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TECHNICAL DATA SHEET

# S4FE-D™ Ready-to-Use Spray

*CBRN Decontamination Surfactant • Powered by the Bind-It™ formulation*

S4FE-D™ Ready-to-Use Spray is the pre-diluted, ready-to-deploy form of the S4FE-D™ surfactant chemistry, packaged in a high-output trigger-spray bottle for hospital, nuclear pharmacy, research-lab, and incident-response use. The active chemistry is identical to the working solution made by diluting S4FE-D™ Concentrate 10:1 with water — LTI does that dilution in-house with reverse-osmosis water so what reaches the operator is consistent batch to batch and ready to spray, dwell, and wipe. Originally developed by Laboratory Technologies, Inc. as the Bind-It™ formulation, S4FE-D Ready-to-Use Spray binds contaminants into its surfactant matrix so they lift off the surface and rinse or wipe away cleanly — rather than dissolving the contamination and risking redeposition.

## PHYSICAL AND CHEMICAL PROPERTIES

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|---|---|
| **Appearance** | Translucent, light green liquid |
| **Odor** | Odorless |
| **pH (as supplied)** | ~6.5 (near-neutral) |
| **Density at 20 °C** | ~1.00 g/mL (pre-diluted working solution) |
| **Viscosity** | Water-thin liquid — sprays cleanly through standard trigger nozzles |
| **Boiling point** | 100 °C (212 °F) |
| **Flash point** | Greater than 100 °C — not flammable |
| **Water solubility** | Completely miscible |

## COMPOSITION

S4FE-D Ready-to-Use Spray is a proprietary aqueous surfactant blend — the same chemistry as S4FE-D Concentrate, pre-diluted 10:1 with reverse-osmosis water at the factory. The complete regulatory composition disclosure is provided in the current S4FE-D Spray & Wipes Safety Data Sheet (available from LTI or at www.labtechinc.com). Specific surfactant chemistry is trade-secret protected and is not disclosed beyond what regulatory requirements mandate in the SDS.

## MECHANISM OF ACTION

Conventional decontamination chemistries, such as acids, bases and oxidizers, work by reacting with or dissolving the contaminant where it sits. That approach can drive contamination into the surface microstructure (microporosity in stainless steel, the oxide layer on aluminum, the grain boundaries of plated finishes) and can create byproducts of its own. S4FE-D™ takes a different approach: the contaminant is lifted off the surface and bound into the surfactant matrix, where it stays until it is rinsed or wiped away. The contamination leaves the workpiece, ends up in the rinsate or on the wipe, and does not redeposit. The same mechanism works on chemical, biological and radiological contamination, and it is why S4FE-D™ is safe on a wide range of materials, including aluminum and plated surfaces where acid-based chemistries cause real harm.

## APPLICATION

**Pre-diluted. Ready to use.** No mixing required. Spray directly onto the surface, allow approximately 60 seconds dwell time, and wipe clean with an absorbent cloth or wipe. The trigger-spray format makes the RTU Spray the right choice for spot decon, fume-hood interiors, faucet handles, doorknobs, room-turnover cleaning, and any application where a measured amount of working solution is needed quickly without the prep step of diluting Concentrate.

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**When to use the RTU Spray vs the Concentrate.** The Ready-to-Use Spray and the Concentrate are the same chemistry — pick the format that matches your usage profile. Reach for the RTU Spray for grab-and-go decon at the bench, in the hot lab, on the cart, or in an incident-response kit — anywhere a measured working solution is needed quickly without prep. Switch to the Concentrate for high-volume routine cleaning, mass-decon staging, ultrasonic bath service, and any application where you would otherwise be emptying multiple spray bottles per shift; one 16 oz Concentrate pouch yields about 175 oz of working solution at the 10:1 dilution.

**Application methods:**

- **Wipe cleaning —** spray directly onto the surface, allow approximately 60 seconds dwell time, wipe clean with an absorbent cloth or wipe. Repeat for heavily contaminated surfaces.
- **Ultrasonic bath cleaning —** the RTU Spray can be poured directly into an ultrasonic bath for small or one-off jobs, but for routine or high-volume bath cleaning the S4FE-D Concentrate diluted 10:1 with water is far more economical (one 16 oz Concentrate pouch makes ~175 oz of working solution). LTI bench-tested the bath configuration in a nuclear-medicine syringe-shield decontamination application; the chemistry performs as expected at the standard dilution either way.
- **Spill response —** saturate the affected area with the RTU Spray, allow brief dwell time, absorb with appropriate absorbent material, and dispose of it under the facility's procedures for the contaminant involved. The trigger-spray format puts working solution onto the spill faster than mixing from Concentrate.
- **Final rinse —** a DI or distilled water rinse on critical surfaces is good practice for removing surfactant residue. Not strictly required for most applications.

## MATERIALS COMPATIBILITY

| Material | Compatible | Notes |
|---|---|---|
| **Aluminum (incl. anodized)** | **Yes** | Founding-design material — S4FE-D was originally developed to be safe on aluminum surfaces. |
| **Stainless steel** | **Yes** | All grades. No pitting or etching. |
| **Chrome / common platings** | **Yes** | Near-neutral pH does not attack the plating layer at grain boundaries. |
| **Brass, copper, painted metals** | **Yes** | Standard surfactant compatibility. |
| **Glass, ceramic, porcelain** | **Yes** | Trivially safe. |
| **Most plastics** | **Yes** | Acrylic, polycarbonate, polyethylene, PVC, and similar. |
| **Most rubbers** | **Yes** | Standard surfactant compatibility for routine contact. |
| **Specialty elastomers** | **Verify** | Hygroscopic specialty elastomers — some silicones and polyurethanes — can absorb water from the aqueous working solution on prolonged contact and exhibit temporary swelling. The effect typically reverses on drying. For uncertain materials, conduct a 24-hour patch test on a sacrificial piece. |
| **Direct skin contact** | **Yes** | Safe for use on skin. The pre-diluted working solution is gentle enough for direct skin contact — chemical gloves are not required for routine handling, and incidental over-spray during use is not a concern. With repeated heavy use, like any surfactant, it can draw oils from skin and cause drying. For routine personnel decontamination of skin, the dedicated S4FE-D Hand & Body Soap is the right tool. Avoid the eyes (H319; eye protection recommended). |

## EFFECTIVE CONTAMINANT RANGE

S4FE-D™ Ready-to-Use Spray removes chemical, biological and radiological contamination. On the radiological side, it is effective across the radionuclides encountered in research, clinical, and emergency-response environments. The binding chemistry is not isotope-selective — it captures dispersed contamination regardless of nuclide identity. The categories

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below are representative examples, not an exhaustive list; in more than 30 years of use the chemistry has performed on every isotope it has been applied to.

- **Common nuclear medicine isotopes —** Tc-99m, F-18, I-131, I-125, Ga-68, Lu-177, Co-57, and similar
- **Calibration sources —** Cs-137, Na-22, Co-60, Ba-133, and others used routinely in health-physics work
- **Actinides —** uranium, plutonium, americium, neptunium, thorium and their decay products. Binding chemistry is particularly important for actinide work, where redeposition risk on metal substrates is real and the surface microstructure can be permanently compromised by dissolving-chemistry approaches.
- **Beta emitters —** including high-energy beta emitters such as P-32, Sr-90/Y-90

## STORAGE AND SHELF LIFE

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|---|---|
| **Storage temperature** | 5 °C to 30 °C (40 °F to 85 °F) recommended. Avoid freezing and prolonged exposure to extreme temperatures. |
| **Storage location** | Cool, dry, well-ventilated. Keep containers tightly closed and labeled. |
| **Light sensitivity** | None significant under normal indoor storage. |
| **Shelf life from manufacture** | 48 months (4 years) from date of manufacture |
| **After opening** | Stable for the full 48 months once opened, provided the bottle is kept capped between uses. The RTU Spray is pre-diluted with reverse-osmosis water, so the shelf-life caveats that apply to user-mixed working solution (tap or DI water shortening usable life) do not apply here. |

## DISPOSAL

Dispose of unused product in accordance with applicable federal, state and local regulations. Used wipes and any rinsate from a decontamination operation carry whatever contamination was removed from the workpiece, so they are handled under the facility's procedures for that contaminant, whether chemical, biological or radiological. In most cases the waste stream's classification is set by the contaminant removed, not by the S4FE-D™ chemistry.

## AVAILABLE FORMATS

| | |
|---|---|
| **S-0032-B** | 32 oz Ready-to-Use Spray bottle — pre-diluted, high-output trigger nozzle, grab-and-go for surface decon and incident response |
| **3 oz Refill** | Single-use pre-measured pouch — refills exactly one 32 oz S4FE-D Ready-to-Use Spray bottle |
| **Bulk sizes** | For high-volume use, switch to the S4FE-D Concentrate, which ships in 1-gallon, 5-gallon pail, 15-gallon, 55-gallon drum, and 275-gallon IBC tote formats and dilutes 10:1 with water. |

*For other S4FE-D formats — Concentrate, Decontamination Wipes, Hand & Body Soap, and pre-staged response kits — see the S4FE-D Product Family Summary or visit www.labtechinc.com.*

## SAFETY DATA SHEET

Hazard classification: H319, causes serious eye irritation (Eye Irritation 2A, signal word Warning). Eye protection is recommended; no special skin measures are required. Refer to the current S4FE-D Spray & Wipes Safety Data Sheet (SDS) for complete regulatory composition disclosure, hazard classification, exposure controls, transportation information, and toxicological data. The SDS is available from LTI on request — contact sales@labtechinc.com — or download from www.labtechinc.com.

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*This Technical Data Sheet provides general guidance on S4FE-D™ Ready-to-Use Spray. Specific applications should be validated by the end user against their own materials, contamination types, and procedures. LTI is available to consult on application engineering for non-standard use cases — contact sales@labtechinc.com.*