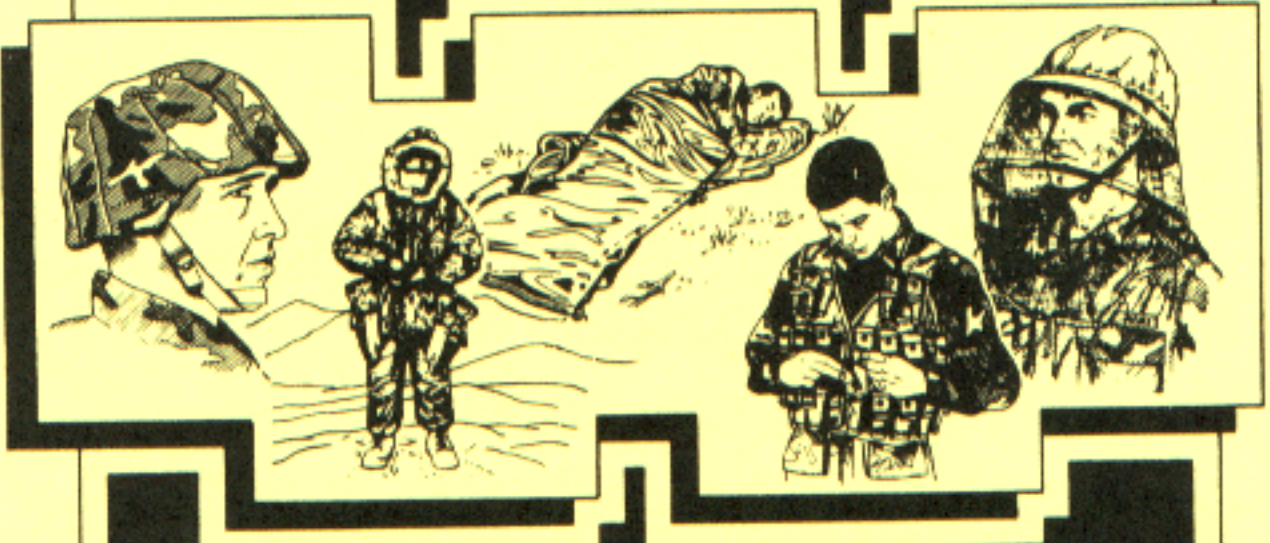


FM 21-15

CARE AND USE OF INDIVIDUAL CLOTHING AND EQUIPMENT



HEADQUARTERS
DEPARTMENT OF THE ARMY

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CARE AND USE OF INDIVIDUAL CLOTHING AND EQUIPMENT

Table of Contents

	Page
PREFACE	iii
Chapter 1	GENERAL CARE AND MAINTENANCE
Clothing	1-1
Boots, Shoes, and Insoles	1-5
Canvas and Web Equipment	1-6
Netting	1-6
Fasteners	1-7
Coated Items	1-7
Chapter 2	PROTECTIVE CLOTHING AND EQUIPMENT
Reasons for Wearing Protective Clothing	2-1
Cold Weather Clothing	2-1
Temperate Uniform	2-3
Desert Ensemble	2-4
Wet Weather Ensemble	2-4
Chemical Protective Ensemble	2-4
Protective Masks	2-6
Armor Vest	2-8
Helmet, Ground Troop's, Steel, Type 1	2-10
Helmet, Personnel Armor System for Ground Troops ...	2-13

*This manual supersedes FM 21-15, 15 February 1977.

	Page
Chapter 3	BIVOUAC EQUIPMENT
	Poncho 3-1
	Poncho Liner 3-3
	Shelter Half 3-4
	Intermediate Cold Weather Sleeping Bag 3-7
	Extreme Cold Weather Sleeping Bag 3-9
	Insulated Pneumatic Mattress 3-9
	Foam Sleeping Mat 3-10
	Sleeping Hood 3-10
	Blanket 3-11
Chapter 4	LOAD-CARRYING EQUIPMENT
	Fighting and Existence Load Concept 4-1
	Fighting Load 4-1
	Procedures for Assembling Fighting Load
	Components 4-3
	Existence Load 4-7
	Procedures for Assembling Existence Load
	Components 4-8
	Combat Field Pack Closures 4-14
	Quick-Release Device 4-15
	Universal Load-Carrying Sling 4-15
	Packboard 4-17
	Grenade-Carrier Vest 4-22
	Bags 4-22
Chapter 5	MISCELLANEOUS CLOTHING AND EQUIPMENT
	Mosquito Hat and Net 5-1
	Knitted Wool Scarf 5-1
	Identification Tags and Necklace 5-2
	First Aid Packet 5-2
	Compass 5-2
	Waterproof Matchbox 5-2
	Intrenching Tool 5-2
	Canvas Cot and Insect Bar Frame 5-3
	Insect Bar 5-4
	Multipurpose Net 5-5
	One-Quart Canteen and Cup 5-5
	Two-Quart Canteen and Cover 5-5
	Mess Gear 5-6
GLOSSARY	Glossary-1
RELATED REFERENCES	References-1

Preface

PURPOSE AND SCOPE

This manual is a guide for all Army personnel who use, care for, or maintain clothing and equipment issued or sold for personal use. It includes general instructions for cleaning, pressing, repairing, and storing items of the uniform. Uses of bivouac equipment, such as the shelter half, sleeping bag, and poncho, are discussed. Methods of assembling, packing, and using load-carrying equipment are also discussed. The use and care of various items of field equipment issued for special purposes or missions are also covered in this manual. General information, with references for specific information, is included on clothing for use in arctic, tropical, and other special environments.

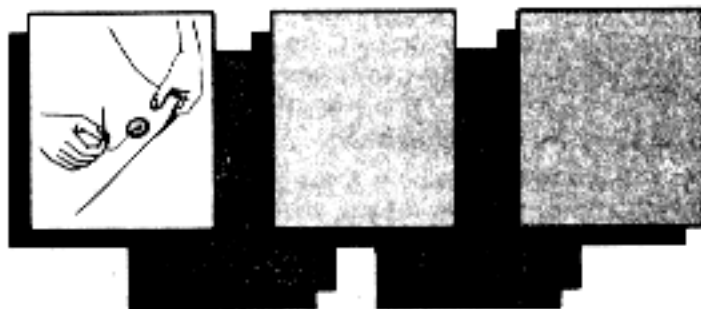
USER INFORMATION

The information, procedures, and equipment described in this manual are current at the time of preparation. Changes in equipment will require changes or revisions of the material presented. Field experience may also suggest changes. The proponent of this publication is the US Army Quartermaster School. You are encouraged to submit recommended changes and comments to improve this manual. Make sure you key your comments to the exact page, paragraph, and line of the text in which the change is recommended. Provide reasons for each comment to ensure understanding and complete evaluation. Write your comments on a DA Form 2028 (Recommended Changes to Publications and Blank Forms) or in a letter, and send them to—

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CHAPTER 1

General Care and Maintenance



CLOTHING

You are responsible for keeping your clothing and equipment in good, useful condition. Your uniform will not look its best and your equipment will not work properly unless they are clean, in good repair, and stored properly. Proper care of your uniform while you are wearing it is important. For example, carry only articles of a suitable size, shape, and weight in your pockets. If you carry something too large or too heavy, you will destroy the tailored shape of your clothing. Cleaning, pressing, repairing, and storing properly are most important for keeping your uniform serviceable and looking its best for as long as possible. You should follow closely the cleaning and care instructions that are attached to most clothing.

Cleaning. Clean clothing regularly when it is in use. Dirty clothing wears out quickly because dirt cuts textile fibers and retains moisture from rain, snow, and perspiration.

Cotton clothing. Wash cotton clothing,

such as shirts, trousers, and socks, with soap or detergent and hot water, and rinse well. Air- or machine-dry the clothing.

Wool clothing. Wash wool clothing, such as socks and glove inserts, in mild soap or detergent and lukewarm or cool water. Stretch the items into shape while they are air-dried. Do not use hot or boiling water.

Tailored wool clothing. Wool jackets and trousers and other tailored items must be dry-cleaned. Do not wash tailored wool clothing as it will cause the clothing to lose its shape.

Coated fabric items. Special care is necessary for items which have a coating to protect against chemicals, radiation, moisture, and other elements. Hand-wash the coated item, such as a poncho, in warm water and mild soap or detergent using a soft bristle brush. Then rinse it thoroughly, and hang it until completely dry. Do not machine-wash, machine-dry, dry-clean, hot-press, or hot-iron

coated fabric items. Do not use cleaning fluid or bleach on coated items.

Synthetic fabrics. Items made of synthetic fabrics should be washed in lukewarm water with mild soap or detergent. Do not use hot water or harsh soaps on synthetic fabrics.

Water-repellent garments. Wash water-repellent outer garments, such as raincoats, by hand or machine. Do not use starch. Rinse them thoroughly. Restore water repellency by treating items with the standard water-repellent compound.

Removing Stains. Remove stains or soil as soon as possible. The longer the stains remain, the harder they are to remove. When removing stains, start at the center of the stain, and work toward the edges. Table 1-1 provides procedures for removing several kinds of stains from clothing.

Pressing. Press clothing after it has been cleaned and all stains have been removed. **DO NOT PRESS DIRTY CLOTHING.** When you press clothing, make sure the temperature setting is adjusted for the type of clothing being pressed.

Cotton clothing. Dampen the surface of the clothing and apply the iron directly to it.

Wool clothing. Use a damp cloth between the iron and the clothing.

Synthetic clothing. Iron clothing with the temperature setting adjusted to the low position on the synthetic scale.

Repairing. Repair rips, tears, and frayed edges as soon as possible before they get worse. Replace buttons as soon as possible to avoid losing them and so your clothes will fit properly.

Repairing rips, tears, and frayed edges. When you repair a ripped seam (figure 1-1), turn the garment inside out. Then place the two edges together and sew. When you repair a tear (figure 1-2), turn the garment

Table 1-1. Procedures for stain removal.

TYPE OF STAIN	PROCEDURE FOR COTTON FABRIC	PROCEDURE FOR WOOL FABRIC	PROCEDURE FOR SYNTHETIC FABRIC
BLOOD	Flush and rub stained area with cold water; then wash stain with soap or detergent solution.	Dampen stained area with water. Apply soap or synthetic detergent solution (with ammonia, if available), tamp with brush, and flush with water.	Flush stained area with lukewarm or cold water, then, using warm water, wash stain with a soap or detergent solution. If stain remains, sponge with hydrogen peroxide.
BLOOD (DRIED)	Scrape off top of stain. Dampen stained area with cold water, apply soap or detergent solution (with ammonia, if available), tamp with brush, and flush with water.	Scrape off top of stain. Dampen stained area with cold water, apply soap or detergent solution (with ammonia, if available), tamp with brush, and flush with water.	Scrape off top of stain. Flush stained area with lukewarm or cold water; then, using warm water, wash stain with a soap or detergent solution. If stain remains, sponge with hydrogen peroxide. (Do not use hydrogen peroxide or bleach on colored material.)

FOOD	Dampen stained area with water. Apply soap or detergent solution D (with ammonia, if available), tamp with brush, and flush with water.	Dampen stained area with water. Apply soap or detergent solution D (with ammonia, if available), tamp with brush, and flush with water.	Sponge with cold or lukewarm water. If grease spot remains, launder washable materials in a soap or detergent solution, using warm water. Do not rub material.
FRUIT OR FRUIT JUICE	Use hot water and wash stain while still moist.	Flush stained area with lukewarm water. Apply soap or detergent solution, tamp with brush, and flush out with water. (If available, apply lemon juice or vinegar, and flush thoroughly with water.)	Sponge with cold or lukewarm water. If grease spot remains, launder washable materials in a soap or detergent solution, using warm water. Do not rub material.
GRAVY	Rub stain with cold water; then place a pad or cloth underneath fabric to absorb stain, and rub stain with cleaning fluid. If any stain remains, dry the fabric and rub with a soap or detergent solution. Do not rub excessively, as this may damage the finish of the garment.	Rub stain with cold water; then place a pad or cloth underneath fabric to absorb stain, and rub stain with cleaning fluid. If any stain remains, dry the fabric and rub with a soap or detergent solution. Do not rub excessively, as this may damage the finish of the garment.	Sponge with cold or lukewarm water. If grease spot remains, launder washable materials in a soap or detergent solution, using warm water. Do not rub material.
GREASE OR OIL	Scrape off top of stain; then saturate stained area with cleaning fluid, tamp with brush, and flush with cleaning fluid.	Scrape off top of stain; then saturate stained area with cleaning fluid, tamp with brush, and flush with cleaning fluid.	Scrape off top of stain. Launder washable materials in a soap or detergent solution, using warm water. Do not rub material.
MILK	Dampen stained area with water. Apply soap or detergent solution D (with ammonia, if available), tamp with brush, and flush with water.	Dampen stained area with water. Apply soap or detergent solution D (with ammonia, if available), tamp with brush, and flush with water.	Sponge with cold or lukewarm water. If grease spot remains, launder washable materials in a soap or detergent solution, using warm water. Do not rub material.

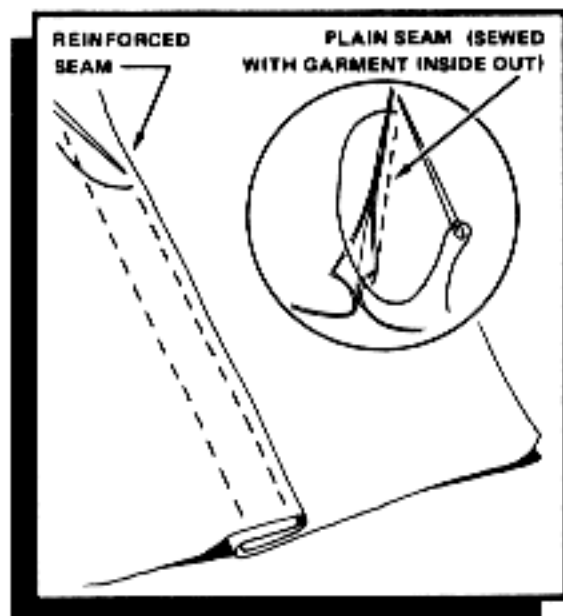


Figure 1-1. Repairing a rip.

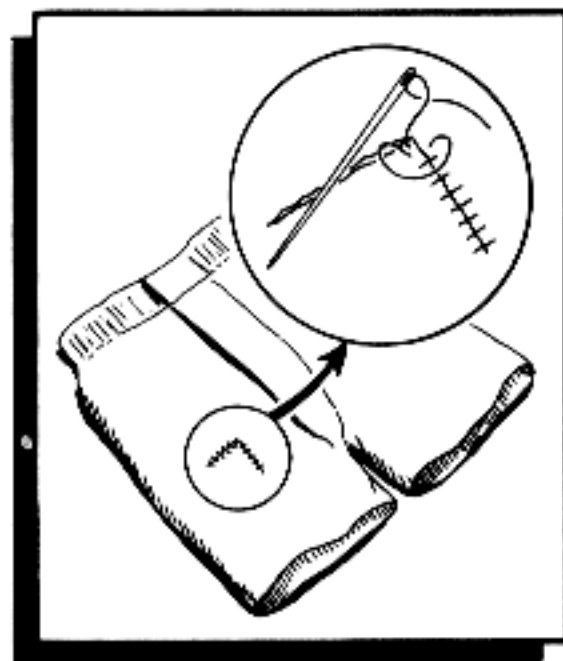


Figure 1-2. Repairing a tear.

inside out, place the two edges together, and sew. When you repair a frayed edge (figure 1-3), turn the edge under and sew.

Replacing buttons. Before replacing a button, select thread that closely matches the color of the material. If this is not possible, use the thread you have. Figure 1-4 shows how to replace a button.

Storing. Before storing clothing, make sure it is clean and dry. Brush thoroughly, and sun and air-dry all wool and cotton clothing before storing it. This way it will not mildew in humid weather. Use naphthalene or mothballs to protect wool clothing in storage. The clothing and naphthalene or mothballs must be in a closed container to be effective. Before folding coated clothing, make sure it is cool and dry. If possible, fold the clothing so a coated side is against an uncoated side. This will help avoid sticking. Also, make sure it does not come in contact with sharp objects

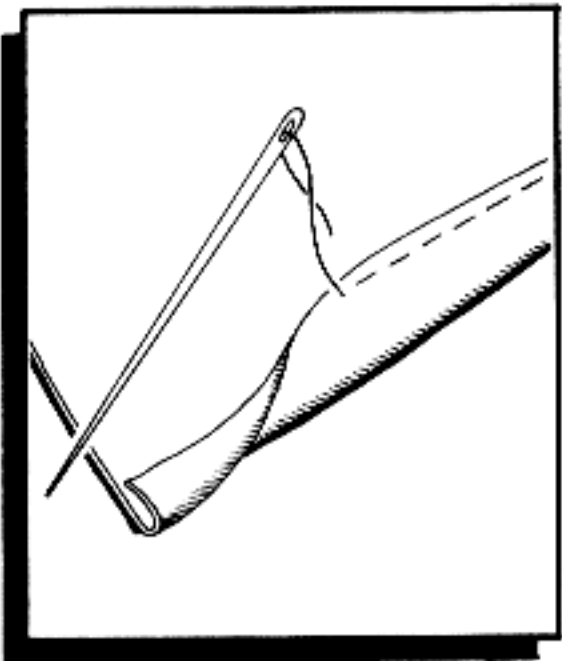


Figure 1-3. Repairing a frayed edge.

Thread a needle, and tie the two ends of thread together.

Insert the needle through the cloth from the inside. Make two or three stitches through the cloth to anchor the end of the thread.

From the outside of the cloth, put the needle through one of the holes in the button. Let the button slide down the thread into position.

To prevent strain on the cloth, hold the button slightly away from the cloth. Stitch through the cloth and holes on one side of the button. Then stitch through the holes on the other side.

When you have made enough stitches to secure the button, bring the needle and thread to the outside of the cloth under the button. Wrap the thread five or six times around the stitches, between the button and the cloth. Stitch through the wrapped thread three or four times, and push the needle through the cloth to the inside. Lock the stitches with a knot.

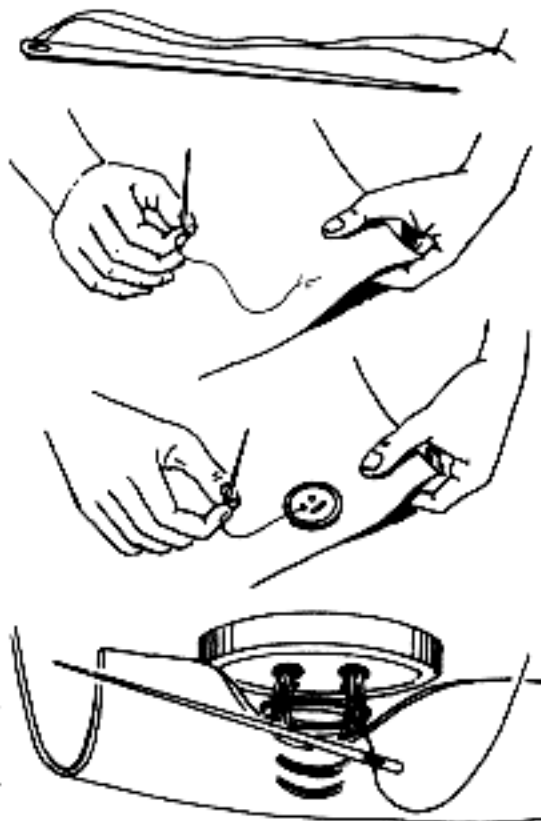


Figure 1-4. Replacing a button.

that may cause rips or tears. When possible, dust coated clothing with talcum before storing.

BOOTS, SHOES, AND INSOLES

Do not wear the same pair of boots or shoes every day. Give the footwear a chance to air between wearings. Wear the ventilating insoles so that air can circulate under your feet.

Breaking In. There are three methods which will help to break in your boots. Each of the processes will leave the boots soft, pliable, and comfortable on the foot. Choose the method which is easiest for you to do.

- The first method is to immerse the boots in warm water, preferably while you are wearing them, for no more than 30 minutes. While the boots are in the water, manipulate the leather often. Remember when wet boots are drying, the toes should

be stuffed with paper. Allow the boots to dry with no added heat.

- The second method is to apply alcohol to the leather. Hand manipulate the leather to soften it. Stuff the toe with paper, and let the boot dry.
- The third method is to rub the boot with saddle soap. Apply it generously and frequently. Follow the application with a brisk brushing. The more often the soap is used, the softer and more pliable the leather becomes.

Cleaning and Drying. Scrape dirt or mud from boots or shoes with a flat stick, brush, or dull instrument which will not cut leather or rubber. Wash the boots or shoes with mild soap and very little water. Remove all soapsuds, and wipe the insides of the footwear with a clean cloth. Stuff paper in the toes of wet footwear to keep the leather from shrinking. Dry the boots or shoes slowly in a warm, dry place. **DO NOT DRY FOOTWEAR BY EXPOSING IT TO HOT SUN, FIRE, OR OTHER STRONG HEAT.** This may damage the rubber or leather. Rub saddle soap into the boots or shoes before they are completely dry to help soften the leather. Wash the ventilating insoles with a warm solution of mild soap or detergent, and let them air-dry. **DO NOT BOIL THE INSOLES.**

Polishing. Use only stains and polishes that match the color of the boots or shoes.

Waxing. Apply silicone sealants, boot and shoe oils, greases, and waxes if necessary. Be sure leather is completely dry before applying these treatments.

Repairing. The direct molded sole is nonrepairable, except for the heel. You should have the heels replaced after wear of seven sixteenths of an inch or more.

CANVAS AND WEB EQUIPMENT

As with your clothing, you are responsible for keeping your canvas and web equipment clean and in good repair.

Cleaning. Dip canvas and web equipment vigorously in a pail of warm water containing soap or detergent. This makes it last longer and stops it from losing color. If dirty spots remain, scrub the spots with a white or colorfast cloth, using warm, soapy water or detergent solution. Do not use chlorine bleach, yellow soap, or cleaning fluids which will discolor the equipment. Dry the equipment in the shade or indoors. Direct sunlight causes it to lose color. Do not attempt to dye web equipment. Never machine-wash or machine-dry canvas or webbing.

NOTE: Certain items, such as the carrier for the field protective mask and the small arms ammunition case, may be provided with fiberboard or plastic stiffeners. If so, clean these cases with a damp, soft brush and cool water only.

Repairing. Repair small rips and tears in canvas equipment as soon as you find them. Use the methods described earlier in this chapter. Replace damaged or missing keepers on the suspenders, small arms ammunition cases, first aid dressing cases, intrenching tool carrier, and canteen cover.

NETTING

Wash netting with a solution of warm water and mild soap or detergent. Repair small tears and holes by placing pieces of adhesive tape or waterproof tape over both sides of each hole while the netting is lying flat. **DO NOT DRAW AND TIE THE EDGES OF THE HOLE TOGETHER, EXCEPT IN AN EMERGENCY.**

FASTENERS

Besides buttons, the Army uses four other main types of fasteners: snap fasteners, slide fasteners (zippers), hook-and-pile fasteners, and buckles. If you use these fasteners correctly, your uniforms and equipment will fit properly and last longer.

Snap Fasteners. Be careful when you open snap fasteners. Place your thumb and forefinger close to the fastener, between the two layers of cloth. Pry the two parts of the fastener apart with your fingers. **DO NOT TUG AT THE CLOTH.**

Slide Fasteners (Zippers). Always use zippers carefully. When a zipper gets stuck, do not yank it or tug at it. Check to see if fabric is caught in the track. If it is, unzip the zipper about an inch, smooth out the fabric, and try again. When the zipper works stiffly, rub a thin coating of wax or lead-pencil graphite on each side of the track. After applying the wax or graphite, work the zipper back and forth a few times. The wax or graphite will lubricate the zipper and allow it to open and close more easily. Close the zipper before washing the garment.

Hook-and-Pile Fasteners. These fasteners are used on equipment and clothing. Each is made up of two sections of tape. One section contains many small nylon hooks; the other section is a woven pile with

many small nylon loops. When the two sections are pressed together, the hooks catch the loops on the pile, resulting in a tight closure. Open the fastener by firmly pulling one tape section from the other.

Buckles. Buckles are used to connect the ends of belts and adjustment straps. The Army uses three main types of buckles: a D-ring with a tongue, a slide buckle, and a hook-type fastener. To maintain these buckles—

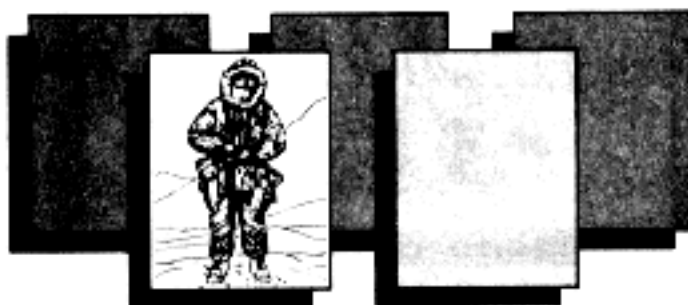
- Make sure buckles are not bent. If they are, gently try to straighten them.
- Watch for rough spots on your buckles. They can snag and tear your clothing.

COATED ITEMS

DO NOT MACHINE-WASH, MACHINE-DRY, DRY-CLEAN, HOT-PRESS, OR HOT-IRON COATED ITEMS. Wipe dirty coated items with a clean cloth. Wash them by hand using a soft brush, warm water, and mild soap or synthetic detergent. After rinsing the items, air-dry them. **DO NOT USE DIRECT HEAT TO DRY COATED MATERIALS AS IT WILL CAUSE THEM TO DRY OUT AND CRACK.** Make sure that such things as oil, grease, acid, or insect repellent are washed off as soon as possible.

CHAPTER 2

Protective Clothing and Equipment



REASONS FOR WEARING PROTECTIVE CLOTHING

You wear protective clothing to cover and protect your body. The most important reason you wear clothing is to keep your body comfortable so that it can function normally. In hot weather, the best way to keep cool is to put on lightweight, light-colored, and loose-fitting clothing. This clothing will help keep the heat and sunlight away from your body. In cooler climates, the best way to stay warm is to dress in layers. If you get too warm, you can take off a layer of clothing, or you can ventilate the clothing by adjusting openings in the garments. The protective clothing and body armor furnished to you, when required in your duty assignment, will help protect you against both natural and man-made hazards. You will have the best clothing which can be produced to maintain your personal safety, efficiency, and health.

COLD WEATHER CLOTHING

Cold weather clothing is designed with removable insulation, several layers of material, and devices for ventilation. Insulation slows the flow of heat from the body to the outside. Layered material traps warm air between layers of clothing. And, ventilation allows the outside air to cool the overheated areas through openings in the clothes, such as cuffs, flaps, and front closures.

Cold-Wet Ensemble. Cold-wet conditions occur when temperatures are near freezing and when changes in day and night temperatures cause alternate freezing and thawing. The freezing and thawing are often accompanied by rain and wet snow, causing the ground to become muddy and slushy. The cold-wet ensemble (figure 2-1) protects you against the hazards of a cold-wet environment. The main components of this ensemble



Figure 2-1. Cold-wet ensemble.

are full-length underwear, wool socks, wool shirt and trousers, wind-resistant coat and trousers, coat liner, insulated cap, mittens, and black rubber insulated boots. It is important that this clothing be ventilated when necessary to keep the body from perspiring. If the clothing becomes wet, it will not protect the body as well. To care for each item, read the label on the item to find out what kind of material it is. Then, refer to chapter 1 for care of this material.

Cold-Dry Ensemble. Cold-dry conditions occur when average temperatures are lower than 14°F. The ground is usually frozen, and snow is often in the form of dry, fine crystals. The cold-dry ensemble (figure 2-2) protects you against the lower temperatures, high winds, and snow of a cold-dry environment. In addition to the components of the cold-wet ensemble (with the exception of the wool trousers), the components of this ensemble are trouser liners, parka and parka liner,



Figure 2-2. Cold-dry ensemble.

winter hood, and white rubber insulated boots. To care for each item, read the label on the item to find out what kind of material it is. Then, refer to chapter 1 for care of this material.

Cold Weather Boots. There are two basic types of boots for use in cold weather. The black rubber insulated boots (figure 2-3) are part of the cold-wet ensemble. The white rubber insulated boots (figure 2-4) are part of the cold-dry ensemble. The white boots have additional insulation to provide greater protection. Although insulation provides protection, feet will get very cold if allowed to rest for long periods of time.

Cleaning. The boots may be cleaned by washing the outside with mild soap and rinsing with water. **DO NOT APPLY OIL-BASED PAINT OR SOLVENT-BASED POLISH TO ANY PART OF THE BOOT. PAINT OR POLISH WILL CAUSE THE RUBBER TO DETERIORATE.**



Figure 2-3. Black rubber insulated boot.

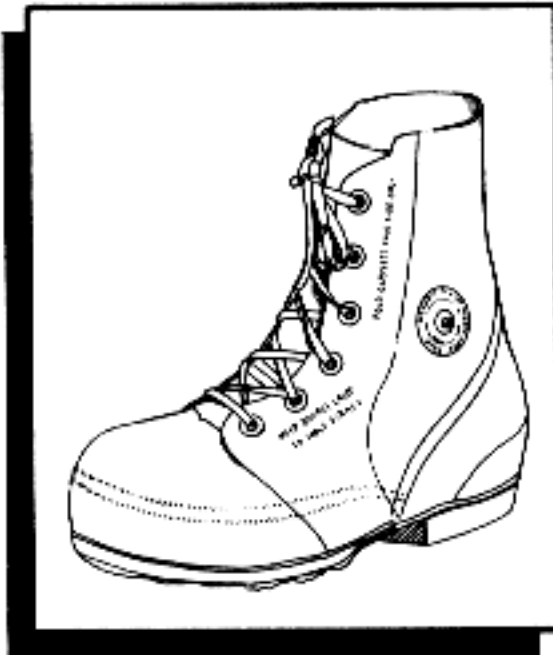


Figure 2-4. White rubber insulated boot.

Repairing. Punctures, tears, cuts, or holes must be repaired promptly (within 1 hour, if possible) in order to prevent severe damage to the insulation. To make an emergency repair of black or white boots, use the maintenance kit, gray, rubber patch (NSN 8465-00-753-6335), and proceed as follows:

- Clean the area to be patched.
- Buff the area thoroughly with abrasive.
- Tear off the end of the tube of cement, and apply a coat of cement to the area to be patched. Allow the cement to dry 3 to 5 minutes.
- Twist and tear off the backing from the patch (do not touch the fresh surface).
- Press the patch firmly in place.

If a repair kit is not available, make a temporary repair by patching the hole with a cold tire patch or with tape, such as rubber

tape, friction tape, or scotch tape. Even chewing gum may serve as a temporary patch. The important thing is to seal the hole as quickly as possible so that the insulation will not get wet.

TEMPERATE UNIFORM

The temperate uniform (figure 2-5) is designed for use in combat, field, and garrison environments where the average temperature does not fall below 40°F. This uniform consists of coat, trousers, field cap, and boots. The bush-type coat has breast and lower pockets. The trousers have four standard-type pockets and a cargo pocket on each leg. The uniform is loose-fitting, allowing body ventilation. Reinforcement patches are at the elbows, knees, and seat. The fabric is a four-color, disruptive camouflage pattern known as the "woodland" pattern. To care for each item, read the label on the item to find out



Figure 2-5. Temperate uniform.



Figure 2-6. Day desert uniform.

what kind of material it is. Then, refer to chapter 1 for care of this material.

DESERT ENSEMBLE

The desert ensemble is actually two uniforms. The day uniform (figure 2-6) is of the same design as the temperate uniform with two exceptions. The coat has an internal back yoke, and the hat is similar to the standard jungle hat. The fabric is a six-color, desert camouflage pattern. A hooded parka with liner and trousers make up the night desert uniform (figure 2-7). It is worn over the day uniform. The color is a light green with dark green grid print. To care for each item in this ensemble, read the label on the item to find out what kind of material it is. Then, refer to chapter 1 for care of this material.

WET WEATHER ENSEMBLE

The wet weather ensemble (figure 2-8) consists of coated nylon parka and trousers. Use this clothing instead of the poncho when you need more freedom of movement in rain or wet snow. It is sized to fit over cold-wet clothing. Use one size smaller if it is not to be used over cold-wet clothing. Avoid moisture buildup in the clothing you wear underneath the rain suit by wearing fewer underclothes or by ventilating body heat to the outside. To care for the wet weather ensemble, refer to the coated items paragraph in chapter 1.

CHEMICAL PROTECTIVE ENSEMBLE

The chemical protective ensemble (figure 2-9) consists of a two-piece, two-layer overgarment (coat and trousers), helmet cover, glove set, footwear covers, and protective mask. It protects the wearer against chemical agent vapors, aerosols, and droplets of liquids; biological agents; toxins; and radioactive alpha and beta particles.