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# Thinners and Strippers

EMC and Thermal Management Solutions



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## THINNERS & STRIPPERS

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## THINNERS

Properties	Thinner	Thinner 1	Thinner 2	Thinner 4
Stock code	FS-435	FS-4351	FS-4352	FS-4354
Evaporation rate	Fast	Moderate	Fast	Moderate
Aggressiveness	High	Low (for sensitive plastics)	Moderate	High
Key features	Non-HAP Low VOC Fast dry Xylene free	Non-HAP Plastic safe Xylene free	Non-HAP Xylene & Toluene free Biodegradable	High solvent power Moderate dry time

### FS-435 THINNER

A super-fast drying thinner with low volatile organic compound (VOC) solvent and non-hazardous air pollutant (HAP) for use with conformal and electromagnetic interference (EMI) shielding coatings. Designed to ensure good adherence to plastics, FS-435 is a good choice for spray applications of EMI shielding and conformal coatings that need a fast drying time with low VOC.

- Fast evaporation
- Low VOC
- Compatible with most substrates used in enclosures and electronic parts
- Enhanced adhesion to plastic substrates
- Highly miscible with other common organic solvents
- RoHS compliant



## Properties

	Test Method	Result
Colour		Clear
Odour	-	Ketone, nail polish remover
Density @ 25°C [77°F]		0.81g/mL
Viscosity @ 25°C [77°F]	Brookfield SP1	0.5cP [0.0005Pa.s]
Flash point	Closed cup	-18°C [-0.4°F]
Freezing point		-94°C [-70°F]
Boiling point		56°C [133°F]
Vapour pressure @ 25°C [77°F]		21.7kPa [163mm of Hg]
Relative evap. Rate (BuAc = 1)		-6
Volatile organic content (VOC)		7.5% [60 g/mL]
MIR value		0.52g O <sup>3</sup> /g of product

## Solvent Parameters

	Test Method	Result
Solubility in water		Highly soluble
Hansen solubility parameters	Total	9.7 [19.8]
(cal/cm <sup>3</sup> ) <sup>½</sup> ; [MPa] <sup>½</sup>	Non polar	7.3 [14.9]
	Polar	5.1 [10.3]
	Hydrogen bonding	3.3 [6.8]

## How to Order

Part No.	Packaging	Size
FS-435-1L	Liquid	945ml
FS-435-4L	Liquid	3.8L

## FS-4351 THINNER

The FS-4351 thinner is used to dilute EMI shielding coatings that require a mild and plastic safe solvent. The solvent is also effective at removing oil and grease contamination without harming the substrate.

- Plastic safe
- Moderate evaporation rate
- RoHS compliant

### Properties

	Test Method	Result
Colour		Clear
Odour	-	Rubbing alcohol
Density @ 25°C [77°F]		0.80 g/mL
Viscosity @ 25°C [77°F]	Brookfield SP1	~ 1cP [0.01Pa.s]
Flash point	Closed cup	15°C [59°F]
Boiling point		65°C [149°F]
Vapour pressure @ 25°C [77°F]		7.5kPa [56mm of Hg]
Volatile organic content (VOC)		100% [80 g/mL]

### How to Order

Part No.	Packaging	Size
FS-4351-1L	Liquid	945 mL
FS-4351-4L	Liquid	3.8L

## FS-4352 THINNER

A moderately fast drying thinner for use with conformal coatings, it is compatible with film forming paint products with epoxy, polyester resins, acrylic, cellulose acetate butyrate, alkyd or nitrocellulose resins, promotes good flow properties and suppresses blushing.

- Plastic safe
- Not classified as hazardous air pollutant
- Blush resistant
- Moderate evaporation rate
- Excellent levelling and gloss
- Highly miscible with other common organic solvents
- RoHS compliant

### Properties

	Test Method	Result
Colour		Clear
Odour	-	Fruity
Density @ 25°C [77°F]		0.883 g/mL
Viscosity @ 25°C [77°F]	Brookfield SP1	28cP [0.028Pa.s]
Flash point tag	Closed cup	27°C [81°F]
Freezing point		-77°C [126°F]
Boiling point		127°C [257°F]
Vapour pressure @ 25°C [77°F]		1.33kPa [10.0mm of Hg]
Relative evap. Rate (BuAc = 1)		1
Volatile organic content (VOC)		100% [883g/mL]
MIR value		0.78

### Solvent Parameters

	Test Method	Result
Solubility in water [%wt]		0.7%
Solubility for water (% wt)		1.6%
Hansen solubility parameters	Total	17.2 [8.4]
(cal/cm <sup>3</sup> ) <sup>½</sup> ; [MPa] <sup>½</sup>	Non polar	15.3 [7.5]
	Polar	3.2 [1.6]
	Hydrogen bonding	6.8 ([3.3])
Dielectric constant @20°C		5.07

### How to Order

Part No.	Packaging	Size
FS-4352-1L	Liquid	945ml
FS-4352-4L	Liquid	3.8L

## FS-4354 THINNER

FS-4354 is a slower drying thinner used with urethane and acrylic conformal coatings. With excellent solvent strength it is a good oil and grease remover and has low water solubility so unlikely to absorb water, creating blush. It dries slow enough to promote excellent levelling but fast enough to use on the assembly line. It is a good choice for spray applications.

- Slow evaporation rate
- Blush resistant
- Highly miscible with other common organic solvents
- Compatible with most substrates used in enclosures and electronic parts
- Good levelling and gloss
- RoHS compliant

### Properties

	Test Method	Result
Colour		Clear
Odour	-	Sharp, aromatic
Density @ 25°C [77°F]		0.87 g/mL
Viscosity @ 25°C [77°F]	Brookfield SP1	~0. cP [0.0006Pa.s]
Flash point tag	Closed cup	27°C [81°F]
Freezing point		Not established
Boiling point		137°C [279°F]
Vapour pressure @ 25°C [77°F]		2.6kPa [19 mm of Hg]
Relative evap. Rate (BuAc = 1)		0.60
Volatile organic content (VOC)		100% [868g/mL]
Product weighted MIR value		4.08

### Solvent Parameters

	Test Method	Result
Solubility in water [%wt]		Insoluble
Hansen solubility parameters	Total	8.8 [17.9]
(cal/cm <sup>3</sup> ) <sup>½</sup> ; [MPa] <sup>½</sup>	Non polar	8.6 [17.7]
	Polar	0.5 [1.0]
	Hydrogen bonding	1.3 [2.6]

### How to Order

Part No.	Packaging	Size
FS-4354-1L	Liquid	945ml
FS-4354-4L	Liquid	3.8L

## STRIPPERS

The strippers are safe for use on most materials found on printed circuit boards (PCBs), however, always carry out a test on similar substrates prior to use and protect areas not being stripped. Always avoid excessive exposure time.

### FS-8309 – CONFORMAL COATING STRIPPER

Available in both liquid and pen format, FS-8309 removes most re-workable conformal coatings and thermoplastic (non-cross linked) acrylics, urethanes and silicone based conformal coatings. It also helps removal of some thermoset coatings such as cross-linked silicones and polyurethanes by softening or swelling the coating which helps mechanical removal.

Safe for most types of PCB components, it is environmentally safe and biodegradable. Used for PCB maintenance and repair, it also removes conductive ink lacquer. The low viscosity allows the PCB to be submerged in the stripper.

- Safe on metals
- Strips polyurethanes, acrylics and silicones
- No substances of very high concern (SVHC)
- Liquid format for submersion of PCB
- Biodegradable
- Liquid or pen format
- RoHS compliant

#### Properties

	Test Method	Result
Colour	Visual	Colourless
Odour	-	Ketone like
Density @ 25°C [77°F]		0.89g/mL
Viscosity		<20.5mm <sup>2</sup> /s
Flash point	Closed cup	-30°C [-22°F]
Boiling point		42°C [107°F]
VOC content		50% (446 g/L)
Shelf life		5 years
Storage temperature		-10°C to 40°C [14°F to 104°F]

#### How to Order

Part No.	Packaging	Size
FS-8309-850ML	Liquid	850ml
FS-8309-3.78	Liquid	3.78L
FS-8309-P	Pen	10ml

## FS-8310A – CONFORMAL COATING STRIPPER – GEL

FS-8310A removes most re-workable conformal coatings as well as thermoplastics (non-cross linked), urethanes, acrylics and silicone based conformal coatings. It also helps to remove some thermoset coatings like polyurethanes and cross-linked silicones by swelling or softening the coating enabling it to be mechanically removed. Safe for most types of PCB, it is environmentally safe and biodegradable. Primarily used for PCB repair and maintenance, it can also be used to remove conductive ink lacquers.

As FS-8310A is a gel, only specific areas of the PCB may be re-worked. If necessary mask the areas not being stripped.

- Metal safe
- No substances of very high concern (SVHC)
- Strips polyurethane, acrylics and silicones
- Good for spot removal
- Biodegradable
- RoHS compliant

### Properties

	Test Method	Result
Colour	Visual	Colourless
Odour	-	Ketone like
Density @ 25°C [77°F]		0.8 g/mL
Viscosity		<20.5 mm <sup>2</sup> /s
Flash point	Closed cup	-30°C [-22°F]
Boiling point		42°C [107°F]
VOC content		51% (448g/L)
Shelf life		5 years
Storage temperature		-10°C to 40°C [14°F to 104°F]

### How to Order

Part No.	Packaging	Size
FS-8310A-55ML	Gel	55ml
FS-8310A-850ML	Gel	850ml
FS-8310A-3.6	Gel	3.6L

*All technical data herein is accurate to the best of our knowledge based on our most up to date testing information and material specifications. This information is not presented as a warranty or guarantee and is not intended to be all inclusive as to conditions of use. The data herein represents typical properties and is not to be used as a basis for a specification.*