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Care and Cleaning Recommendations for Mount Vernon FR Flame Resistant Fabrics

Mount Vernon Mills, Inc. has continuously operated as a US textile manufacturer for more than one hundred and sixty five years. On October 12, 1845, the first Mount Vernon textile plant began operation in Trion, Georgia. The Trion plant has grown into a fully integrated denim mill, piece dyeing and finishing plant with supporting yarn and fabric production facilities in Alto, GA. When all steps in the textile production process from fiber through finishing and shipment of the fabric are under the control of the same entity, this is known as a *vertical operation*. Vertical processing provides at least two distinct advantages: complete control over each step of the process and the ability to innovate in new fabric development, both of which create benefits for our customers.

Mount Vernon Mills has an unwavering commitment to the safety of the men and women in hazardous occupations whose work exposes them to the hazard of garment ignition and burning. Since 2005, Mount Vernon has delivered more than 60 million yards of Mount Vernon FR fabrics with no failures of the material in use. Backed by unmatched process and quality control, equipment, and technology as well as testing and certification to industry standards and specifications, **all Mount Vernon flame resistant fabrics are guaranteed to maintain flame resistance for the expected life of the garment, as long as recommended laundering instructions are followed.**

Mount Vernon FR Flame Resistant Garments in the Workplace

Mount Vernon offers 100% cotton fabric and cotton blended fabrics in a wide range of weights, styles and colors. These fabrics are designed for use in garments intended for daily wear in occupations where a risk of ignition exists. These include oil and gas exploration and production, transmission and distribution of electricity, working on energized electrical parts, welding and flame cutting and general industry tasks where flame or exposure to high temperature surface contact is possible.

Because the fabrics produced by Mount Vernon are made into garments for daily wear, they serve as the normal work apparel for many tasks. As such, they will become soiled with the wide variety of oil, grease, sweat and dirt that is experienced daily in these occupations. These soils can disrupt the operation of the flame retardant chemistry in the fabric, or in extreme cases be flammable themselves.

It is, therefore, critical that these garments are thoroughly cleaned and all contaminants are removed. **If during the work day a garment becomes saturated or contaminated with a high level of flammable substances, it must be removed immediately and replaced with a clean garment.**

General Considerations

- **Fiber Content:** Garments made from AMTEX™ fabrics that are 100% cotton or a blend of 88% cotton/12% high tenacity nylon may be laundered by the same processes in either industrial or home washers. They may also be laundered together in the same load. Garments made from flame resistant and non-flame resistant fabrics should be washed separately.
- **Water quality:** Hard water contains mineral salts that can form insoluble deposits on the fabric surface. It can also precipitate soaps and reduce the cleaning ability of detergents. Soft water (less than 25 ppm or 1.5 grains of hardness) is recommended.
- **Products to avoid:** The objective in cleaning any flame resistant fabric is to remove soils and not to add anything that could serve to mask the action of the flame retardant or to serve as an ignition source. Therefore, products such as starch, fabric softener or any other laundry additives such as soil release or anti-statics must not be used.
- **Bleach: Chlorine bleach (sodium hypochlorite) and oxygen bleach (hydrogen peroxide), either alone or in combination with other chemistry must never be used on flame resistant treated fabrics. Repeated exposure to bleach will destroy the flame retardant polymer and result in flammability failure if the fabric is exposed to an ignition source.**
- **Soap:** Natural animal fat or tallow soap (anionic) is uncommon, especially in products for home laundering. Tallow soap should not be used to launder flame resistant garments as it could build up on the fabric surface and mask the flame retardant or serve as an ignition source.

Industrial Laundering of Garments Made from Mount Vernon FR Fabrics

- **Sorting and Loading the Washer:** Garments should be sorted by color and separated by type – shirts, pants, coveralls, etc. Soil type and level of soiling must also be considered to prevent cross contaminating garments from different accounts. Washers are normally loaded to 80% of their rated capacity, but if required for soil removal, a lower load factor should be considered to increase mechanical action.

- Wash Formulas: Wash formulas are based on consultation between the laundry and the laundry chemical provider and reviewed with the end use customer to determine the types and levels of soil in the accounts being served. Guidance can be found in ASTM F1449 Standard Guide for *Industrial Laundering of Flame, Thermal, and Arc Resistant Clothing*. An example heavy soil industrial laundry formula can be found in NFPA 2112 *Standard on Flame-Resistant Garments for Protection of Industrial Personnel against Flash Fire*.

For heavy soil, a flush can be used prior to the break step to remove particulates and reduce abrasion in the wash wheel. Most formulas will contain the following operations: a flush (optional), a break, a carry-over or second suds (depending on soil level), three rinses and a sour step. Complete rinsing is required to ensure that all contaminants are removed. The sour step neutralizes the fabric to prevent wearer skin reaction to the highly alkaline detergents used in the break step.

As a general rule, nonionic surfactant based detergents or detergents based on built metasilicate chemistry can be used. Wash temperature will affect color retention of the fabric, but lower temperatures may reduce soil removal. Generally break temperatures between 150°F and 165°F are used. As these fabrics do not contain major amounts of thermoplastic fibers, shock wrinkles are not a concern but normal step-down cooling should follow the higher temperature break step.

- Extraction and Conditioning/Drying: Extract as you would non-flame resistant 100% cotton garments. Condition at a stack setting of 165°F. Fabric temperature in the dryer basket must not exceed 280°F or loss of color and increased garment shrinkage may result. Do not over dry the clothing as this will result in excessive shrinkage.
- Tunnel Finish/Pressing: Garments made from Mount Vernon FR fabrics may be tunnel finished. As with conditioning, fabric temperature must not exceed 280°F. If desired, garments may be pressed using normal cotton settings with the press head temperature set at or below 300°F.

Home Washing of Garments Made from Mount Vernon FR Fabrics

- Guidance for home laundering can be found in ASTM F2757 *Standard Guide for Home Laundering Care and Maintenance of Flame, Thermal and Arc Resistant Clothing*.
- Washing at home can be accomplished using any typical home laundry detergent. Powered detergents containing “color safe” bleaches such as sodium perborate may be used. Liquid

detergents or other products containing hydrogen peroxide may not be used because of the risk of damaging the flame resistant finish.

- Flame resistant clothing should be laundered separately from the family wash to prevent cross contamination. Turning the garments inside out before laundering will help prevent streaking, especially with flame resistant denim jeans.
- If stain removal is required, any commercial stain removal product that does not contain hydrogen peroxide is acceptable. The detergent being used to launder the clothing can also be poured directly onto the stain to aid removal. It is possible that heavy stains may not be completely removed, but the presence of a visible stain doesn't necessarily compromise the flame resistant characteristics of a garment. If the smell of petroleum or solvent is present, launder the garment again, or consider dry cleaning or other professional care to remove the soil.
- Wash on the Cotton/Sturdy cycle with the wash temperature set to Hot.
- Dry on the Cottons setting, but do not over dry the garments as this will result in excessive shrinkage. If desired, garments may be ironed on the normal cotton setting.

Repair and Maintenance of Garments Made from Mount Vernon FR Fabrics

Guidance for repair and maintenance of flame resistant garments made from Mount Vernon FR fabric can be found in ASTM F2757 *Standard Guide for Home Laundering Care and Maintenance of Flame, Thermal and Arc Resistant Clothing* and ASTM F1449 *Standard Guide for Industrial Laundering of Flame, Thermal, and Arc Resistant Clothing*. Minor repairs that do not affect the integrity of the garment can be made by darning with flame resistant thread, patching with a flame resistant heat seal material, or patching with like materials. Because garments made from Mount Vernon FR flame resistant fabrics are guaranteed to remain flame resistant for the life of the garment when laundering in accordance with our recommendations, they should be removed from service on the same basis as normal wearing apparel: they are ripped or torn and cannot be repaired, have stains that cannot be removed, have lost color, or are just worn out.

Dry Cleaning

Flame resistant garments made from Mount Vernon FR fabrics can be dry cleaned if needed. If the clothing requires dry cleaning, the services of an industrial laundry with dry cleaning capability or a commercial cleaner should be obtained. The dry cleaner will be able to be certain that all of the cleaning

fluid is completely removed from the garment. It is also possible that in a situation involving heavy oil and grease, an occasional dry cleaning may be required to completely remove potentially flammable contaminants. This can be coordinated with the laundry provider or commercial dry cleaner as needed.

A Final Word

Each work environment and occupational exposure is unique. The employer and those responsible for selection of flame resistant protective garments and their care and maintenance must consider all aspects of the installation and constantly monitor the condition of the garments in service. Laundry conditions must be adjusted to remove potentially flammable soils so that the garment can perform its protective function if required. Soil removal is more important than appearance and color retention and must be the top priority.

For the latest information from Mount Vernon Mills on care and maintenance of garments made from Mount Vernon FR flame resistant protective fabrics, find us on the web at www.mvmfr.com.