Lighthouse Staccato™ Non-Coated Capillary Cleaning Procedure

To clean a Staccato dispense capillary, you'll use the flushing method below with Staccato Wash and Flush kit, followed by a gentle cleaning of the piezo tip. This method involves using the Staccato syringe and cleaning solution to push liquid through the capillary and back out, then addressing any remaining residue with a Kimwipe.

Materials:

1. Staccato Wash Kit ST-WS-1 (non-coated capillaries)
2. Staccato Dispense Capillary (Non-Coated)

Personal Protective Equipment (PPE):

1. Gloves (Nitrile or latex)
2. Safety goggles
3. Lab coat/apron

Fragile: care must be taken to not break the glass piezo tip.

Step 1. Prepare the Capillary:

- Remove any cartridges or disconnect dampers if applicable.

Step 2. Flush with Cleaning Solution:

- Draw the cleaning solution from the 2mL vile into the syringe.
- Connect the Lure adapter to the syringe.
- Connect the Lure adapter to the threaded Staccato dispense capillary.
- Use the syringe to push a cleaning solution through the capillary into the 2mL vile.
- Push and pull the plunger to circulate the cleaning solution.
- You can also use a Kimwipe to soak up any excess liquid or debris.

3. Repeat Flushing:

- Repeat the flushing process multiple times (2-3 cycles) to ensure thorough cleaning.

4. Clean the Tip:

- Gently clean the piezo tip of the capillary with a Kimwipe.

What to Avoid for All Coatings:

❌ **Acetone, DMSO, Chloroform** – High risk of dissolving/swelling coatings.
❌ **Strong acids/bases (HCl, NaOH)** – Can etch coatings or glass.
❌ **Ultrasonication or high-pressure flushing** – May delaminate coatings.

Validation After Cleaning:

1. **Microscopy** – Check for coating damage (cracks, peeling).
2. **Contact Angle Test** – Compare before/after for hydrophobic/hydrophilic coatings.
3. **Functional Test** – Dispense a test liquid to verify performance.

Safety Precautions

1. Personal Protective Equipment (PPE)

- **Gloves** (Nitrile or latex) – IPA can dry skin; Triton X-100 may cause mild irritation.
- **Safety goggles** – Prevent accidental splashes to eyes.
- **Lab coat/apron** – Protect clothing from spills.

2. Ventilation

- **Use in a well-ventilated area** (e.g., fume hood or open window).

3. Fire Safety

- **Keep away from sparks/open flames** – IPA is flammable (flash point: ~12°C/53°F).
- **No smoking** near the workspace.
- Store away from heat sources.

4. Chemical Handling

- **Avoid mixing with bleach** (creates toxic chloroform).
- **White Vinegar: Skin/Eye Irritant**
- **Tetrasodium EDTA: Eye Irritant**

5. Waste Disposal

- **Collect used solvent** in a labeled waste container (IPA is hazardous waste in some regions).
- **Do not pour down the drain** if mixed with surfactants (check local regulations).

6. Capillary Handling

- **Avoid high-pressure flushing** – Can damage coatings or glass.
- **Do not use metal wires** for unclogging (scratches coatings).

7. First Aid

- **Skin contact**: Rinse with water for 15 minutes.
- **Eye contact**: Flush with water for 15 minutes; seek medical help if irritation persists.
- **Inhalation**: Move to fresh air.

Additional Notes for Labs

- **Label all containers** with contents and hazards.
- **Keep surfactants sealed** (Triton X-100 degrades in light).

This solution is low-risk but still requires basic lab safety practices.

MSDS

Isopropanol, Tetrasodium EDTA, Acetic Acid, d-Limonene

CAS No. 67-63-0, 64-02-8, 64-19-7, 5989-27-5

DANGER

Highly flammable liquid and vapour. Flammable liquid and vapour. May be corrosive to metals. Causes serious eye irritation. May cause drowsiness or dizziness.

Keep away from heat/sparks/open flames/hot surfaces – No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof lighting. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves/goggles/lab coat. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. In case of fire: Use dry chemical for extinction. Store in a well ventilated place. Keep cool. Dispose of contents/container to hazerdous waste. Keep only in original container. Absorb spillage to prevent material damage. Store in a closed container. Wash hands thoroughly after handling. IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. Get medical advice/attention. Avoid breathing fumes/vapors. Use only outdoors or in a well-ventilated area. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. Store in a well ventilated place. Keep container tightly closed. Store locked up.

MATERIAL SAFETY DATA SHEET (MSDS)

Product Name: Multi-Purpose Cleaning Solution

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

- Manufacturer/Supplier: Lighthouse Diagnostics
- Emergency Contact: +1 (602) 845-0667
- Intended Use: Cleaning agent, degreaser, or other applications.

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification:

- Isopropyl Alcohol (varies by %):
  - Flammable Liquid (Category 2)
  - Eye Irritant (Category 2B)
  - H225, H319
- **White Vinegar (5–10% Acetic Acid):**
  - Skin/Eye Irritant (Category 2) H290 (may be corrosive to metals)
- **Tetrasodium EDTA:**
  - Eye Irritant (Category 2B) H319

Potential Hazards:

- Flammable (due to alcohol and limonene).
- May cause eye/skin irritation.
- Use in well-ventilated areas.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS #	Hazards
Deionized (DI) Water	**7732-18-5**	**Non-hazardous**
Isopropyl Alcohol	**67-63-0**	**Flammable, irritant**
Acetic Acid (Vinegar)	**64-19-7**	**Irritant, corrosive to metals**
Tetrasodium EDTA	**64-02-8**	**Eye irritant**

SECTION 4: FIRST-AID MEASURES

- Inhalation: Move to fresh air. Seek medical attention if breathing is difficult.
- Skin Contact: Wash with soap and water. Remove contaminated clothing.
- Eye Contact: Rinse with water for 15 minutes. Seek medical help if irritation persists.
- Ingestion: Rinse mouth. Do NOT induce vomiting. Call Poison Control.

SECTION 5: FIRE-FIGHTING MEASURES

- Extinguishing Media: CO_2, dry chemical, or foam.
- Hazards: Vapors may form explosive mixtures with air.
- Protection: Wear self-contained breathing apparatus (SCBA).

SECTION 6: ACCIDENTAL RELEASE MEASURES

- Small Spills: Absorb with inert material (e.g., sand). Ventilate area.
- Large Spills: Contain and dispose per local regulations.

SECTION 7: HANDLING AND STORAGE

- Handling: Use gloves (nitrile) and eye protection. Avoid sparks/open flames.
- Storage: Keep in a cool, ventilated area away from oxidizers.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

- Ventilation: Use local exhaust or work in open areas.
- PPE: Gloves, safety goggles, and flame-resistant clothing if handling large volumes.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

- Appearance: Clear liquid with sharp odor (Vinegar).
- pH: ~3–5 (acetic acid lowers pH).
- Flash Point: ~12°C (Isopropyl Alcohol).

SECTION 10: STABILITY AND REACTIVITY

- Stable under normal conditions.
- Incompatibilities: Strong oxidizers, acids/bases (depending on formulation).
