

## Care & Cleaning Information for Bulwark Excel-FR™ Flame Resistant 100% Cotton and Excel-FR ComforTouch™ 88% Cotton/12% Nylon Garments

Bulwark Excel-FR™ durable “Flame Resistant” (“FR”) 100% cotton and Excel-FR ComforTouch™ 88% cotton/12% nylon blend garments are made from fabrics treated with a durable flame retardant finish.

These garments can be laundered at temperatures normal to cottons. With the exception of FR denim, they can also be dry cleaned. Do not dry clean 100% cotton denim as the indigo dye system will fade and bleed into the solvent.

Flame resistant garments should be removed immediately and replaced with clean FR apparel if they become fouled with flammable materials.

Flame resistant apparel should be washed using soft water (less than 4.0 grains). Hard water adversely affects cleaning, resulting in increased detergent usage. Hard water contains mineral salts that can form insoluble deposits on the surface of fabrics. Sufficient buildup can negate the flame resistant characteristics of the garment, and may serve as fuel if garments are exposed to an ignition source.

These garments should not be worn where contact with strong oxidizers (e.g., >10% sodium hypochlorite, NaOCl) or reducing agents (e.g., sodium hydrosulfite, Na<sub>2</sub>S<sub>2</sub>O<sub>4</sub>) is a consideration.

### INDUSTRIAL LAUNDRY

- It is important that formulas are developed using detergents and wash temperatures (up to 165°F) adequate to thoroughly clean all contaminants from garments.

- Use non-ionic formulas. Do not use natural soaps (anionic or tallow soap) or silicate supplemented detergents. Soft water is recommended. Hard water precipitates soaps. It also contains calcium and magnesium salts. These products can build up on the fiber surfaces, coating the fabric and masking FR properties.
- **Chlorine bleach (sodium hypochlorite) and hydrogen peroxide (oxygen bleach), whether separate or contained in detergents, must be avoided.** Repeated exposure to bleach can destroy the FR polymer and make the garments non-protective.
- Starch, fabric softeners, and other laundry additives can coat the fiber and mask the FR performance or serve as fuel in case of garment ignition. Therefore their use is not recommended. Garments should be soured to a pH between 5.5 and 6.5.
- If garments are heavily soiled with particulate or abrasive soils, a flush at the beginning of the cycle will help reduce abrasion in the wash wheel. Wash formulas and load sizes should be set up to minimize redeposition and fabric abrasion.
- Extract by methods typically used for regular 100% cotton garments.
- Condition at a stack setting of 165°F so fabric temperature measured in the basket does not exceed 280°F. Normal shrinkage of 5 % to 6% can be expected. As with any 100% cotton fabric, excessive shrinkage may occur if overdried.
- If desired, garments may be pressed using normal cotton pressing techniques.

## HOME WASH

- Use any typical home laundry detergent. Powdered home wash detergents containing sodium perborate and other “color safe” bleach alternatives will not affect the flame resistance of the garments.
- **Do not use chlorine bleach, liquid non-chlorine bleach or detergents that contain hydrogen peroxide.** These include but are not limited to liquid *Tide with Bleach*®, liquid *Clorox II*®, and liquid *Vivid*®.
- It is important that all potentially flammable soils and other contaminants are completely removed from garments during the wash process. This may require the use of stain removal products, such as *Shout*®, *Spray ‘n Wash*®, or *Zout*®; or presoaking garments prior to washing. The use of hot water can often make detergents more effective in soil removal. If all contaminants cannot be removed in home care, you should obtain professional help in getting your FR garments clean.
- The use of conditioned or soft water can help improve removal of contaminants from garments. Hard water precipitates soaps and can result in the build-up of calcium and magnesium salts. These can serve as fuel in the event they are exposed to a source of ignition.
- Starch, fabric softeners, and other laundry additives are not recommended because they can coat fibers and mask FR performance, or serve as fuel in case of garment ignition.
- Do not over dry garments. If desired, you may press with an iron on the normal cotton setting.
- **We recommend you turn garments inside out to help reduce streaking that can occur due to abrasion in the washer.**

## DRY CLEAN

- Either perchloroethylene or petroleum solvent can be used. With petroleum, it is necessary to ensure that all solvent has been completely dried from the garments. Do not dry clean indigo dyed FR denim.

## REPAIR & MENDING

- Minor repairs that do not affect the integrity of the garment may be made with like materials by either heat sealing or sewing on patches or darning small holes.

*The information in this bulletin is based on the results of testing in our laboratory and information from the fabric vendor. It is provided for your guidance and knowledge. As of the publication date, this bulletin contains up to date information on care and cleaning. Please visit our website at [www.bulwark.com](http://www.bulwark.com) for the latest information.*