

# SOLVENT SELECTION GUIDE

## OPTIMIZING YOUR SOLVENT CLEANING PROCESS

Optimizing your chemical usage increases productivity, eliminates product duplication, and can even save money. Techspray offers a full array of cleaners to match solvents with soils.

The best cleaning solvent for a specific facility and application depends on several criteria:

- Cleaning Ability
- Flammability
- Compatibility
- Evaporation Rate
- Health & Safety
- Regulations
- Cost

Each criteria is explained below. The opposite page has a solvent selection chart with specifications that tie in with these chemical criteria. When in doubt, call Techspray's Technical Sales department at 800-858-4043.

### CLEANING ABILITY

A solvent's cleaning ability varies widely depending on the type of soil. Standard specifications (e.g. kB Value) are helpful, but only testing will provide definitive answers.

In general, matching the polarity of the solvent with the soil optimizes solvency (cleaning ability).

- Polar soils - hand oils, rosin fluxes, water soluble fluxes
- Polar solvents - IPA, Equinox Gold™ (pg. 51)
- Non-polar soils - oils, no-clean fluxes, waxes, grease
- Non-Polar solvents - G3®, AK225, EcoLine™

### FLAMMABILITY

The necessity of non-flammable solvents depends on ventilation and the presence of live circuitry or open flame. Non-flammable formulas tend to be more expensive than flammable counterparts, so an overly conservative approach can increase costs.

- Non-flammable - G3®, AK225, HFE
- Flammable - EcoLine™, IPA (Isopropyl Alcohol)

### COMPATIBILITY

Plastics can be softened, etched, or even melted if an inappropriate solvent is used. Testing is the best way to ensure compatibility. There are hundreds of different kinds of plastics, from soft rubber to rigid plastics – all with varying degrees of solvent tolerance.

- Plastic compatible - EcoLine™, IPA, AK225, HFE
- Test before using - G3®, HCFC-141b, nPB, TCE (Trichloroethylene)

### EVAPORATION RATE

For high volume production, fast evaporation is usually desirable. Slow evaporation may be needed when a solvent needs to soak in and break up heavy soils.

- Fast evaporation - G3®, AK225, HFE
- Controlled evaporation - EcoLine™, terpenes, water-based cleaners

### HCFC-141B EPA PHASE-OUT

The most widely used aerosol solvent in the electronics industry is being eliminated. The EPA phased out the manufacture of HCFC-141b, Jan. 1, 2003.

HCFC-141b was popular because of its non-flammability, rapid evaporation, good cleaning efficiency, and moderate plastic compatibility. Solvent blends that are composed mainly of HCFC-141b are common in the following applications:

- PCB manufacture, repair, and cleaning
- Field service in the power utility industry
- Transportation industry (railroads, subway systems) for contacts, switch boxes, and traffic light signals
- Military/aviation electronic parts
- Field service like elevator repair and maintenance
- Anywhere you typically see relays, contacts or circuitry that need to be maintained and cleaned.

### NOW THE GOOD NEWS

Techspray's patented G3® formulas have all the advantages of HCFC-141b with 32% greater cleaning ability! See pages 10-12 for details.

### HEALTH & SAFETY

The safety of solvents is usually specified as Threshold Limit Value (TLV) in Parts Per Million (PPM). The higher the PPM the better.

Acceptability of lower TLV depends on the availability of ventilation systems or whether the solvents will be used in a sealed system.

- Low TLV - nPB, TCE, Perc (Perchloroethylene)
- High TLV - G3®, EcoLine™, AK225, HFE

### REGULATIONS

EPA, OSHA, and other government agencies set standards for exposure, Volatile Organic Compounds (VOC), and ozone depletion (see sidebar).

Go to [www.techspray.com](http://www.techspray.com) for technical data sheets and MSDS for all Techspray chemical products.

### COST

Effectiveness and safety should always be scrutinized when considering low cost solvents. IPA, for example, is one of the lowest cost solvents, but is flammable and ineffective at removing many types of soils. Carefully matching solvents with the application and soil is an important way to maximize productivity and minimize cost.

# SOLVENT SELECTION CHART

CATALOG PAGE #	NON-FLAMMABLE AEROSOL	NON-OZONE DEPLETING	VOC	SAFE ON MOST PLASTICS	FLASH POINT	TOXICITY (TLV - Threshold Limit Value)	Kb VALUE (Cleaning Strength)
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## CLEANER/DEGREASER

Cleans oil and contaminants off of metal parts, printed circuit boards, barcode instruments, switch boxes, label boxes and engines.

<b>1610</b>	<b>IPA</b>	7		•	794 g/l	•	53° F	400	N/A
<b>1620</b>	<b>ECOLINE</b>	8		•	692 g/l	•	-15° F	50-1000	>200
<b>1630</b>	<b>G3 BLUE SHOWER</b>	10	•	•	859 g/l	test	none	200-1000	200
<b>1667</b>	<b>AK225</b>	13	•		135 g/l	•	none	1000	61
<b>1685</b>	<b>HFE</b>	14	•	•	474 g/l	•	none	200-1000	

## FLUX REMOVER

Removes no-clean and rosin based residues off of printed circuit boards in electronic repair and production.

<b>1621</b>	<b>ECOLINE</b>	8		•	696 g/l	•	53° F	200-1000	>200
<b>1631</b>	<b>G3</b>	10	•	•	855 g/l	test	none	200-250	199
<b>1634</b>	<b>G3 NO-CLEAN</b>	10	•	•	855 g/l	test	none	200-250	199
<b>1660</b>	<b>AK225 NO-CLEAN</b>	12	•		517 g/l	•	none	200	176
<b>1665</b>	<b>AK225 AMS</b>	13	•		70 g/l	•	none	200	50
<b>1686</b>	<b>HFE</b>	14	•	•	497 g/l	•	none	200-1000	

## CONTACT CLEANER

Cleans oils and contaminants off of relays, contacts and housings.

<b>1622</b>	<b>ECOLINE</b>	9		•	692 g/l	•	-15° F	50-1000	>200
<b>1632</b>	<b>G3</b>	11	•	•	857 g/l	test	none	200	199
<b>1668</b>	<b>AK225</b>	13	•		exempt	•	none	750	34
<b>1687</b>	<b>HFE</b>	14	•	•	461 g/l	•	none	200-1000	

## SMT STENCIL CLEANER

Removes inks, pastes and contaminants from SMT processes.

<b>1608</b>	<b>IPA WIPE</b>	7		•	794 g/l	•	53° F	400	N/A
<b>1693</b>	<b>HYDROCARBON WIPE</b>	14		•	820 g/l	•	111° F	300	N/A

## SERVICE/REPAIR CLEANER

Assortment of products for in-house and field repair.

<b>1671</b>	<b>DUSTER</b>	6	•	•	exempt	•	N/A	1000*	N/A
<b>1697</b>	<b>VORTEX™ DUSTER</b>	6	•	•	exempt	•	N/A	1000*	N/A
<b>1603</b>	<b>TECHCLEAN® CARD</b>	7		•	794 g/l	•	53° F	400	N/A
<b>1612</b>	<b>RUBBER REJUVENATOR</b>	8		•	939 g/l				N/A
<b>1613</b>	<b>LABEL &amp; ADH. REMOVER</b>	8		•	750-800 g/l		115° F	300*	N/A
<b>1614</b>	<b>INK REMOVER</b>	9		•	780 g/l		<53° F	400-750	N/A
<b>1624</b>	<b>TAPE HEAD CLEANER</b>	9		•	790 g/l	•	53° F	400-1000	N/A
<b>1625</b>	<b>GLASS CLEANER</b>	9		•		•		400	N/A

\*Acceptable Exposure Limit by Supplier