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PPE Protection

Guide to the care of firefighter protective clothing & PPE

GB 2026

Guide to the care of Personal Protective Equipment

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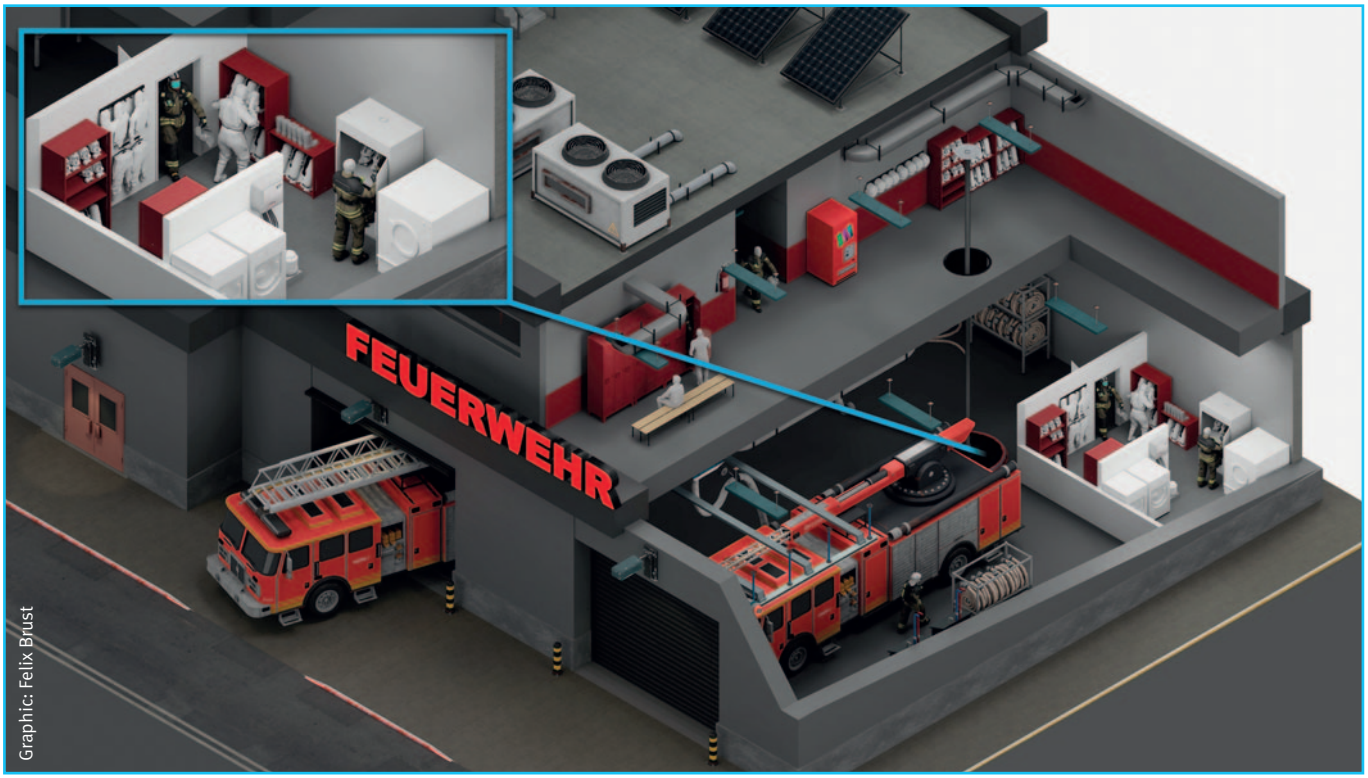

Graphic: Felix Brust

The information provided in this leaflet is intended for guidance purposes. No liability can be derived from these recommendations.

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Foreword

This guide is intended for all users interested in personal protective clothing.

When using protective clothing, it is essential to consider the applicable standards and the requirement profile according to the manufacturer's production and testing specifications. To ensure the longest possible usability, this clothing requires special care.

In addition to the manufacturer’s instructions provided with the clothing and the labeling tag attached to the garment, this guide is designed to assist you in effectively and properly maintaining and reprocessing your protective clothing.

Types of personal protective equipment:

- Firefighter Protective Clothing
- Emergency Service Clothing
- Police Uniforms
- Chemical Protective Clothing
- Waste Collection / Sewer Cleaning Clothing
- Forestry and Woodworker Clothing

Protective clothing is made of the following materials:

- Aramid fabric
- Climatic membrane
- Reflective material
- Insulation lining
- Velcro
- Background material

Care of protective clothing

To achieve optimal and hygienic cleaning results while ensuring maximum fabric protection, maintaining the reflective power of retroreflective strips, and preserving the color permanence of the outer material, only detergents specifically developed and tested for this application should be used.

In addition to chemical parameters, physical parameters—i.e., process parameters—must also be considered. Only a correctly chosen combination of time, temperature, mechanics, and chemistry will ensure long-term success.

Important basic instructions:

1. Do not wash at home – Risk of contamination
2. Wash separately
3. Avoid long storage times for soiled clothing
4. Pre-treat heavily soiled garments
5. Close or cover hook and loop fasteners
6. Close zippers
7. Do not clip labels – Risk of membrane damage
8. Remove carabiners or detachable metal parts
9. For flame-resistant clothing: Do not wash with flammable materials!!
10. Garments heavily contaminated with soot, oil, or grease should be dry-cleaned.

Recommended machine technology:

1. Freely programmable washer-extractors
2. Minimum capacity of 14 kg
3. Machine load capacity at a maximum of 75% – to prevent excessive mechanical stress
4. Professional dryer or drying cabinet – time and temperature should be freely programmable
5. Optimized dosing system

Decontamination process

Decontamination – but do it right!

After firefighting operations, the personal protective equipment (PPE) of the emergency services is often contaminated with various pollutants. These residues include, among other things, mineral and asbestos fibres, inorganic dusts and heavy metals, chemical residues from extinguishing and recovery operations, as well as microbiological contaminants. In addition, material damage can occur due to heat, chemicals and mechanical stress.

In a comprehensive joint research project (2017–2021), a standardised test procedure was developed that enables a reproducible test of decontamination performance. In this context, test fabrics that are close to real-life conditions were used, which realistically reflect the composition of firefighter PPE.

The results of the washing process showed the following reduction rates:

- **96.8% for fats, oils and resins**
- **92.3% for polycyclic aromatic hydrocarbons (PAH)**
- **93.5% for bound soot fire residue**
- **92.4% for mineral fibres**
- **94.6% for PFT extinguishing agent.**

These results exceed the current state of the art.

Minimising the risk of cancer

Studies suggest that firefighters have an increased risk of developing certain types of cancer. To minimise the risk of cancer, consistent operational hygiene is essential. This includes thoroughly cleaning and decontaminating personal protective equipment (PPE) after every operation.

It is recommended that PPE should not be washed at home to avoid the spread of contamination. Instead, it should be cleaned in specialised facilities that have the appropriate equipment and expertise.

Three steps of the cleaning process

1. Washing

For washing treatment, we recommend **Viva Lana** for more delicate garments. This standalone detergent is free from bleach and optical brighteners and has been specifically adapted to meet the special requirements for the reprocessing of protective clothing.

For heavily soiled garments, the detergent booster **Viva Blue** can be used.

In the case of clothing suspected of contamination with infectious agents, it must undergo a disinfecting procedure.

2. Finishing

For the finishing treatment of protective clothing, we recommend a fluorocarbon coating, which does not affect the functionality of the reflective fabric. This treatment continuously restores the dirt-, water-, and chemical-repellent properties of the protective clothing.

Additionally, it helps maintain the breathability of the membrane technologies used in the garments.

The **Chemprotect FC** treatment is applied after the washing process, directly in the washing machine.

3. Drying

Drying should be carried out at a maximum temperature of **80 °C**.

Higher temperatures should be avoided, as certain components of the protective clothing (reflective fabric, hook and loop fasteners) may be damaged.

The effectiveness of the **Chemprotect FC** treatment improves with higher drying temperatures.

Three steps of maintenance:

1. Washing

Personal protective clothing worn by firefighters and other emergency service personnel is exposed to extreme conditions and stress. As a result, the cleaning process must deal with particularly stubborn dirt from various substances, stains and odors from different bodily fluids, as well as intense and penetrating smells.

To thoroughly and hygienically clean this clothing, SEITZ offers the proven solutions: **Viva Lana** and **Viva Blue.**

Viva Lana

Liquid single-component detergent or just Liquid detergent for delicate garments and PPE.

It is used for the maintenance of PPE made from aramid fibers and other fabrics with reflective materials. The detergent is free from optical brighteners and bleaching agents, ensuring that the treatment does not cause color fading or shifts in high-visibility protective clothing.

Viva Lana is tested for the maintenance of:

- Firefighter service clothing according to EN 469: 2005 2/2/2 HuPF
- Emergency service clothing according to EN 343 Class 3/3
- High-visibility protective clothing according to EN 471 Class 3/2; GUV-R 2106

For all steps of washing and impregnation, it is essential to strictly follow the manufacturer's instructions and care labels attached to each garment. In case of doubt, a verification of the protective function should be carried out.

Viva Blue

Detergent booster, grease remover, and wetting agent for synthetic oils and fats.

Viva Blue is a highly concentrated detergent booster designed for treating workwear and PPE with heavy oil and grease contamination, effectively removing them completely from the fabric.

SEITZ's research has successfully developed **Viva Blue**, a unique grease remover that effectively eliminates all types of fats and oils from PPE at temperatures ranging from **40 to 80 °C**, without the use of solvents, citrus terpenes, or nonylphenols.

Firefighters, emergency services, and THW rescue workers may come into contact with dangerous pathogens during their operations. Therefore, thorough washing alone is not sufficient. Disinfection in accordance with the recommendations of the Robert Koch Institute is required.

Disinfection

Protective clothing in emergency services must comply with **GUV R 2106** to provide protection against thermal, mechanical, and weather influences. Additionally, **protection against pathogens is of essential importance**. This clothing also ensures that emergency personnel remain visible from a sufficient distance.

Unlike firefighter clothing, emergency service clothing does not offer protection against heat. Therefore, during reprocessing, **maintaining these protective properties and ensuring hygienic safety are top priorities**.

Emergency service clothing should be **disinfected during washing and re-impregnated** to maintain its weather-resistant properties.

Our **Viva Lana/Viva Duox process** enables gentle, fast, and effective washing and disinfection at a low temperature of **40 °C**. Additionally, **Viva Duox** helps eliminate unpleasant odors.

It is important to note that disinfecting wash processes can reduce the lifespan of protective clothing.

Viva Duox

Liquid bleaching and disinfecting agent.

Viva Duox is a highly effective liquid disinfectant and bleaching agent based on peracetic acid. It acts as an efficient bleach even at low temperatures while being gentle on colors and fibers.

Its use on retroreflective and background materials is possible within the SEITZ-approved processes.

The **Viva Lana/Viva Duox-Verfahren** process ensures comprehensive bactericidal, fungicidal, and virucidal effects. This effectiveness is guaranteed at 40°C in accordance with §18 IfSG, efficacy spectrum AB (and is registered for listing with the RKI).

- **Reliable disinfection at 40 °C**
- **Removes even the most stubborn stains**
- **Eliminates the strongest odors**
- **Disinfection process in accordance with RKI guidelines**

2. Finishing

What to consider during finishing:

- The fluorocarbon resin treatment **Chemprotect FC** should be dosed using a dosing pump.
- The washing machine should only be loaded up to 75% of its capacity.
- The specified dosing amounts must always be followed.
  The dosing instructions refer to the liquor present in the machine.

Protective clothing must not only be properly cleaned but also periodically re-impregnated, depending on the intensity of use.

The dirt-, water-, and chemical-repellent properties of protective clothing diminish with use but can be restored through treatment with special fluorocarbon resins. This treatment reduces the absorption of liquids by the outer fabric, prevents the fabric from becoming saturated, speeds up drying, and improves insulation, especially when wet. This is particularly important when exposed to heat or during winter conditions.

Chemprotect FC

Emulsion for water-, oil-, and chemical-repellent impregnation of protective equipment

Chemprotect FC is a fluorocarbon resin emulsion suitable for all types of PPE made from synthetic and blended fabrics.

In firefighting, protective clothing is used in compliance with EN 469 and the requirement profile based on the manufacturing and testing specifications for universal firefighter protective clothing (HuPF).

Chemprotect FC is highly suitable for the re-treatment of this firefighting protective clothing.

3. Drying

Drying can be done in a dryer or drying cabinet, depending on the machine's capacity.
The higher the drying temperature, the better the impregnation effect and durability of the treatment.

Always follow the care label instructions on each garment. The specified drying temperature must not be exceeded, as it can damage the clothing. Tunnel dryers are not recommended.

After drying, a small amount of residual moisture may remain in the garment, particularly in waterproof, multilayered areas, such as under moisture barriers. Therefore, protective clothing should always be stored in a well-ventilated, dry, and light-protected environment.

Care of respiratory masks and chemical protective wear.

Respiratory masks:

Another important aspect of personal protective clothing is the cleaning of respiratory masks. Since these masks are often not only soiled but also contaminated, disinfection before cleaning is essential.

- Only a registered product may be used for disinfection, in combination with a disinfection process specifically designed for that product. Disinfection is carried out—just like the maintenance of HuPF protective clothing—in a wet cleaning or washing machine with a minimum capacity of 15 kg of load.
- Respiratory masks must be placed in special protective bags for treatment. These bags can be obtained through the authorized specialist retailer.
- When treating respiratory masks, it is essential to ensure that excessive mechanical stress is not applied to the material. Therefore, a liquor ratio of 1:5 must be used during the disinfection process.
- Additionally, it is essential to ensure that no objects enter the washing machine that could damage the respiratory masks.
- Masks, suits, or other accessories must never be punctured for labeling purposes.

  Please follow the manufacturer's instructions regarding the selection of products!

Chemical protective wear

Manufacturers recommend various procedures for the maintenance of chemical protective suits.

To prevent damage to these high-quality protective garments, we provide a customized wet cleaning process tailored to your specific needs.

However, for this, we require the care instructions from the respective manufacturer.

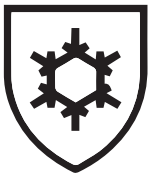
Illustrationen: Tobias Rózsa

Overview of symbols for personal protective clothing

High-visibility clothing
EN 471 (EN ISO 20471)

Welding protection clothing
EN 11611, EN 348, EN 470

Machine protection clothing
EN 510

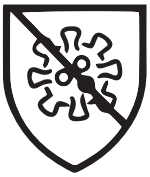


Cold protection clothing
EN 342, EN 343

Chemical protection clothing
EN 13034, EN 367–369

Arc flash protection clothing
IEC 61482-1-2

Waterproof protection clothing
EN 342, EN 343



Infection protection clothing
EN 14125, DIN 10524

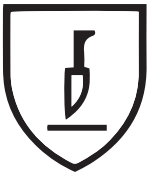
Antistatic protection clothing
EN 1149

Flame and heat protection clothing
EN 14116, EN 11611,
EN 11612

Radioactivity protection clothing
EN 1073-2

Cleanroom protection clothing
EN 14644-1, EG GMP, VDI 2003

Firefighter protective clothing
EN 469



Stab-resistant clothing
EN 471 (EN ISO 20471)

HACCP-certified
DIN 10524

The fresher company.

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Innovations since 1885

In constant development for our customers

Good to Know:

Detailed information on the properties and applications of our individual products is available in the form of technical data sheets and specialized brochures.Our application technicians and field service representatives are happy to provide consultation and support—both by phone and on-site.For complex cases, we offer expert advice and assistance through textile and laboratory testing.

IMPORTANT: USE BIOCIDES SAFELY—
ALWAYS READ THE LABEL
AND PRODUCT INFORMATION BEFORE USE!

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