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~~Standard Guide for Care and Maintenance of Flame, Thermal and Arc Resistant Clothing~~ Industrial Laundering of Flame, Thermal, and Arc Resistant Clothing¹

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1. Scope

1.1 This guide provides recommendations for the care and maintenance of clothing that is flame, thermal, and arc resistant.

1.2 These recommendations address the Industrial Laundering process.

~~NOTE 1—The focus of this standard is the laundering process. More detailed information on decontamination, inspection, storage and repair is available in NFPA 2113.~~

~~1.2 These recommendations address the Industrial laundering process.~~

~~1.2.1 This guide does not provide detailed suggestions for dry cleaning. For more information contact your processor; his/her dry cleaning equipment supplier and solvent supplier; and the fiber, fabric, and garment manufacturers:~~

~~1.2.2 This guide does not apply to home laundering of flame, thermal, and arc resistant clothing. Follow label directions or contact garment supplier. For best cleaning results and proper maintenance of the protective characteristics of flame, thermal, and arc resistant clothing the services of a professional processor is recommended. (See 1—The National Institute for Occupational Safety and Health (NIOSH) recommends leaving clothing soiled with hazardous chemicals at work to be laundered by the employer; or if such clothing is washed at home, to launder separately from the family wash.~~

~~1.2.1 This guide does not apply to dry cleaning of flame, thermal, and arc resistant clothing. For more information on dry cleaning, follow label instructions or contact your garment supplier.~~

~~NOTE 2—Dry cleaning indicates cleaning by a professional dry cleaner.~~

~~1.2.2 This guide does not apply to home laundering of flame, thermal, and arc resistant clothing. For more information on home laundering, follow label instructions or contact your garment supplier.~~

~~NOTE 3—Home laundering indicates laundering in a home laundering machine.~~

1.3 It is important that potentially flammable contaminants are removed from garments during the wash process. If flammable contaminants are not removed, the flame resistance of the garment will be compromised. (See Note 1.)

~~NOTE 4—Effective cleaning and proper maintenance of the protective characteristics of flame, thermal and arc resistant protective clothing should include consideration of the services a professional processor can supply.~~

1.4 It is important that the processes and materials used to launder flame resistant garments are compatible with the FR materials to ensure that the FR protection of the garment is not compromised during the laundering process.

1.5 It is the responsibility of the end user to determine if their laundering method is the appropriate care and maintenance procedure for their application. (See Appendix X1 and X1.1.)

~~1.2.3 This 1.6 This guide does not apply to specialized protective garments such as specialized firefighter turnout gear and proximity firefighter ensembles.~~

~~1.3 This 1.7 This guide also identifies inspection criteria that are significant to the performance of flame, thermal, and arc resistant clothing.~~

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2. Referenced Documents

2.1 ASTM Standards:²

D 123 Terminology Relating to Textiles

F 1494 Terminology Relating to Protective Clothing

2.2 Other Standard:

NFPA 2113 Standard for Care of Stationhouse Gear Other References:

Textile Laundering Technology Handbook -2005 Edition by Dr. Charles Riggs, Ph.D. and Michael Klipper

NIOSH, Protecting Workers' Families, A Research Agenda Report of the Workers' Family Protection Task Force – February, 2002

3. Terminology

3.1 Definitions of Terms Specific to This Standard—The following terms have been defined specifically as they relate to this guide: Definitions:

3.1.1 care—care and maintenance, *n*—procedures for cleaning, sterilization, decontamination, and storage of flame, thermal, and arc resistant clothing. —effective cleaning to remove soil and maximize use life of garments while maintaining (not removing) protective properties and procedures for inspection, repair, and removal from service.

3.1.2 end user, *n*—the entity or organization whose employees ultimately wear the flame, thermal, and arc resistant clothing.

3.1.3 finish, *n*—a chemical or mechanical modification, or both, of the fabric for a specific performance result.

3.1.4 finishing technique, *n*—the mechanical means by which the garment is put in its final state (for example, pressing, drying, wrinkle removal, and so forth). tunneling.

3.1.5 laundry wash formula, *n*—the details related to procedures, cycle times, temperatures, and chemicals used in the laundering process.

3.1.6 maintenance processing launderer (processor), *n*—the procedures for inspection, repair, and removal from service of flame, thermal, and arc resistant clothing. — the party performing the operation of cleaning or repairing, or both of the flame, thermal, and arc resistant clothing.

3.1.7 processing launderer (processor) soil, *n*— the party performing the operation of cleaning or repairing, or both of the flame, thermal, and arc resistant clothing. —foreign substances that may be on garments, which are not part of the garment construction or materials.

3.1.8 soil level, *n*—the amount of soil on a garment (very light, light, medium, heavy, and very heavy) are subjective categories of soil levels commonly used in the laundry industry; the definition of each category depends on the soils, fabric type, garment construction, and fabric release properties. (Refer to “The Textile Laundering Technology Handbook” in Section 2. Referenced Documents)

4. Summary of Guide

4.1 This guide provides guidelines for use by suppliers of the flame, thermal, and arc resistant clothing including the fabric and fibers used in its construction, processors, and the end user to effectively maintain flame, thermal, and arc resistant clothing and to provide a means of determining when such items should be removed from service. This includes the following:

4.1.1 Classification of flame, thermal, and arc resistant clothing by fiber, fabric, and finish.

4.1.2 Listing of elements to consider when developing wash formulas

4.1.3 Recommendations for removing flame, thermal, and arc resistant clothing from service.

4.1 This guide provides guidelines for use by suppliers of the flame, thermal, and arc resistant clothing (including the fabric and fibers used in its construction), processors, and end users to effectively care for and maintain flame, thermal, and arc resistant clothing. The guidelines include:

4.1.1 A listing of elements to consider when developing wash procedures and formulas for processor(s).

4.1.2 Recommendations for removing flame, thermal, and arc resistant clothing from service.

4.1.3 Recommendations for the repair, modification and fit of flame, thermal and arc resistant clothing.

5. Significance and Use

5.1 This guide identifies the responsibilities of the fiber, fabric, and clothing manufacturers, as well as the processor, the processor's chemical supplier and the end user.

5.2 This guide has been developed to describe the key components involved in a program for the care and maintenance of flame, thermal, and arc resistant clothing.

5.2.1 New fibers, fabrics and construction techniques are continually being developed to improve flame, thermal, and arc resistant clothing.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.