A Guide to PPE (Personal Protective Equipment)

Photo: AP/Laura Leon

Introduction

Whether it is worn for reporting from a war zone or protest location, covering a natural disaster, or working on an undercover investigation, relevant and correct-grade PPE can help save lives and reduce the chances of personal injury.

In order to select the appropriate PPE, media workers should research and identify which threats they may potentially face in advance of an assignment.

For instance, when reporting from an active conflict zone, journalists should consider ballistic-grade PPE, which offers some protection from ammunition and shrapnel from blasts. For reporting from a civil disorder location, a covert soft body vest that is more discreet may be more suitable.


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Credit for all PPE photos in this glossary: Jonathan Goldberg
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General Safety Considerations

- Always seek advice or training if you are unfamiliar with or have not used a particular PPE item before.
- Always thoroughly inspect the condition of your PPE, paying attention to any defects such as cracks, tears, chips, fraying, or general signs of degrading. **If the integrity of an item of PPE is in any doubt, do not wear the affected item and source a suitable replacement.**
- When selecting PPE, it is generally sensible to avoid items that are overly militaristic in appearance.
- Consider the color. For instance, blue might be preferable to black or combat colors/camouflage. There are times, however, when blending in with the force(s) you are with may be appropriate to avoid targeting by the other side.
- To work effectively, PPE must be the correct size, properly adjusted and securely fastened.
- Consider the pros and cons of wearing PRESS badges on your PPE and other items of clothing.
- Note that certain items of PPE are subject to **export restrictions and controls** and may require an export license.
- Always research import restrictions if travelling internationally with PPE, noting that even connecting flights or layovers at certain airports may cause issues if you need to collect your checked luggage.
- It is advisable to avoid sharing items of PPE unless they are well maintained by a designated and trained person.
- Do not store PPE in direct sunlight, as the heat can weaken certain materials—so don't leave it in the rear window of your vehicle!
- Never make any modifications to an item of PPE, and always follow the manufacturer's cleaning guidelines.
- Be aware that wearing certain heavy items of PPE (e.g. heavy ballistic-grade helmets and vests) over prolonged periods of time can cause or exacerbate back and spinal injuries. Consult a medical practitioner if you experience any pain or serious discomfort.

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Protective Body Armor / Vests

Designed to protect the vital organs in the torso, protective body armor is graded according to a range of threats and the level of protection it affords the wearer.

Ballistic *(e.g. bullets or shrapnel)*
Graded on a level from I to IV by **The NIJ** (National Institute of Justice standard 0101.06)

Stab *(e.g. edged blade like a knife)*
Graded on a level from KR1 to KR2 by **CAST** (Centre for Applied Science & Technology)

Spike *(e.g. a needle or screwdriver)*
Graded on a level from SP1-SP2 by **CAST** but only in conjunction with stab protection

NB: Multi-threat body vests are available—always check with the manufacturer regarding the level of protection the vest offers for each specific threat.

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Protective Body Armor / Vests

General Information

- The actual vest itself is often referred to as the “carrier,” the exterior of which is typically made from nylon, polyester or another synthetic material.
- Carriers have “pouches” at the front and back into which various grades of protective plates/panels can be inserted or removed. (**NB:** on certain body vests, the protective material is built in and can’t be removed).
- Body vests are classified as either **“hard”** or **“soft,”** depending on which type and grade of protective material is used.
- Some body vests can be worn overtly (i.e. over the clothes) while others can be worn covertly (i.e. under the clothes).

Safety Advice

- Body vests must fit correctly, and must be adjusted and securely fastened, to ensure the stated level of protection.
- Protective plates/panels must be inserted into the carrier the correct way around.
- Plates/panels must be cleaned only according to the manufacturer’s guidelines.
- Protective materials will become less effective over time, **according to Body Armor News**, even if maintained and undamaged.
- Some vests will degrade faster if they get wet, due to water acting as a lubricant and making the material more susceptible to penetration.
- While vests will help protect the wearer against a range of ammunition, larger-caliber bullets will still usually hit with enough impact to cause blunt force trauma, which may result in heavy bruising at the point of impact.

Hard Body Vests

- Usually worn overtly (i.e. over the clothes), hard vests are considered essential if you may be exposed to live ammunition and shrapnel (e.g. in a warzone).
- Sometimes referred to as a “ballistic vest,” “bulletproof vest,” “flak jacket” or “bullet-resistant armor.”
- It is sensible to have a vest that fits snugly under your armpits and around your neck. **The more neck/torso exposure, the greater the vulnerability to injury.**
- Different grades of “hard” plates can be inserted and removed from the front and back of the carrier. **The higher the NIJ grade**, the greater the protection against various types and velocity of ammunition and shrapnel.
- Ceramic hard plates are made from lumina oxide, silicon carbide or boron carbide. **These must not be dropped or they will crack/fracture.**
- Polyethylene hard plates are more expensive, but they are lighter, more comfortable to wear and can protect against multiple strikes. **Traditionally these plates are graded up to NIJ level III / IIIA**, so are not effective against armor piercing rounds

Velcro straps over the shoulder and around the sides help secure the carrier to the body.

Optional detachable neck protection (also available for the shoulders and groin).

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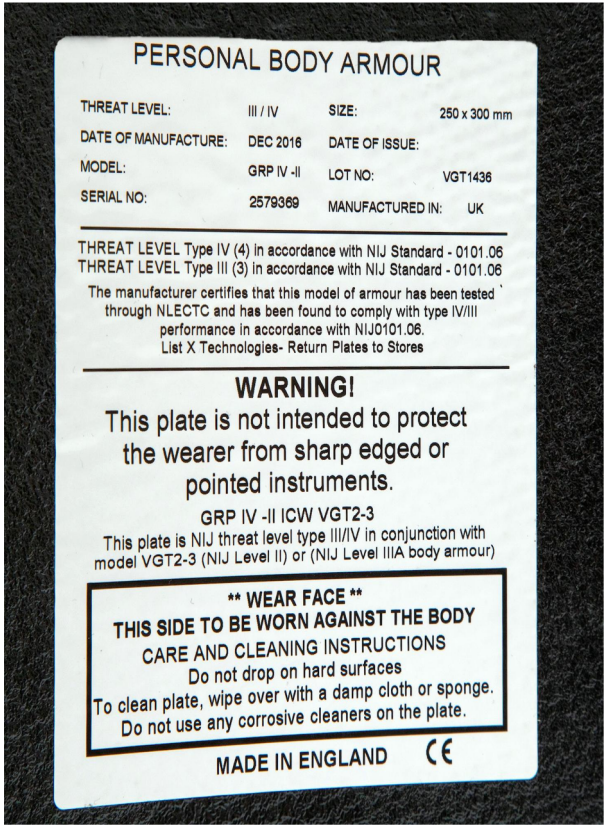
Advantages	Disadvantages
• Protects the neck, groin and shoulders (optional additions).	• Considerably heavier than soft vests, and may feel cumbersome and restrictive.
• Protects the torso from potentially life-threatening injuries.	• Import/export restrictions in certain countries may apply, and permits may be required.
• Overt vests may help prevent a hostile situation (i.e. a visible deterrent).	• Ceramic plates can easily be damaged if dropped and must be replaced.
• It can help protect the wearer in **vehicular accidents** as well.	• Good-quality vests are expensive and must be replaced if your body weight changes.

Velcro PRESS badges can be added or removed as necessary.

A ballistic hard plate insert made from ceramic.



Safety information on a ballistic hard plate made from ceramic.

Soft Body Vests

- Protective soft panel inserts are typically made from a high-strength synthetic material such as Kevlar, Dyneema, Twaron or Spectra.
- Such fabrics are lightweight, have a high-tensile strength and offer high-impact resistance.
- These properties help reduce the chances of penetration or slashing by spiked and edged weapons, such as a needle or a knife.
- Depending on the grading, certain soft vests offer a degree of protection against projectiles as well as lower-velocity and small-caliber ammunition. **Always check with the manufacturer for clarity.**

Advantages	Disadvantages
• Lighter, more flexible and less restrictive to wear than a hard body vest.	• Not capable of resisting larger-caliber ammunition.
• Can be worn covertly (i.e. less conspicuous and more useful for undercover reporting).	• Some soft vests have the protective material built in, making cleaning more difficult.
• Soft vests that have removable inserts/panels can be washed.	• Most do not offer optional protection for the neck, groin and shoulders.

Secured with velcro straps at the side and shoulders, with flaps that tuck into your pants.

This particular carrier has soft panel inserts that can be removed and replaced. This allows the carrier to be cleaned easily.

NB: Multi-threat body vests are available — always check with the manufacturer regarding the level of protection the vest offers for each specific threat.

Protective Headwear

Designed to protect the cranium from impact and trauma, a wide variety of protective headwear is available, ranging from ballistic-grade combat-style helmets, to sports safety helmets, to a more basic bump cap.

Head protection should always:

- be worn the correct way around
- fit properly and be adjusted accordingly (think snug but comfortable)
- be securely fastened on or under the chin (if with a strap)
- worn level on the head, so that the helmet is seated properly and does not obstruct your line of vision

When selecting protective headwear, always consider:

- What is the level of protection against the threats you might face?
- How far does the headwear extend down the back and sides of the cranium? **The lower the helmet extends, the more protection it offers.**
- Ventilation ports can potentially expose the cranium to projectiles. How many are there, and how big are they?
- How compatible is the helmet with other items of PPE (such as face respirators and safety goggles)?
- Does it include or accommodate other equipment worn on the head, such as night vision cameras or goggles (which can be quite heavy)?

Ballistic-Grade Safety Helmets

A ballistic-grade helmet is essential if you may be exposed to live ammunition or shrapnel. The NIJ safety standard 0106.01 previously graded ballistic helmets **on a scale of I - II**, which later became 0106.01 **(Modified)** with the addition of a grade: IIIA.

This helmet profile helps protect more of the sides and back of the cranium. The chin strap helps keep the helmet securely in place.

A solid construction with no ventilation ports helps prevent object penetration.

Interior padding and suspension add comfort for what can be a heavy item to wear.

- Ballistic helmets are considered bullet resistant **but not bulletproof**, and the curvature of the helmet helps deflect ammunition.
- Typically made from aramid fibers such as Kevlar, twaron, or UHMWPE (ultra-high-molecular-weight polyethylene).
- An internal suspension system and padding aid comfort and help prevent sweat from dripping down the face.
- Helmets with a padded chin guard help secure the helmet in place, and should incorporate a quick-release buckle.
- Some ballistic helmets come with a ballistic visor to help shield the face.
- Some helmets also offer non-ballistic protective qualities against threats such as concussive shock waves from explosions.
- Avoid dropping ballistic helmets as it may cause fractures to the casing, and never dry them in direct sunlight.

Sports Safety Helmets

There are a wide range of sports safety helmets available, each offering various levels of protection to the cranium, including skateboard (crash), mountain bike, canoe and rock climbing helmets. Exterior shells are typically made of ABS (Acrylonitrile Butadiene Styrene) and are molded around an interior casing of high-density EPS (expanded polystyrene foam), usually with an adjustable headband and under-the-chin strap.

The profile of this crash helmet extends farther down the cranium and has a more robust construction.

This bike helmet has multiple large ventilation ports, and the casing profile offers less cranium protection.

- **Never choose style over safety!** Look at the shape and profile of the helmet along with the number and size of ventilation ports, and assess if the helmet will provide sufficient protection based upon the threats you may face.
- Always check if a helmet offers multi-strike protection before purchasing or wearing it. Some helmets may protect you against only one impact and then need replacing. **Never use a helmet if its integrity is in any doubt.**
- Check that the helmet meets the required safety standard certification for where it was manufactured (e.g. **EN in the European Union**).

Bump Caps

Designed to resemble a baseball cap, a bump cap has a molded plastic casing, usually made from ABS (Acrylonitrile Butadiene Styrene) or HDPE (High Density Polyethylene), that sits in the interior of the cap.

Advantages	Disadvantages
• Lightweight, inexpensive and less conspicuous.	• Much less secure than a helmet — most do not have straps.
• Most caps have breathable gauze fabric sewn in.	• Offers little protection against heavy objects or projectiles.
• Some caps' plastic casing can be removed for cleaning.	• Some caps cannot be adjusted, so it may be difficult to get a snug fit.
• Some caps may have exterior hi-vis strips and interior sweatbands.	• Caps with a longer visor can potentially obstruct your line of vision.

- Helps protect the head against low impacts from fixed or stationary objects, scalping or entanglement.
- Does not offer protection against heavy, flying or falling objects or projectiles.
- Always check the plastic casing for any signs of cracking, and push against it to see if it is brittle. When in doubt, do not wear the cap and source a replacement.

Protective Eyewear

A huge variety of protective eyewear is available, ranging from ballistic-grade goggles and glasses, to eye shields, to general purpose safety goggles and glasses. Wearing high-quality eye protection that conforms to one of the **following safety standards** will help protect your eyes from various objects, and can also help protect you from liquids, gases, smoke, sand, dust and other particulates:

- U.S. military standard (MIL-PRF-31013)
- U.S. civilian standard (ANSI Z87.1 – 2010)
- European standard (EN166, 169, 170 & 172)

Protective eyewear should always:

- Fit properly, be adjusted accordingly, and be securely fastened (behind the ears or with a strap)
- Offer “wraparound” protection by extending around the side of the eye line
- Be compatible with any other items of PPE you might need to wear (e.g. a face respirator)
- Be appropriate to the dangers you may face (e.g. rubber bullets require ballistic-grade eyewear)

Always consider the following:

- Are the lenses anti-scratch and anti-fog, and do they offer UV protection?
- Do they provide an airtight seal? (This is essential if you may be exposed to liquids, gases, chemicals or smoke.)
- Do they have a hard protective bridge above the eye line and to the side of the lenses?
- Do they have a non-slip nose bridge? (This applies to glasses only.)
- Though some eye protection can accommodate prescription lenses, it is usually more cost effective to purchase larger safety goggles that can be worn over your normal prescription glasses.

Ballistic-Grade Eye Protection

Ballistic-grade goggles and glasses are designed and rigorously tested to help protect the wearer against debris and projectiles typically associated with a combat zone environment. The recognized standard for ballistic eyewear is **MIL-PRF-31013** for glasses and **MIL-DTL-43511D** for goggles (the ballistic resistance for both is defined by MIL-STD-662).

These ballistic-grade goggles have extra-thick 2.8mm polycarbonate lenses and offer a tight seal to the face around the eye line.

These ballistic-grade glasses have interchangeable and different-colored lenses.

- Ballistic eyewear offers a degree of protection from higher-velocity shrapnel, rubber bullets and ammunition of a certain caliber.
- It is considered to be bullet resistant **but not bulletproof.**
- Goggles that form a tight seal to the face are ideal as they also offer some protection against gases and liquids.
- Goggles secured with a strap around the back of the head are usually more secure than glasses.
- Ballistic lenses are typically made from polycarbonate, NXT/Trivex or plutonite.
- Some models may come with covers or lenses that can be changed or replaced.
- Frames are usually made from a shatter-resistant material, such as triloid nylon.

Other Protective Eyewear

Safety goggles and glasses graded as **ANSI Z87.1** (U.S. civilian standard) or **EN166, 169, 170 & 172** (European standards) will offer a degree of protection against lighter and lower-velocity projectiles. Goggles with a seal around the eye line will help limit damage if liquids, dust and gases are a threat. Protective eyewear graded below these levels will offer only limited protection against specific dangers.

These Z87.1 safety glasses are a popular choice but do not form a tight seal around the eye line.

Z87.1 safety goggles like these offer high-impact resistance and a tight seal around the eye line.

General-purpose safety goggles have a soft, flexible frame and offer only limited protection to the wearer.

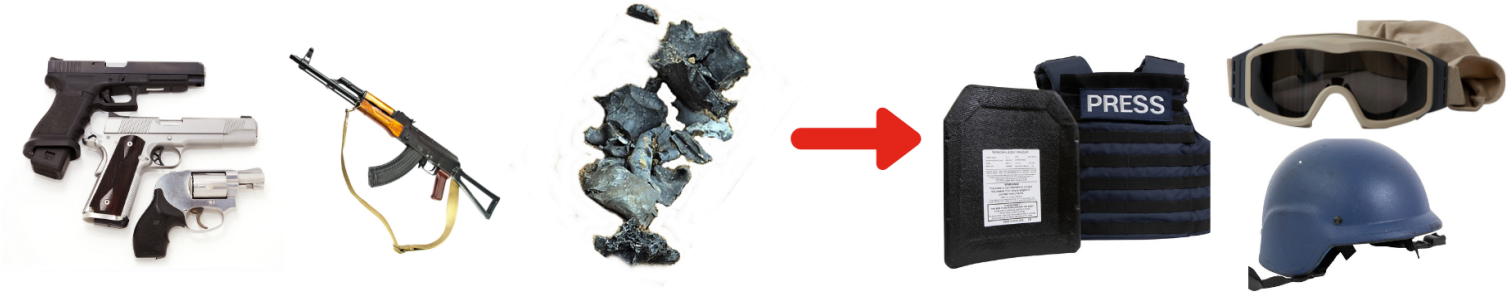
- **Z87** is the rating for regular impact, while **Z87+** is awarded to those that offer higher-impact resistance.
- European standard EN166 has ratings of **A, B F & S** for lenses and frames (related to the level of impact resistance they offer).
- Lenses are also graded according to the protection they offer against radiation and light transmission, as well as optical quality, temperature resistance, anti-fog properties, and resistance to damage from fine particles.
- Frames are graded according to their overall strength and how effective they are at preventing dust and liquids getting into the eyes.

THREATS

PROTECTION

Ballistic

e.g. bullets or shrapnel



Stab

e.g. edged blade like a knife

Spike

e.g. a needle or screwdriver

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Ear Protection

Attenuation describes the extent to which ear protection reduces sound (measured in decibels dB), and is rated **according to** NRR (noise reduction rating) in the U.S. or SNR (single number rating) in the European Union. The majority of industry-standard ear protection carries an SNR of between 25 and 33dB.

Ear Defenders

- Quick and easy to put on and take off.
- Ear shells are typically made from a hard thermoplastic, affording the ear itself some protection.
- Some have adjustable headbands.
- Check if they are compatible with other PPE such as your respirator and helmet.
- Quite bulky, but can be worn around the neck.

Ear Plugs

- Made from soft polyurethane foam.
- Some have a tapered design for a better fit.
- Shouldn't interfere with other PPE.
- To be effective, ear plugs must totally block the ear canal with an airtight seal.
- Inexpensive and discreet.
- Shouldn't be shared with others.

Percussive Ear Filters

- Block higher levels of dB while allowing voices and ambient noise to come through.
- Made from a hard moldable plastic.
- Custom-molded to your ear profile and can be remolded numerous times.
- Help suppress high-pressure sounds such as firearms, artillery fire and explosions.
- More expensive.

Important: Avoid ear protection that reduces noise levels to below 70 decibels. Such limited hearing may reduce your ability to hear warning signals, reduce your situational awareness and lead to you become isolated from the surrounding environment.

Respiratory Protection

Protecting your lungs and throat is essential when working in a location where harmful gases, dust, smoke, viruses, bacteria and liquid vapor present a hazard. Examples of hazards include (but are not limited to):

- Tear gas
- Pepper spray
- Thick dust (e.g. post-earthquake or explosion)
- Virus droplets (e.g. COVID-19)
- Wildfire smoke
- Debris smoke (e.g. burning tires or wood)

Full-face or half-face respirators offer the most protection. They are designed to seal tightly to the face so that no air can leak in or out, and a range of air filter canisters are available according to the threat. Canisters filter differently sized particles out of the air as you breathe in (the size of the particles depends upon the rating of the canister). Note that full-face and half-face respirators are quite bulky and can feel oppressive to wear, especially in hot and humid conditions. **Individuals who suffer from claustrophobia will likely struggle with wearing one.**

Filtering facepiece respirators (FFRs) are usually single-use, disposable, and come in a **variety of grades**. Note that FFRs will offer only limited protection against the identified threats above, but will help reduce exposure to airborne particulate hazards such as general dusts, mists and fumes.

Be aware that those with **impaired lung function** (e.g. due to asthma or emphysema) may not be able to wear a respirator.

Important: In extreme environments where you may be exposed to toxic gases from an explosion or asbestos from a collapsed building, always seek expert advice regarding the most appropriate breathing apparatus.

Full-Face Filter Respirators

A full-face or half-face respirator will help individuals to operate in locations where tear gas or pepper spray may be deployed, or where the air is thick with smoke, dust or other particulates.

Screw-on or bayonet disposable canisters filter the air against a variety of dangers such as particles, gases, viruses and bacteria, etc.

The visor/cover affords the wearer good panoramic vision — but <u>always check</u> the impact resistance against projectiles.

A head-strap harness secures the respirator — which you may need to put on quickly.

- They are typically made from a soft and pliable silicone or halogenated butyl rubber, which is easy to decontaminate and wipe down.
- Screw-on canisters/filters will need changing every few hours under heavy conditions, so always take a spare canister with you.
- The respirator must fit and be adjusted to ensure a tight seal to the face. **Any facial hair will prevent a tight seal.**
- Models with filter canisters at the side help reduce neck strain and afford good downward vision.
- A diaphragm allows your voice to be heard through the mask, but can feel restrictive and oppressive to wear for extended periods of time.
- Consider compatibility with other PPE you might need to wear (e.g. how quickly can you put the respirator on if you're wearing a safety helmet?)
- Individuals who wear prescription glasses will need to use a respirator that can accommodate a **corrective lens insert**.
- **Half-face respirators may be more suitable in situations where ballistic-grade eye protection is required.**
- Note that certain respirators are controlled items and subject to tight regulations—so you may require a license to carry one.

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Filtering Facepiece Respirators

Filtering facepiece respirators (FFRs) are designed to reduce exposure to airborne particulates such as dust, pollen and smoke fumes, **and are graded** according to how effective they are at filtering out such hazards.

FFRs are typically made from synthetic plastic fibers with straps made from polyisoprene. Those with a strap that secures behind the head (rather than behind the ears) are considered more effective in ensuring a close seal to the face. Some FFRs incorporate valve filters, which are typically made from polypropylene.

General Information

- **FFR design varies.** Some are cup-shaped and quite rigid, while others are flat-fold and more easily stored.
- The filter material helps form a seal with the face, forcing inhaled air to pass through the mask material instead of around the edges.
- Breathing valves are a feature of many FFR designs. **Note that breathing valves do not necessarily increase the level of protection,** but instead help regulate how quickly air can escape from the mask. This is an advantage for those who wear glasses, as it helps prevent the lenses from fogging up.
- FFRs without valves can feel more stifling to wear.
- Some masks have a metallic strip over the nose bridge to help form a better seal.
- Most manufacturers stipulate that FFRs are for single use only.
- Be aware that significant quantities of **counterfeit FFRs** have been produced since the onset of the COVID-19 pandemic.

Always:

Ensure your mask fits snugly and forms a tight seal, put it on and take it off properly, and wash your hands before and after doing so.

Never:

Wear a damaged or faulty FFR, touch the front of the mask, or wear it for longer than the manufacturer's guidelines.

Filtering Facepiece Respirators

FFP3 / N99 / P3 / N100

- **FFP3** filters approx. 99% of particles.
- **N99** filters approx. 99% of particles.
- **P3** filters approx. 99.95% of particles.
- **N100** filters approx. 99.97% of particles.

N95

- Graded according to U.S. standard NIOSH-42CFR84.
- Filters approx. 95% of airborne particles.
- Most designs have a breathable valve.

FFP2 or P2

- Both filter approx. 94% of airborne particles.
- FFP2 is a European grading based on EN 149-2001.
- P2 is an Australia/NZ grading based on AS/NZA 1716:2012.

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Filtering Facepiece Respirators & Face Masks

KN95

- A Chinese grade that relates to the standard **GB2626-2006**.
- Filters approx. 94-95% of particles.

FFP1 / P1

- Filters approx. 80% of particles.
- Offers only limited protection and is more appropriate for general DIY jobs.

Cloth Face Masks / Coverings

- Helps prevent wearer from spreading germs but offers little protection to the wearer themselves.
- The same applies to **homemade face coverings**.

NB: Additional categories of FFR safety standards and grading can be seen via the **CDC website**.

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General Items & Equipment

Elbow / Knee Pad Protection

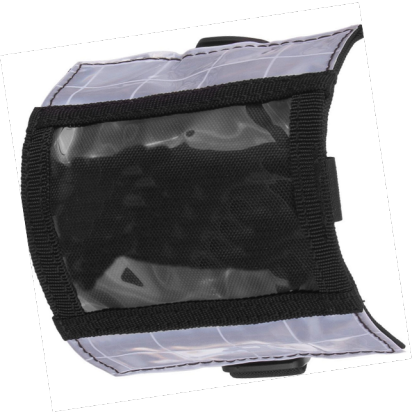
- Used in sports such as skateboarding.
- Designed to reduce the impact to your elbows and knees if you trip or are pushed over.
- This particular model has a plastic cap made from polypropylene, which is attached to soft EVA padded material.

Hi-Visibility Vest

- An inexpensive safety item that helps make you more visible in the dark.
- Typically available in yellow, orange and red.
- They should be **EN ISO 20471** certified.
- They should be washed in cold water to prevent fading.

Media Credentials Pouch

- Clear-view face allows quick identification.
- Fasten around the arm with velcro straps.
- Potentially safer to wear in a hostile location, as lanyards can potentially be grabbed to pull or choke you.



- In situations where PPE is required, shoes or boots with laces, ankle support and a thick sole are usually preferable.
- Avoid flammable clothing like nylon, which can stick to the skin and cause burns. Cotton or flame-retardant fabrics are better.
- Avoid military-style fatigues, lots of black-colored clothing, specific logos, and anything that fits too loosely or too tightly.

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First Aid Kits

It is recommended that a well-stocked first aid kit is taken on and made available during assignments.

A wide variety of first aid kits are available, such as an emergency first responder kit, bleeding control kit, trauma kit, travel kit and burn kit (among numerous others). All kits should contain medical essentials such as bandages, surgical tape, disposable gloves and saline fluid, along with items specific to the threat (i.e. a burn kit will likely include burn blott sachets).

Always research which type of kit is most appropriate for the location and your assignment. A general guide to first aid kits and what to take can be seen via the **CPJ website.**

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This PPE glossary has been produced for the Committee to Protect Journalists (CPJ) by HP Risk Management.

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