

## Ultra-Fine Point Laboratory Markers Smear Resistance and Removal - Tech Information

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Ultra-fine point laboratory markers are frequently used to label glass autosampler vials, U-2D inserts, headspace vials, and other chromatography-grade containers. Accurate, durable labeling is essential for traceability, especially when samples move across preparation, storage, and analytical steps. This technical note summarizes the smear resistance, dry-time behavior, and recommended removal methods for these markers when used on standard borosilicate autosampler vials.

### Smear Resistance on Glass Vials

Testing performed on standard glass autosampler vials demonstrated that the ultra-fine point marker ink becomes fully smear-resistant when wiped with a dry cloth, provided the ink is allowed to dry for approximately 30 seconds.

This behavior aligns with solvent-based permanent inks that undergo rapid carrier-evaporation and pigment fixation on clean glass surfaces. Once dried, labels tolerate:

- Normal handling
- Gloved-hand contact
- Placement into metal or plastic autosampler trays
- Light friction from storage boxes or vial racks

### Removal Characteristics

While resistant to dry wiping, the writing can be intentionally removed using common laboratory solvents, including:

- Methanol
- Acetone
- Isopropanol (IPA)

These solvents dissolve the resin/pigment film, enabling rapid cleaning without leaving residue on the glass surface.

### Best Practices for Solvent Removal

- Use a solvent-dampened low-lint lab wipe to avoid particulate shedding.
- Avoid excessive solvent exposure near polymeric caps or septa, which may swell in acetone.
- Perform removal before placing vials in temperature-controlled environments (e.g., ovens, autosamplers) to prevent residual solvent vapor interference with analyses.

### Technical Recommendations for Chromatography Workflows

1. Allow  $\geq 30$  seconds dry time before placing vials into trays or racks to ensure label durability.
2. For LC/MS workflows, remove marker ink with methanol or IPA rather than acetone to minimize risk of extractable contamination from aggressive solvent vapor.
3. For U-2D™ micro-sample management workflows, ensure ink is fully dry before inserting vials into tight-tolerance plate carriers to prevent smearing onto guides or rails.
4. If performing barcoding or automated vision tracking, marker labeling should be confined to areas that do not obscure applied labels or fiducials.

## Why Smear Resistance Matters

Reliable, non-smearing vial identification is essential for:

- Chain-of-custody traceability
- Compliance with regulated workflows (GxP, ISO, FDA)
- Avoiding contamination from ink transfer
- Maintaining readability during refrigerated, ambient, or heated storage

By combining rapid dry time and solvent-based removability, these markers offer an optimal balance between permanence and clean reusability for chromatography-grade glassware.

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