



FIREFIGHTER HEALTH & SAFETY

By DARRELL REDLER

Rugged Turnout Gear Requires Delicate Care



Firefighter turnouts can withstand the effects of a burning building, yet a simple home washer can render them useless.

The improper cleaning action of a top-loading home-style washer is brutal to turnouts. The agitator in most home machines harshly abrades the material while other parts of the bulky gear receive little or no washing action – vital for proper cleaning. This is just one of the many concerns to keep in mind when planning how to properly clean turnout gear and keep it in the best condition.

Efficiently cleaning and decontaminating firefighter gear can be done at either an on-premises laundry (OPL) at the firehouse or by working with a gear-cleaning service that specializes in handling firefighter turnouts. Either way, washing processes should follow the recommendations of the National Fire Protection Association (NFPA) 1851 Standard and guidelines from the Fire and Emergency Manufacturers and Services Association (FEMSA) pamphlet on protective ensembles for structural firefighting. (Both publications emphasize the importance of using a gear-cleaning specialist or machines dedicated to cleaning turnout gear as opposed to washing at home. NFPA 1851 also prohibits cleaning at a public laundry unless that facility has an area dedicated to turnout gear, as well as cleaning by a dry cleaner.)

Properly cleaned turnout gear will last longer because the various components of the gear – shell, moisture barrier and temperature barrier – will be cleaned without damage to the goods. Proper cleaning also makes the gear safer to wear because carcinogenic soot and tars have been removed from the turnouts.

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Properly cleaned turnout gear lasts longer and is safer to wear.

Turnout gear cleaning should take place in a front-loading, industrial washer-extractor, with lift-and-tumble washing action. This type of washing action causes the gear to interact with the water (and wash chemicals) and releases soil. In a

home appliance, an agitator provides some mechanical action, but a commercial/ industrial machine imparts complete mechanical action by lifting and gently tumbling the garments

in the washing solution. Lifting is aided by “ribs” placed along the wall of the rotating wash cylinder.

Provided you have the correct type of formulas and the correct chemicals, efficient cleaning and decontamination of gear can be done at the same time. A variety of cleaning and disinfecting chemicals are available through many firehouse supply companies. Also, check with your turnout gear manufacturer. NFPA 1851 provides guidelines on these chemicals.

One process that many fire stations have chosen is to designate a specific individual to ensure that turnout gear – whether laundered in-house or by an outside cleaner – is handled properly. A compliance officer can monitor the tracking of these goods to determine that they are properly cleaned after each use and that they are cleaned on a regular basis – regardless of whether or not they have been used.

Another concern to keep in mind regarding turnout gear cleaning is the extraction speed – or spin cycle – at which moisture is removed from the goods. After the garments or inner linings are cleaned and rinsed, the washer-extractor will go into its extract cycle. Extraction removes most of the water in preparation for drying.

Because turnouts are typically made of materials that shed water easily—unlike cotton towels, for example—they do not require high extraction speeds. In fact, some garment makers prefer lower extraction speeds to avoid harm to the turnouts. It is important to keep in mind what type of items you plan to wash most frequently, and judge extraction speeds on this basis.

One problem that can arise is associated with cleaning the moisture barrier. These moisture barriers are of two main varieties: a Teflon fabric or a polyurethane-coated mesh. (It is recommended that these be washed separately, unless the protective inner lining is sewn into the shell, to avoid cross contamination.)

During the laundering process, water circulates in and around the outer shells and inner linings. When turnout gear is subjected to high-speed extraction, water is violently pulled from the goods. Since the moisture barrier is by necessity waterproof, water must pass either around or through the barrier. Water is often trapped within the folds of the gear during the wash process. This results in small microbursts of the fabric that leads to premature moisture barrier failure when using excessively high extract speeds. This effect will also be evidenced by the premature deterioration of the reflective striping (safety striping, name, number, etc.) on the gear. This can lead to increased maintenance cost, premature gear retirement, or worse still, increased risk to the firefighter.

Consideration should also be given to drying turnout gear. A variety of devices and methods are available to fire departments. The best course of action, including the washing of turnout gear, is to always consult the manufacturer’s specific cleaning and drying instructions.



Before you go with a cheaper washer, remember what you're playing with.



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6 essential features of a turnout washer.

1. Industrial construction. Firefighters and their bulky turnouts can be rough on a washer-extractor. So buy one that's built as tough as your truck.

2. Easy operation. Formula selection should be clear, to help operators make the right choices. Self-diagnostics should be available if troubleshooting is needed.

3. Professional washing action. *Lift and drop* washing action is far superior to mechanical agitators (used by home washers). And garment manufacturers say it's safer for gear.

4. Roomy wash cylinder. It not only holds more gear, but also washes better because gear has more space to lift and drop. Compare *cylinder volume*, not rated capacity.

5. Intermediate extraction. Enhances rinsing by slinging

water and chemicals from the gear before the next rinse. This speeds processing, saves water.

6. Distribution speed. Minimizes vibration by helping to balance the load before high-speed extraction. Extends machine life.

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