTIMUM
Concentration	3-7 %	5%
pH	11-13	12
Temperature	40-60°C	50°C
Contact Time	Depend on thickness of the dry film	Depend on thickness of the dry film

RELATION BETWEEN pH AND CONCENTRATION



RELATION BETWEEN CONDUCTIVITY AND CONCENTRATION



AUXILLIARY DRY FILM CHEMISTRY

ORDYL STRIPPER 5000

PRODUCT DESCRIPTION

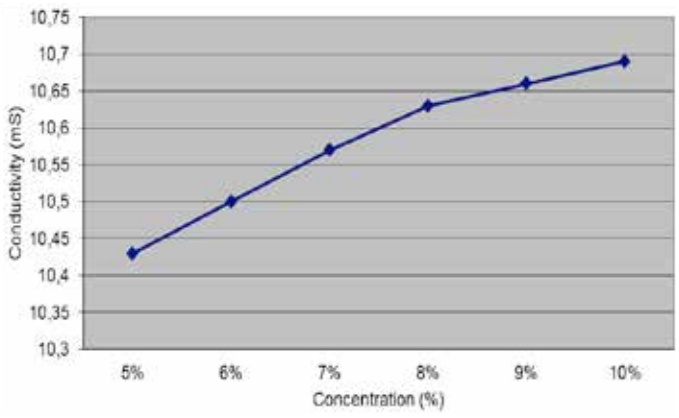
ORDYL STRIPPER 5000 is an alkaline, fully aqueous solvent free dry film stripper concentrate designed to strip all commercially available aqueous dry film resist products.

Ordyl Stripper 5000 with filtration system will strip approximately 15 - 20 m^2 of 50 µm aqueous resist per litre of strip solution. Ordyl Stripper 5000 contains no glycol ether-type solvents, removes adhesion promoters completely and leaves metal surfaces bright and untarnished.

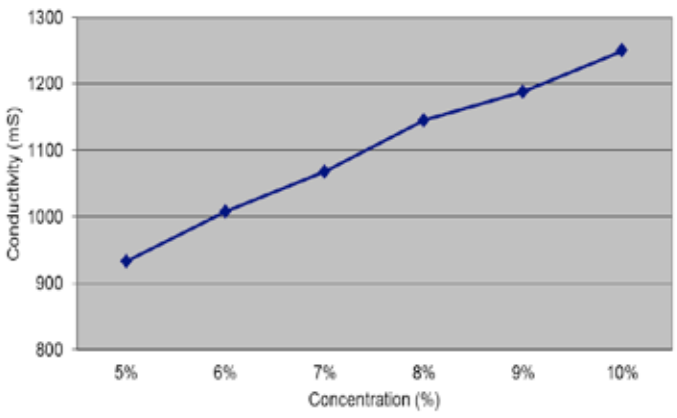
OPERATING PARAMETERS

PARAMETERS	RANGE	OPTIMUM
Concentration	5-10 %	7%
pH	10.5-12.5	11.5
Temperature	50-60°C	55°C
Contact Time	Depend on thickness of the dry film	Depend on thickness of the dry film

RELATION BETWEEN pH AND CONCENTRATION



RELATION BETWEEN CONDUCTIVITY AND CONCENTRATION



AUXILLIARY DRY FILM CHEMISTRY

ORDYL STRIPPER 300

PRODUCT DESCRIPTION

DRY FILM STRIPPER 300 is a highly alkaline liquid concentrate for removal of aqueous dry films and alkaline processable inks.

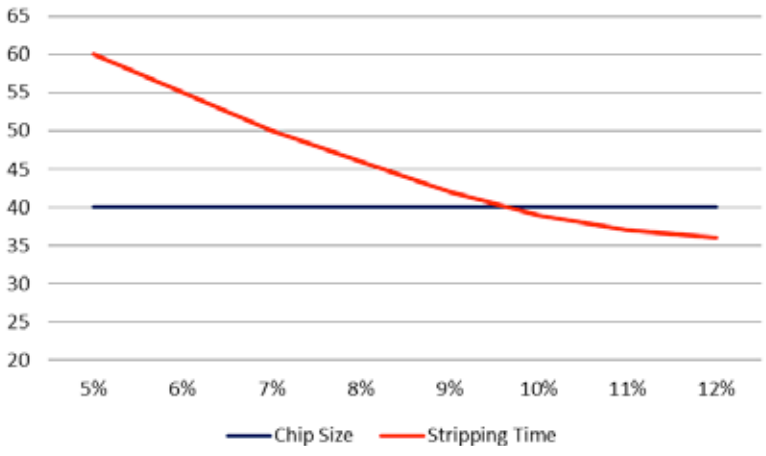
Dry Film Stripper 300 is especially effective at dissolving dry film if over-plated. Dry Film Stripper 300 is a fast acting, long life product designed primarily for use in agitated and still soak tank systems and ultrasonic assisted immersion stripping machines.

Dry Film Stripper 300 is virtually odourless making its use in open dip tanks trouble free with no requirement for extraction.

OPERATING PARAMETERS

PARAMETERS	RANGE	OPTIMUM
Concentration	5-12 %	8%
pH	12-14	13
Temperature	40-60°C	50°C
Contact Time	Depend on thickness of the dry film	Depend on thickness of the dry film

RELATION BETWEEN CONCENTRATION AND CHIP SIZE/STRIPPING TIME



Data in the graph are obtained with laboratory dipping test.

AUXILLIARY DRY FILM CHEMISTRY

ORDYL ANTIFOAM C

PRODUCT DESCRIPTION

ORDYL ANTIFOAM C is a highly concentrate liquid antifoam for use in the control of foam in alkaline dry film developing and stripping solutions. Ordyl Antifoam C is highly stable and exhibits excellent de-foaming characteristics over a long period of time in alkaline solutions.
Ordyl Antifoam C is based on a polyalcohol type product so it has free rinsing properties and consequently presents a minimum risk of contaminating the developing or stripping process.
Ordyl Antifoam C contains no silicone agents.

DOSING

The dosing rate will depend upon the type of dry film used, the dry film load and the type of machine employed.

Indicative dosing rate:

For developing solutions	100-500 ppm
For stripping solutions	250-1000 ppm with NaOH/KOH 500-1500 ppm with proprietary strippers

AUXILLIARY DRY FILM CHEMISTRY

ORDYL ANTIFOAM T3

PRODUCT DESCRIPTION

ORDYL ANTIFOAM T3 is a lightly concentrated liquid antifoam for use in the control of foam in alkaline dry film developing and stripping solutions.
Ordyl Antifoam T3 is soluble in water up to a ratio of 1:10 to 1:20 making it ideal for dosing in feed and bleed systems.
Ordyl Antifoam T3 is highly stable and exhibits excellent de-foaming characteristics over a long period of time in alkaline solutions.
Ordyl Antifoam T3 is based on a polyalcohol so it has excellent free rinsing properties and consequently presents a minimal risk of contaminating the developing and stripping process.
Ordyl Antifoam T3 contains no silicone agents.

DOSING

The dosing rate will depend upon the type of dry film used, the dry film load and the type of machine employed.

Indicative dosing rate:

For developing solutions	100-500 ppm
For stripping solutions	250-1000 ppm with NaOH/KOH 500-1500 ppm with proprietary strippers

SURFACE PREPARATION CHEMISTRY

TECHNIETCH D-688TC

PRODUCT DESCRIPTION

TECHNIETCH D-688TC is an organic acid based copper microetch specially formulated to be used in a wide variety of pretreatment applications. Technietch D-688TC ensures an excellent surface preparation with an optimum copper topography leading to improved performance of subsequent processes (dry film, soldermask, hot air solder levelling).

MAIN FEATURES

- High copper solubility levels
- Excellent copper topography with outstanding performance for dry film and soldermask
- A stable etching rate with uniform copper etching
- Tolerant of chlorides (de-ionised water not required for make-up)
- Clear pink consistent appearance: simple AOI inspection
- Easy effluent disposal: contains no chelating agents
- Environmentally friendly with simple waste treatment

OPERATING PARAMETERS

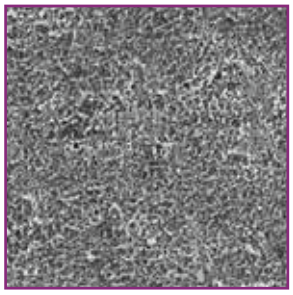
TECHNIETCH D-688TC

PROCESS	RANGE	OPTIMUM
Spray Pressure	1.0 bar - 2.0 bar	1.5 bar
Temperature	25-35°C	30°C
Contact Time	20-80 sec.	Depend on application
Copper Removal	0.5 - 1.5 µm	Depend on application

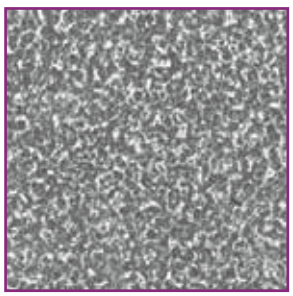
ACID RINSE

PROCESS	RANGE	OPTIMUM
Spray Pressure	6-14% v/v	10% v/v
Temperature	1.0 - 2.0 bar	1.5 bar
Contact Time	Room temperature	Room temperature
Copper Removal	10-20 sec.	15 sec.

Base Copper Etch Rate 1.0 µm



Galvanic Copper Etch Rate 1.0 µm



AUXILLIARY DRY FILM CHEMISTRY

TECHNIETCH 1118

PRODUCT DESCRIPTION

TECHNIETCH 1118 is a proprietary ammonia-free, persulfate microetch designed to provide improved topography over standard persulfate and peroxide chemistry at the same etch depth.

This topography will improve resist or plating adhesion which becomes critical when processing parts with fine features.

The microetch is effective for both electroless and electroplated copper surface treatment and will provide additional cleaning and some tarnish resistance. TechniEtch 1118 can be used in horizontal or vertical equipment and for various applications including surface treatment prior to resist, electrolytic and electroless copper plating, electroless nickel as well as many copper surfaces commonly used in connector and lead frame manufacturing processes.

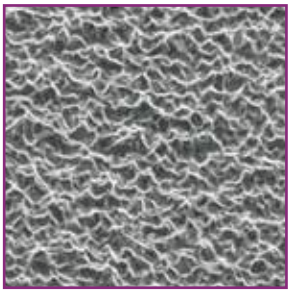
MAIN FEATURES

- High copper solubility levels
- Ammonia free
- Stable chemistry
- Cost effective replacement for generic persulfate and peroxide microetch
- Good copper topography with consistent etch rates
- A stable etching rate with uniform copper etching
- Environmentally friendly with simple waste treatment
- Compatible with subsequent electrolytic end electroless processes

OPERATING PARAMETERS

PROCESS	RANGE	OPTIMUM
Make-Up	50-70 g/l	60 g/l
Additive	50-70 ml/l	60 ml/l
Contact Time	30 sec. - 5 min.	Depend on application
Copper Removal	0.5-1.5 µm/min.	Depend on application
Temperature	28-32°C	30°C

TechniEtch 1118 Etch Rate 1.0µm



SURFACE PREPARATION CHEMISTRY

TECHNICLEAN 688

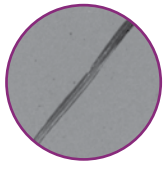
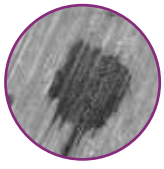
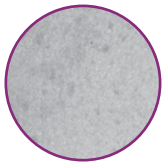
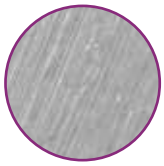
PRODUCT DESCRIPTION

TECHNICLEAN 688 is a liquid acid cleaner specifically formulated to produce a clean slightly etched surface; it can remove oxides, fingerprints, light oils and other soils from copper or copper alloys.
Techniclean 688 can be used in either soak or spray applications.
The product not only provides more effective soil removal, but is easly rinsed. Tecniclean 688 is compatible with most dry films and screening inks.
The use of Techniclean 688 followed by Technietch D-688TC ensures excellent copper surface preparation improving performance of subsequent processes (dry film lamination, soldermask application and HAL applications).

OPERATING PARAMETERS

PARAMETERS	RANGE	OPTIMUM
Sulphuric Acid (d=1.84g/cm³)	40-60 ml/l	50 ml/l
H_2O_2 (130 vol)	30-50 ml/l	40 ml/l
Copper	2-25 g/l	25 g/l max
Temperature	30-40°C	35°C
Contact Time	15-60 sec.	40 sec.

PERFORMANCE TECNICLEAN 688

	Fingerprints	Permanent Maker	OXIDE
BEFORE TREATMENT			
AFTER 40 sec. at 35°C			

SURFACE PREPARATION CHEMISTRY

ACID CLEANER 100

PRODUCT DESCRIPTION

ACID CLEANER 100 is a mixture of organic acids and non-hazardous surfactants. Acid Cleaner 100 does not contain phosphoric, nitric and sulphuric acids and is fluoride free.

Acid Cleaner 100 can be used to degrease all common metal types with no effect, and can also be used to treat sensitive metals such as magnesium, aluminium and their alloys

TYPICAL USES

- Degreasing of stainless steel
- Degreasing magnesium without attack to the surface
- Removal of brazing-soldering residues on iron and brass
- Brightening copper, brass, iron and aluminium in a barrel system

Acid Cleaner 100 can be used in both immersion and spray equipment types.

FEATURES

- Acid Cleaner 100 does not contain hazardous chemicals
- Simple waste water treatment, only the surfactants and the metals derived from degreasing
- No darkening of magnesium or zamak

OPERATING PARAMETERS

MATERIAL	PARAMETERS	RANGE
Stainless Steel	Concentration Temperature	3-10% 60°C
Aluminum and Iron	Concentration Temperature	3-10% 60-80°C
Zamak and Magnesium	Concentration Temperature	3-5% 40-50°C

PLATING PROCESS CHEMISTRY

ACID CLEANER 230E

PRODUCT DESCRIPTION

ACID CLEANER 230E is specifically formulated for cleaning copper surfaces in conveyorized spray machine.
The use of Acid Cleaner 230E ensures excellent copper surface preparation for subsequent playing processes.
Acid Cleaner 230E does not attack in any way Ordyl dry films.

OPERATING PARAMETERS

PARAMETERS	RANGE	OPTIMUM
Acid Cleaner 230E	200-300 ml/l	250 ml/l
Contact Time	2-4 min.	3 min.
Temperature	25-35°C	30°C

PLATING PROCESS CHEMISTRY

MICROTECH 3100

PRODUCT DESCRIPTION

MICROETCH 3100 is a copper etchant product used in the in the pre-treatment cycles prior to electroless copper deposition and acid copper plating. It can also be used for microetching many copper-based substrates. Microetch 3100 is particularly effective in etching both electroless and electroplated copper surfaces prior to processing through the electroless nickel and immersion gold, as well as many copper surfaces commonly used in the connector industry.

MAKE-UP PROCEDURE

COMPONENT	QUANTITY
Microtech 3100	100 g/l
Sulphuric Acid (d =1.84)	20 ml/l
DI water	To volume

ETCHING: Laminate/Electrolytic Copper
(PC Fabrication, ENIG, & Connector Applications)

COMPONENT	QUANTITY
Microtech 3100	30-60 g/l
Sulphuric Acid (d =1.84)	20 ml/l
DI water	To volume

ETCHING: Electroless Copper
(PC Fabrication Applications)

PLATING PROCESS CHEMISTRY

ACID COPPER Cu230

PRODUCT DESCRIPTION

ACID COPPER CU 230 is designed for through-hole printed circuit board applications as a high throw, micro-levelling acid copper electroplating process. The electrodeposits produced by the Acid Copper Cu 230 process are fine grained equiaxed, high purity, ductile copper deposits from a single additive system, providing advanced technology from an economical solution that will meet or exceed all the requirements of MIL-P-55110-D and BS9760.

All of the components in the process are fully analyzable and the Acid Copper Cu 230 process is specifically optimized for on-line analysis and control by EBA automated bath analysis equipment or by HPLC.

MAIN FEATURES

- Specifically engineered for Direct Current applications to produce even, bright deposits from a stable electrolyte
- Economical to use
- High purity fine grained, equiaxed deposits
- Excellent over-plating and soldering properties
- Flexible enough to work with airless (E-ductors) and standard conventional DC plating tank configurations
- Easily controlled by EBA-Analysis, and/or auto-dosing methodologies

OPERATING PARAMETERS

	RANGE	OPTIMUM
Copper Sulphate Pentahydrate ($CuSO_4 * 5H_2O$)	60-90 g/l	75 g/l
Copper Metal	15-22.5 g/l	18.75 g/l
Sulphuric Acid (96% Pure Grade)	185-195 g/l	190 g/l
Chloride Ion	40-80 g/l	60 ppm
CU 230 Brightener Make-Up	0.5-7.5 ml/l	3 ml/l
CU 230 Carrier Make-Up	3-15 ml/l	7.5 ml/l
Temperature	20-30°C	25°C
Cathode Current Density	0.5-5 A/dm^2	
Anode Current Density	0.75-2.0 A/dm^2	
Anode to Cathode Distance	15-30 cm (20 cm optimum)	
Agitation: Reciprocal Cathode Rod and Oil Free Air Sparger/E-ductors	Vigorous air movement: • 0.035 kg/cm^2 for each meter of solution depth • 0.09 - 0.18 m^3/min for each meter of sparger length from pumps or E-ductors and cathode rod 5-10cm excursion, 4-5 cycles/min.	
Filtration Rate	3 tank volume turnovers per hour	
Deposition Rate	42µm/hour at 3A/dm^2 and under at optimum operating parameters	

PLATING PROCESS CHEMISTRY

ELGATIN TL

PRODUCT DESCRIPTION

ELGATIN TL is a matt tin plating solution, based on a sulphate system which produces a very smooth, white and fine grained tin deposit with excellent throwing power.
Elgatin TL matte sulphate plating bath can be used to plate directly on copper, nickel, and nickel alloys such as Alloy 42 and Kovar. Steel can also be plated after a copper strike has been applied.

This process is suitable for rack, barrel, strip or wire line plating and is particularly effective as a metal etch resist in printed circuit board applications.

OPERATING PARAMETERS

PARAMETERS	RANGE	OPTIMUM
Tin Metal	7.5-30 g/l	19 g/l
Sulphuric Acid (96% Pure Grade)	80-120 ml/l	100 ml/l
Elgatin TL Make-Up	80-120 ml/l	100 ml/l
Temperature	18-35°C	25°C
Current Density	0.5-2 A/dm^2	Depend on application

TIN AND TIN/LEAD STRIPPER

STRIPPER OS 243

PRODUCT DESCRIPTION

STRIPPER OS243 is a fast, single stage stripper formulated for complete and fast removal of Tin and Tin-Lead deposits used in PCB fabrication. Stripper OS 243 doesn't contain complexing agents, fluoride, fluoborates, peroxides and ammonia: this is a very important benefit for waste treatment. The product has minimal attack on copper (< 1 micron/min) and leaves the exposed copper surface clean and bright.

With a metal uptake of 150 g/l the product has a long bath life and is very economical in use. The working bath is extremely stable and produces no sludge or precipitate making it ideal for use in feed and bleed dosing systems.

OPERATING PARAMETERS

PARAMETERS	RANGE
Strippers os 243	Product is supplied ready to use
Temperature	25-35°C
Stripping Time	Stripping time depend by equipment, type of alloy, age of solution

CLEANING SOLUTIONS

CL-DF-ST-I-EE
Acid solution

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 ¼ 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

CLEANING PARAMETERS

PARAMETERS	RANGE	OPTIMUM
Temperature	20-30°C	
Contact Time	30 min. - 120 min.	
Frequency	Developing/stripping bath: 2 weeks	
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.

CLEANING SOLUTIONS

CL-MDF-ST-I-EE

Alkaline solution

PRODUCT DESCRIPTION

CL-MDF-ST-I-EE ALKALINE SOLUTION is a cleaning agent for the cleaning of:

- Tin and Tin/Lead stripping machines and rinse modules
- Dry film stripping machines

The cleaning of the dry film developing/stripping plants should include the use of decontamination solution CL-DF-ST-I-EE Acid solution.

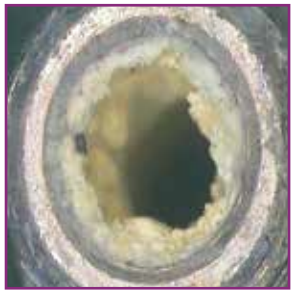
The application of CL-MDF-ST-I alkaline solution alone satisfies the cleaning of Tin and Tin/Lead stripping-plant. CL-MDF-ST-I-EE Alkaline Solution allows a comprehensive and thorough cleaning of resist stripping and developing machines (in connection with cleaning agent CL-DF-ST-I-EE Acid Solution) and:

- Achieves an improvement of the developing/stripping quality through an optimal cleaning
- Reduces the maintenance time of the plant to ¼ 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

CLEANING PARAMETERS

PARAMETERS	RANGE - OPTIMUM
Temperature	20-30°C
Contact Time	30 min. - 45 min.
Frequency	Rising modules: once a week
All other parameters	Same as for the cleaning machine

Nozzle before cleaning



Nozzle after treatment: 30 min. at 25°C

CLEANING SOLUTIONS

LSL-ST-I-EE
Solder Mask Stripper

PRODUCT DESCRIPTION

LSL-ST-I-EE is a product specially formulated for stripping solder mask even after the final curing.

The solder mask stripper LSL-ST-I-EE offers the following advantages:

- Allows recoating of solder mask after defective product has been fully cured.
- No attack to the basic material occurs, epoxy resin is unaffected.
- No attack on copper, tin, tin/lead, nickel or gold occurs.
- LSL-ST-I-EE can be used diluted and used as a cleaning product

LSL-ST-I-EE is used for stripping fully cured solder mask and UV cured screen printing inks.

STRIPPING

The stripping time depends on the type, layer thickness and curing degree of solder mask.

The following tables contain typical stripping time values:

MANUALLY

LAYER THICKNESS	RANGE	OPTIMUM
20µm to 30µm	40°C to 45°C 60°C to 70°C 70°C to 75°C 80°C to 90°C 90°C to 100°C	6 hours 30 minutes 25 minutes 9 to 18 minutes 5 to 7 minutes
More than 30µm	40°C to 45°C 60°C to 70°C 70°C to 75°C 80°C to 90°C 90°C to 100°C	8 hours 35 minutes 27 minutes 12 to 20 minutes 10 minutes

CONVEYORIZED EQUIPMENT

LAYER THICKNESS	TEMPERATURE	STRIPPING TIME	PRESSURE
20µm to 30µm	60°C to 70°C	3 to 5 minutes	18 to 22 bar
More than 30µm	65°C to 80°C	4 to 6 minutes	18 to 22 bar

CLEANING SOLUTIONS

DFR
Equipment Cleaner

PRODUCT DESCRIPTION

DFR EQUIPMENT CLEANER: DFR Equipment Cleaner is an acid solvent based solution, water soluble cleaner solution for the decontamination of dry film resist residue in the developing and stripping machines.
DFR Equipment Cleaner is a read y to use solution that operate at room temperature, usually, it remove the residues form the sump, pipeline and spray nozzles in 1 hour of recirculation time.
DFR Equipment Cleaner could be re-used several times.
DFR Equipment Cleaner is compatible with all plastic, rubber and metallic parts of machines.

PHISICAL PROPERTIES

PARAMETERS	RANGE
State	Liquid
pH	<1.0
Colour	Colourless
Odour	Characteristic
Flash Point	84°
Combustibility	Not Flammable
Self Igniting	Not Self Igniting
Density (at 20°C)	0.93 - 0.98 g/cm^3
Solubility in water	Completely miscibile

CLEANING PROCEDURE

DFR Equipment Cleaner can be used in all standard dry film resist developing/stripping plants.

CLEANING PROCESS OF DRY FILM DEVELOPING/STRIPPING MACHINES:

1. Empty the machine and rinse with water.
2. Fill the tank with DFR Equipment Cleaner full strength, up to the maximum level.
3. Start up the spray pumps and the conveyor for 45 – 60 minutes with a temperature set at 25-30°C. (May be necessary longer spray time in case of high build of residue).
4. Drain the tank and transfer the cleaning solution into the original drums to be re-used.
5. Fill the tank with water and spray for 15 minutes.
6. Drain the tank and repeat the rinse with working solution (NaCO3/K2CO3) for developer, for stripping machine, just water or NaOH 2-3%.
7. Drain the tank and make up the new working solution.

COPPER FOIL
HTE COPPER FOIL

PRODUCT DESCRIPTION

HTE COPPER FOIL is an high purity copper foil produced by Chang Chun Petrochemical Taipei Taiwan adopting the most advanced equipment, with severe quality control, through electro-deposition and special surface treatment.

HTE Copper Foil has very good mechanical properties (Elongation ductility), solder and chemical resistance.

Elga Europe, who is marketing responsible for Europe, imports from CCP the master rolls which are cut in Italy in rolls and sheets providing specific sizes and packaging according with customer specific requirements with the guarantee of prompt deliveries.

PROPERTIES

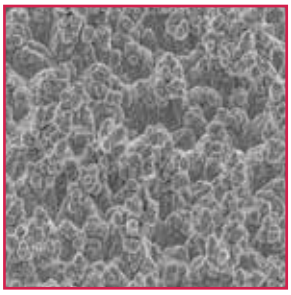
High Temperature Elongation Copper Foil
According to IPC-4562-1.2.4.1

Grade 3 HTE Copper Foil for multilayer
According to IPC-4562-1.3

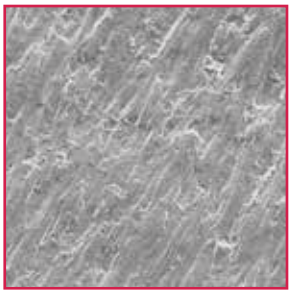
Low profile electrodeposited copper foil
According to IPC-4562-1.2.7

COPPER TOPOGRAPHY

Matt side of treated copper foil (S.E.M. 2000x)



Matt side of raw copper foil (S.E.M. 2000x)



ABQ SOLDERMASK
RS-2000

PRODUCT DESCRIPTION

RS-2000 is a dual component, alkaline developable liquid photo-imageable solder mask for single and double sided screen printing and air spray application. It is designed for oncontact exposure and development in aqueous sodium or potassium carbonate.
This advanced material presents good definition characteristics, high photosensitivity, excellent adhesion and optimal resistance to all common finishes processes. RS-2000 is formulated for the manufacture of Rigid PCB as permanent protective coatings.

RS-2000 products exhibit the following performance properties:

- Wide process latitude enabling fine image reproduction with clean PTH/Via development
- Excellent reliability
- High productivity with yields in order of 14-18 m2/kg (depending on application)
- Superior chemical and electrical properties of RS-2000 guarantee excellent resistance to all common process finishes
- RS-2000 is compatible with UV and thermal legend inks
- Resistant to downstream processing chemicals including noclean fluxes, cleaners, solvents, etc.
- Completely ecological
- Fully compatible with all assembly rework processes
- Meets or exceeds IPC SM 840E specifications

CODE TABLE

CODE	PACK SIZE	NAME	COLOUR	FINISHING
HT 8001	1 kg	RS-2000 6GL	Green	Glossy
HT 8004	1 kg	RS-2000 Y	Yellow	Glossy
HT 8005	1 kg	RS-2000 R	Red	Glossy
HT 8006	1 kg	RS-2000 BL	Blue	Glossy
HT 8007	1 kg	RS-2000 BK	Black	Glossy
HT 8021	1 kg	RS-2000 CBKM-F	Black	Matt
HT 8009	1 kg	RS-2000 3GLM	Green	Matt
HT 8002	1 kg	RS-2000 W-1(B)	White	Glossy
HT 8015	1 kg	RS-2000 W	White	Glossy
HT 8011	1 kg	RS-2000 3GLDI	Green	Glossy
HT 8027	1 kg	RS-2000 W-16A	White	Glossy
HT 9001	**25 l tank**	**OPSR THINNER**