



(First Applied Sorbent Treatment - Against Chemical Threats)

CHEMICAL HAZARD CONTAINMENT AND NEUTRALIZATION SYSTEM

USER MANUAL

Pressurized Cylinders

FA15-1000, FA15-2000, FA15-4000

Shaker Bottle

FA15-0500

Bulk Pail

FA15-5000

Prepared by:

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INTRODUCTION

FAST-ACT® (**First Applied Sorbent Treatment – Against Chemical Threats**) is a proprietary formulation of non-toxic nanomaterials effective for neutralizing a wide range of **toxic chemicals** with the added capability to destroy **chemical warfare agents**. The FAST-ACT formulation is non-flammable, non-corrosive and can be safely applied to any liquid spill or vapor release enabling Emergency Responders to utilize one technology when faced with a wide variety of known or unknown chemical hazards. Since the dry powder absorbs all spills and is effective against both liquid and vapor hazards upon contact, on-site incident management and clean up times are reduced.

FAST-ACT is offered in pressurized cylinders capable of addressing both liquid and vapor hazards as well as manually dispersed containers for liquid hazard treatment.

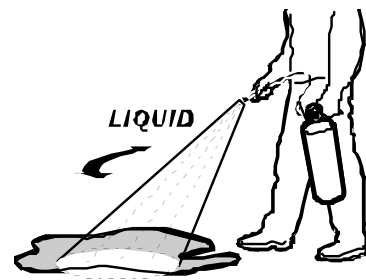
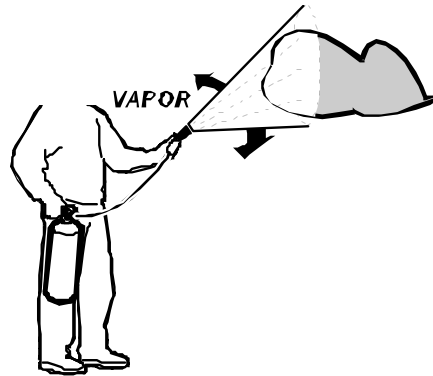
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I. INSTRUCTIONS FOR USE AND APPLICATION

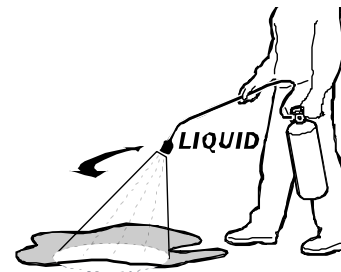
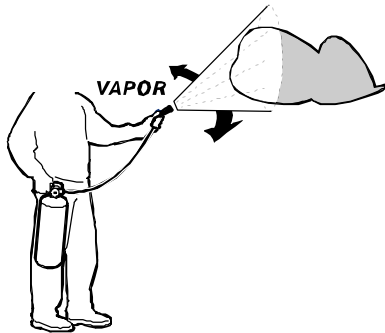
FA15-1000, FA15-2000, FA15-4000 (Pressurized cylinders)

1. Pull ring pin.
2. Squeeze the lever and shake cylinder in up and down motion to ensure maximum clean-out.
3. For vapor hazard aim hose and mist all powder in direction of hazard.
4. For liquid hazard sweep hose side to side to ensure complete coverage of hazard.



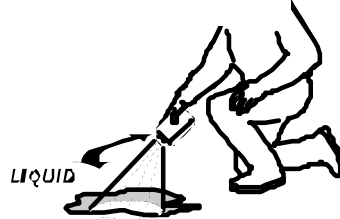
FA15-4000 (Pressurized cylinders with an optional applicator wand)

1. Pull ring pin.
2. Squeeze the lever and shake cylinder in up and down motion to ensure maximum clean-out.
3. For vapor hazard *detach applicator wand* and aim hose in direction of hazard. Mist all powder into air in direction of hazard.
4. For liquid hazard sweep applicator wand side to side to ensure complete coverage of hazard.



FA15-0500 (Shaker bottle)

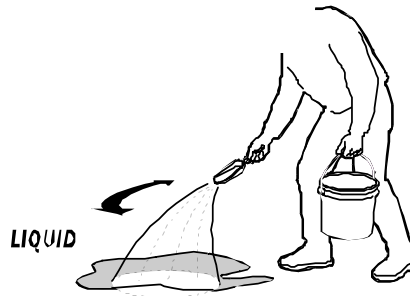
1. Unscrew lid.
2. Apply powder forming a ring around the hazard and then shake the powder directly onto hazard to thoroughly cover the liquid.



3. Agitate powder to ensure all liquid has been adsorbed.

FA15-5000 (Bulk pail)

1. Unscrew lid.
2. Apply powder forming a ring around the hazard and then scoop powder directly onto hazard to thoroughly cover the liquid.



3. Agitate powder to ensure all liquid has been adsorbed.

II. GUIDELINES FOR UNIT SIZE SELECTION

FAST-ACT neutralizes a broad range of acids including phosphoric, sulfuric, nitric hydrochloric and hydrofluoric. Using concentrations at which the acids are commonly transported, the amount of spill that can be neutralized using various FAST-ACT units is shown in Table 1.

Caution: Neutralization of acids and selected aqueous solutions generates heat.

Table 1: Guidelines for Maximum Acid Spill Sizes that can be Neutralized by Various FAST-ACT Units.

<i>Type of Acid</i>	<i>FA15-0500</i>	<i>FA15-1000</i>	<i>FA15-2000</i>	<i>FA15-4000</i>	<i>FA15-5000</i>
	mL	Liters	Liters	Liters	Liters
85% H ₃ PO ₄	354.8	.76	1.4	3.1	3.5
94% H ₂ SO ₄	295.7	.57	1.2	2.3	3.1
70% HNO ₃	946.2	1.9	3.8	7.7	9.7
37% HCl	1241.9	2.28	4.6	10.1	12.7
39% HF	650.5	1.33	2.5	5.4	6.6

FAST-ACT absorbs a wide range of organic compounds such as alcohols, aldehydes, chlorocarbons and petrochemicals. Table 2 gives recommendations for unit selection based on the spill size.

Table 2. Guidelines for Maximum Amount of Organic Spill that can be Absorbed by Various FAST-ACT Units

<i>Type of Organic Spill</i>	<i>FA15-0500</i>	<i>FA15-1000</i>	<i>FA15-2000</i>	<i>FA15-4000</i>	<i>FA15-5000</i>
	mL	Liters	Liters	Liters	Liters
Acetone	502.7	1.05	1.99	4.3	5.4
Alcohols	354.9	0.71	1.3	2.9	3.7
Chlorinated hydrocarbons	827.9	1.66	3.3	6.8	8.5
Petrochemicals	502.7	1.0	2.0	4.1	5.1

FAST-ACT neutralizes phosphorus and sulfur containing compounds, such as insecticides and even chemical warfare agents. Table 3 provides information on the amount of agent that can be destroyed using various FAST-ACT units.

Table 3. Guidelines for Maximum Amount of Liquid Chemical Hazard that can be Destroyed by Various FAST-ACT Units.

<i>Type of Liquid Chemical Hazard</i>	<i>FA15-0500</i>	<i>FA15-1000</i>	<i>FA15-2000</i>	<i>FA15-4000</i>	<i>FA15-5000</i>
	mL	mL	mL	mL	mL
Paraoxon	17.7	35.4	73.9	147.85	177.42
DMMP	20.7	41.4	85.7	171.5	215.8
2-CEES	23.6	47.3	91.6	183.33	230.6
VX	8.8	20.7	38.44	76.8	97.6
GD	8.8	20.7	38.44	76.8	97.6
HD	5.9	14.8	29.6	62.1	76.88

FAST-ACT effectively neutralizes or adsorbs acidic and caustic gases as well as oxidizers. Table 4 provides agent concentration in parts per million (ppm) that can be successfully treated (at least 95% reduction) in a 1,000 ft³ room using various FAST-ACT units. The safety levels for immediate danger and time-weighted average, based on NIOSH, are given as a guide.

Table 4. Guidelines for Maximum Concentration (in parts per million) of Vapor Hazard that can be Successfully Treated with FAST-ACT Pressurized Cylinders in a 1,000 ft³ (28.32 m³) room.

<i>Type of Vapor</i>	<i>Safety Levels (ppm)</i>		<i>FAST-ACT Unit</i>		
	Immediately Dangerous	TWA* (8 hrs)	<i>FA15-1000</i>	<i>FA15-2000</i>	<i>FA15-4000</i>
			ppm	ppm	ppm
Acidic					
Hydrogen chloride	50	5	865	1730	3460
Hydrogen sulfide	100	20	235	475	950
Sulfur dioxide	100	5	340	685	1370
Caustic					
Ammonia	300	20	215	430	860
Oxidizers					
Ethylene oxide	800	5	125	250	500
Chlorine	10	1	200	400	800

*TWA = Time Weighted Average

III. USER CAUTIONS AND WARNINGS

FA15-1000, FA15-2000 and FA15-4000 (Pressurized cylinders)

Do not incinerate. Contents under pressure. Tested to 585 psi (41.13 kg/cm). Do not expose to temperatures over 120°F (49°C). Suitable for use at temperatures from -40°C to 49°C. Improper or careless use may cause severe bodily injury or property damage. Read and thoroughly understand all directions for use before operating.

The unit is non-rechargeable. Partial discharge may cause extinguisher to leak.

Warning! Do not check the pressure or test the unit by spraying it.

FA15-0500 (Shaker bottle), FA15-5000 (Bulk pail)

If the seal has been broken, discard product immediately. Prolonged exposure to the atmosphere will degrade product effectiveness. Close lid between uses. Read and thoroughly understand all directions for use before utilizing the product.

IV. MAINTENANCE AND STORAGE INSTRUCTIONS

FA15-0500 (Shaker bottle) and FA15-5000 (Bulk pail)

Inspect the unit at least monthly. Check for signs of damage or misuse. Ensure that all text on the label is still readable. Store in a dry place.

FA15-1000, FA15-2000 and FA15-4000 (Pressurized cylinders)

Inspect frequently (at least monthly) to determine that the hose is unobstructed, that the system is properly pressurized, and that the seal is intact. Examine the surface of the unit for corrosion. If you notice corrosion during the warranty period, return to NanoScale (see the Limited Warranty section). Ensure that all text on the label is still readable.

V. DISPOSAL

A used unit needs to be fully discharged prior to disposal. Powder should be disposed of in accordance to local, state and federal regulations. For federal regulations follow 40 CFR 261, Subpart C “Characteristic Hazardous Wastes” and 40 CFR 261, Subpart D “Listed Hazardous Wastes”.

VI. TROUBLESHOOTING

- Symptom:** The pointer on the FAST-ACT gauge is in the red.
Cause: The unit is over or under pressurized.
Solution: If the unit has not been used and is within the warranty, return to NanoScale Materials, Inc. for replacement (see the next section). If the warranty has expired, completely discharge and discard the unit. Replace it with a new one immediately.
- Symptom:** The powder is not discharging from the pressurized cylinder.
Cause: The powder has settled.
Solution: Shake the cylinder several times in an up and down motion.
- Caution!** **The pressurized cylinder is a disposable, non-rechargeable unit. Do not try to service or repair the unit under any circumstances. Do not remove the nozzle or valve assembly.**

If the information you need is not covered in the questions and answers above, please call us at: (888) 537-0179.

VII. LIMITED WARRANTY

NanoScale Corporation warrants that for a period of one year from the date of purchase, this product will be free from manufacturing defects. NanoScale, at its option will repair or replace the product or any component of the product found to have manufacturing defects during the warranty period. If the product is no longer available, replacement may be made with a similar product of equal or greater value.

This warranty is non-transferable and is valid from the date of the original purchase. Proof-of-purchase and/or your warranty registration card on file is required to obtain warranty performance. This warranty does not cover consequential damages and/or damages resulting from negligent use or misuse of the product by failure to store, maintain and/or use the product in accordance with label directions otherwise. In addition, disassembly, repair or modification by anyone other than NanoScale, acts of God, such as fire, flood, hurricanes and tornados will not be covered. To be eligible for the warranty, the unit cannot be partially discharged.

To obtain a warranty service, contact Customer Support at (888) 537-0179 Monday through Friday, 8 am – 5 pm CST. To assist in serving you, please have the model number and date of purchase available when calling.