

MARKUS

Protective suit for firefighting in open terrain

User information and care instructions

Diese Anleitung ist auch in anderen Sprachen erhältlich.

This manual is also available in other languages.

Cette notice est également disponible dans d'autres langues.

Queste istruzioni sono disponibili anche in altre lingue.

www.scr-roemer.de/waldbrandanzug-markus

SCR Römer GmbH

Ludwigshof 6 · 67346 Speyer · Deutschland

+49 6232 9903711 · info@scr-roemer.de · www.scr-roemer.de

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User information

Before we introduce you to the use and care of your new wildland firefighting clothing, we would like to congratulate you warmly on your decision in favour of protective clothing from SCR Römer.

We develop our protective clothing in close consultation with German fire services in order to ensure maximum practical suitability. We use exclusively high-quality materials from well-known manufacturers or from our own production. Our manufacturing operates under seamless and strict quality control. You have therefore chosen well thought-out, high-quality protective clothing that will carry you safely through your daily operations for a long time.

Please read this user information carefully before first use and keep it together with your protective clothing.

Standards and materials

The MARKUS protective suit consists of a jacket (article number MARKUS-Ja) and trousers (article number MARKUS-Ho). Only the combination of both garments forms complete protective clothing. Wherever the following text refers to MARKUS clothing or the MARKUS protective suit, the combination of jacket and trousers is always meant.

Unless explicitly stated otherwise, jacket always refers to the MARKUS jacket and trousers always to the MARKUS trousers. The clothing is available in yellow, navy blue, sand and red, and jacket and trousers may also be combined in different colours.

Padded braces (article number 893107) and removable knee pads for the trousers are available for the MARKUS protective suit. This accessory is not PPE within the meaning of the standard, it merely serves to increase wearing comfort and wellbeing.

This protective clothing is subject to PPE Regulation (EU) 2016/425, category III. Individual parts and finished products are therefore subject to permanent final inspection, including by external test houses. The notified body is AITEX Laboratories, Plaza Emilio Sala 1, E-03801 Alcoy (Alicante), Spain.

The MARKUS protective suit is certified in accordance with:

- DIN EN ISO 15384:2022-04, protective clothing for firefighters, protective clothing for wildland firefighting

- DIN EN ISO 11612:2015-11, clothing to protect against heat and flame, A1, A2, B1, C1
- DIN EN 1149-5:2018-11, protective clothing, electrostatic properties
- DIN EN ISO 13688:2013, protective clothing, general requirements

The MARKUS protective clothing is made from the following materials:

Outer fabric	AKATEK OptiSyn, 220 g/m ² , 33 % aramid (meta and para aramid), 32 % modacrylic, 23 % Tencel, 10 % polyamide, 2 % antistatic fibre. Ripstop construction 2/1-3/1, with FC finish
Reinforcements	Ceramic-coated composite material at elbows, knees and trouser hems
Reflective trim	3M™ Scotchlite™ reflective transfer film 5697, segmented

No modifications may be made to the protective clothing. Repairs may only be carried out by the manufacturer or by certified repair centres. Only spare parts and accessories from SCR Römer may be used.

Labelling and performance levels

Every garment is permanently labelled. The sewn-in label states the manufacturer, the product designation, the size designation based on body measurements, the underlying standards with pictogram and performance levels as well as the care symbols. In addition to this booklet, please always observe the sewn-in care label.

The labels of jacket and trousers state that both garments must be worn together. Only the combination forms complete protective clothing.

The codes A1, A2, B1 and C1 are the performance levels of DIN EN ISO 11612. The information on the label means the following in detail:

EN ISO 15384	Protective clothing for wildland firefighting
EN ISO 11612	Clothing to protect against heat and flame. The MARKUS protective suit achieves performance levels A1, A2, B1 and C1:
A1	Limited flame spread, surface ignition

A2	Limited flame spread, edge ignition
B1	Protection against convective heat, level 1 of 3
C1	Protection against radiant heat, level 1 of 4
EN 1149-5	Dissipation of electrostatic charge
EN ISO 13688	General requirements for protective clothing

The EU declaration of conformity and the EU type-examination certificate are available in the download area at www.scr-roemer.de/waldbrandanzug-markus.

Use and intended purpose

In combination with the matching MARKUS trousers, the MARKUS jacket protects the wearer in accordance with DIN EN ISO 15384:2022-04 and DIN EN ISO 11612:2015-11 A1-A2-B1-C1 against thermal influences during wildland and open-terrain firefighting, and against thermal and mechanical influences during technical rescue operations.

The protective jacket must always be worn with the matching trousers and must be supplemented with further suitable PPE for head, hands and feet that complies with the relevant standards.

During operations the front zip must be closed and covered by the front flap. The collar and the trouser fastening must also be fully closed. All pockets are to be closed so that no embers can enter. We recommend connecting jacket and trousers using the connecting zip.

Visibility and exemption from the high-visibility vest

Your protective clothing is equipped with high-quality segmented reflective trim with a retroreflective and a fluorescent component. The area and arrangement of the reflective material comply with the requirements of DIN EN ISO 15384:2022-04. The minimum areas required there correspond to those of EN 469 Annex B, and the arrangement follows the contour of the body.

The combination of jacket and trousers therefore meets the requirements that the German statutory accident insurance (DGUV) places on a suitable warning measure within the meaning of the accident prevention regulation for fire

services (DGUV Vorschrift 49). In Germany an additional high-visibility vest is therefore not required.

The clothing is not certified as high-visibility warning clothing according to EN ISO 20471. The respective applicable national regulations always take precedence. A separately available identification tabard in high-visibility design is also offered.

Electrostatic properties

When the yarn for the protective clothing is spun, fibres with electrostatic dissipation properties are added (antistatic fibre, 2 % share in the outer fabric). This prevents electrostatic charging of the fabric. The outer fabric of the protective clothing was therefore tested according to method 2 (induction charging) in accordance with EN 1149-3.

Protection against static electricity in accordance with DIN EN 1149-5:2018-11 is given if the following safety instructions are observed:

- Proper earthing of the wearer of the protective clothing is mandatory. This can be achieved by suitable footwear, for example. In every case the electrical resistance between the wearer of the protective clothing and earth must be less than 10^8 ohms.
- The protective clothing must NOT be opened, taken off or set aside in a hazardous area, in particular in a flammable or explosive atmosphere, or when handling flammable and explosive substances.
- The protective clothing must NOT be worn in an oxygen-enriched atmosphere without the prior consent of the responsible safety officer.
- Wear, tear, damage, soiling and further factors can adversely affect the electrostatic dissipative performance of the protective clothing.
- During use, the electrostatic dissipative protective clothing must completely cover all materials that do not meet these requirements. This applies in particular, but not exclusively, when bending or kneeling and when working overhead.

Fit

For optimum protection and unrestricted wearing comfort, the protective clothing must be worn in the correct size. SCR Römer and qualified sales partners will be glad to support you in selecting the right size. Jacket and trousers may be worn in different sizes as long as sufficient overlap is ensured.

Inspection before every use

Before every operation the wearer checks the protective clothing for completeness and externally visible damage. Pay particular attention to tears, holes, cuts, open seams, damaged or detached reflective stripes and to the function of all zips and hook-and-loop fasteners.

Clothing that is wetted with fuel, oil, solvents or other flammable liquids must not be worn. It must be taken off and cleaned immediately.

Jacket and trousers are always worn together. We recommend connecting both parts using the connecting zip and closing all fastenings completely.

Limits of the protective clothing

The protective clothing may only be used within the intended limits of use. The MARKUS protective suit is not firefighting clothing according to EN 469 and must therefore not be used for interior attack or for firefighting inside buildings.

The protective effect of the clothing has certain limits. Other protective clothing, such as cut protection trousers, structural firefighting clothing, a heat protection suit or a chemical protective suit, may be required.

Ergonomics and tolerability

Like all protective clothing, the MARKUS protective suit restricts the release of body heat. During heavy physical exertion and at the high ambient temperatures typical of vegetation fires there is a risk of heat stress. Make sure you drink enough, take regular breaks and are relieved in good time.

To the best of our knowledge the materials used do not contain any substances that cause allergic reactions or that are carcinogenic, toxic for reproduction or mutagenic. Should skin irritation nevertheless occur, take the garment off and seek medical advice.

Damage and repairs

The garments must be inspected visually at regular intervals by a competent person and by the user. This applies in particular after severe thermal, mechanical or chemical stress.

If there is any doubt about the perfect condition of the garment, it must no longer be used. It must then be sent to the authorised repair service of SCR

Römer for inspection. The garment is inspected there and repaired on request. Severe damage can in some cases only be repaired at the factory or may constitute a total economic loss.

SCR Römer accepts no liability for improperly repaired protective clothing or for the consequences of using protective clothing that has not been repaired correctly.

Regular inspection in accordance with DGUV

Under section 11 of the German accident prevention regulation for fire services (DGUV Vorschrift 49), the protective clothing must be visually inspected for completeness and externally visible damage after every use.

In addition, the protective clothing must be inspected at least once a year by a competent person. DGUV Grundsatz 305-002 provides guidance. The results of the inspection should be documented.

Our free webinar on DGUV-compliant inspection of protective clothing shows step by step how such an inspection is carried out. You will find the dates at the end of this booklet.

Care instructions

During operations the protective clothing can become contaminated with various substances that are hazardous to health. Correct care is essential in order to remove these as quickly as possible and to restore a hygienic condition. To ensure thorough cleaning and to avoid shortening the service life of the protective clothing, please observe the following instructions and the sewn-in care label.

Care interval

The protective clothing should be cleaned at least twice a year and immediately after every operation involving contamination by fire gases, body fluids (in particular blood), oils and greases, chemicals or other substances hazardous to health.

SCR Römer guarantees a standard-compliant condition of the protective clothing after 25 wash cycles. The outer fabric is additionally tested for wildland firefighting after 50 wash cycles. For protective clothing, 50 wash cycles is already a very ambitious figure. A significantly higher number of wash cycles is not realistic in practice.

Contamination and operational hygiene

After operations involving fire smoke the protective clothing is loaded with hazardous substances. Transport and store contaminated clothing in closed containers or laundry bags and not in the crew cab. Observe the rules of operational hygiene and the clean/dirty separation of your fire service.

Clothing contaminated with body fluids, chemicals or other hazardous substances must not be washed using the standard process. It must be stored separately and decontaminated professionally. When in doubt, please contact us.

Contaminated protective clothing must not be washed in private domestic washing machines. There is a risk of carrying hazardous substances into the private environment.

In the event of severe contamination, for example with asbestos or corrosive chemicals, the protective clothing must be withdrawn from service and disposed of professionally.

Preparation

Before a garment is placed in the wash, please observe the following points:

- Empty all pockets and remove all carabiners from the pockets.
- If fitted: remove the knee pads. Take the opportunity to check them for wear and damage and obtain replacements if necessary.
- Remove braces if fitted and wash them separately in a laundry bag only if required.
- Remove name and back badges and wash them separately in a laundry bag if required.
- Close all zips and pockets and cover exposed hook parts of hook-and-loop fasteners.
- Do not pierce the garments with sharp objects such as safety pins and do not scrub them with brushes.
- Leave the garments the right way out, that is with the outer fabric and reflective trim facing outwards. Most of the dirt is located there, so the cleaning effect is greatest exactly where it is needed.

Machine washing

The protective clothing is to be washed in industrial washer extractors with a maximum load of 30 kg. We expressly advise against washing in domestic washing machines. Neither cross-contamination with other laundry nor correct disposal of the wash water can be reliably controlled there, and the necessary programmes and rinse cycles are missing.

The following points must be observed when machine washing:

- Set a temperature between 40 °C and 60 °C. A higher temperature may produce a better cleaning result, a lower temperature may extend the service life of the garment and of the finish.
- Use a commercially available mild detergent. Liquid detergents are preferable. Do not use heavy-duty detergent and do not use fabric softener.
- Select a wash programme with pre-wash and two, better three, rinse cycles. Spinning should be carried out intermittently.
- Always wash the protective clothing separately from private or non-flame-retardant laundry. Lint from cotton or polyester can deposit in the fabric and impair the flame protection.

- Dose the detergent according to the water hardness and use softened water where possible. Lime soaps deposit in the fabric and impair both the flame protection and the finish.
- Do not use chlorine-based bleaching agents, optical brighteners or laundry starch.
- Rinse thoroughly. Detergent residues in the fabric can impair the flame protection. The final rinse liquor should be as pH-neutral as possible.
- Load the machine to only about 50 to 70 % of its rated capacity and select a programme with a high water level. An overloaded machine washes less effectively and stresses the material more.
- The pH value of the wash liquor should be between 7 and 9. Strong acids, strong alkalis and oxidising agents impair the mechanical properties of the protective clothing.

Detergents and disinfection

SCR Römer recommends the washing and care products of the Kreussler company:

- Detergent: Derval RENT
- FC finish for water repellency: Hydrob FC
- Disinfection: OTTALIN Peracet

All common, suitable commercially available detergents may however expressly also be used. If you are unsure, we will be very glad to help you make a selection. Simply get in touch with us.

Drying

Drying can be carried out in the air or in a dryer. A sufficient temperature is important so that the FC finish is thermally reactivated.

- Dry with sufficient temperature in order to thermally reactivate the FC finish.
- First raise the temperature to 70 to 75 °C, then allow it to fall to 60 to 70 °C.
- When drying in a tumble dryer, select a slow drum speed.
- Dry seams and a warm feel indicate that the garment is dry. A residual moisture of about 5 to 10 % is ideal. Do not overdry.
- When air drying, dry in a well-ventilated place and not in direct sunlight, ideally hanging. Do not dry on radiators, stove pipes or near open flames. In this case the finish must be activated by ironing.

Ironing and visual inspection

After a regular wash the clothing can optionally be ironed. After reproofing the clothing should be ironed so that the finish reaches its full performance. The clothing can be ironed at medium temperature, max. 120 °C, and without steam. Do not iron over the reflective material.

The garment should be inspected visually after every wash. Please also check the reflective trim for detachment, cracks and damage and check the beading effect of the outer fabric.

Dry cleaning

Dry cleaning is possible. However, the finish is attacked more severely than during a regular machine wash, so the finish must be checked after every dry cleaning and renewed if necessary.

Care must also be taken because residues of solvents can remain in the protective clothing and impair the flame protection. These must be removed completely by additional rinsing in water.

Reproofing

If the outer fabric no longer shows a beading effect, the FC finish must be renewed. Fluorocarbon reproofing restores the water and dirt repellency. We recommend Hydrob FC from the Kreussler company for this purpose.

The finish must then be thermally activated, either in the dryer or by ironing. Reproofing should only be carried out when it is genuinely necessary.

Storage

The protective clothing should be stored in a dry and well-ventilated place. The protective clothing must not be permanently exposed to direct sunlight. In the case of open storage, for example in the appliance bay, the hall windows should be fitted with UV protection film. Storage is ideally on hangers. Never store protective clothing damp or wet, as mould will otherwise form. Use drying rooms or drying cabinets.

We advise against storing the trousers as a so-called boot package. Moisture may accumulate in the compressed trousers, so that they are no longer hygienically sound.

Service life and disposal

The service life of the protective clothing depends on numerous factors.

Signs of ageing and declining protective performance include severe fading or discoloration of the outer fabric, embrittled or brittle material, large abraded areas, open seams, dull, cracked or detached reflective stripes, defective fastenings and permanently ineradicable soiling.

The following factors have a positive influence on service life:

- Correct care in accordance with the care instructions
- Professional repairs
- Correct storage

The following factors have a negative influence on service life:

- High operational frequency
- Exposure of the protective clothing to extreme heat
- Exposure of the protective clothing to chemicals and other hazardous substances
- Storage of the protective clothing in sunlight
- Improper washing, drying or care
- Neglect of regular inspections, repairs that are not carried out professionally

Depending on the factors listed above, the protective clothing reaches a certain service life. After this service life, in the case of a poor general condition or if the cost of a repair exceeds 50 % of the cost of replacement, we recommend replacing the garment. It must then be disposed of professionally.

Contaminated protective clothing may have to be disposed of as hazardous waste or professionally by a specialist disposal company.

Care at a glance

Washing	40 to 60 °C, mild detergent, no fabric softener, no heavy-duty detergent
Wash separately	Never together with non-flame-retardant laundry
Bleaching	Do not bleach, no optical brighteners, no laundry starch
Drying	Suitable for tumble drying. 70 to 75 °C to reactivate the finish, then 60 to 70 °C. Slow drum speed
Ironing	Max. 120 °C, without steam, not over the reflective material
Dry cleaning	Possible. Check the finish afterwards and renew if necessary
Reproofing	When the beading effect declines, use Hydrob FC and activate thermally afterwards

Free webinars

SCR Römer regularly offers free webinars on the care and inspection of protective clothing. Each webinar is normally held twice a year and is open to all interested parties, expressly including participants who use other brands. Every participant receives a certificate afterwards. The webinars are held in German.

Correct washing, drying and care of firefighter protective clothing

In around two hours (90 minutes of presentation and 30 minutes of questions and answers) we cover the fundamentals of textile laundering and the sequence of an ideal wash programme for firefighter PPE, including recommended detergents and temperatures. Reproofing and correct drying are also examined in detail.

Regular inspection of protective clothing in accordance with DGUV

How often must protective clothing be inspected, who is allowed to carry this out and how does an inspection work step by step? Using our TIM, STEFAN and MARKUS models we show in practical terms what matters during the regular visual and functional inspection.

All dates and registration in our webinar calendar:

webinare.scr-roemer.de
