

Health & Safety- Personal Protection Equipment (PPE) - 2024

The Requirement

Field trips are often to environments where safety equipment is essential both for personal protection and to gain access e.g. to working quarries and mines. Also wearing appropriate PPE is an essential pre-requisite for insurance cover.

What is required will be laid out on the Risk Assessment for a field trip and is mandatory if you are to join the trip. The specified PPE MUST be worn at all times during the field trip. It is for your protection.

Summary

The following sections provide more detail of what is required, explain the standards and give guidance on the effective use and care of safety equipment. In summary depending on where a field trip is visiting or on local site requirements in summary you may need

1. HiViz clothing to **BS EN 471 2003 Class 3** e.g. bright orange with reflective strips
2. Hard Hat to **BS EN 397 2012** which was manufactured less than **3** years ago
3. Safety Boots to **BS EN ISO 20345:2022 S3 or S7**. This covers both steel and composite boots. However, it is recommended that boots should have composite toes and insoles rather than steel as some quarries e.g. Breedon, Cloud Hill etc. expect composites and may refuse entry otherwise.
4. Safety Eyewear to **BS EN 166**. Normal glasses alone are not sufficient
5. Heavy Duty Gloves: No standard is applicable for these
6. Tools: It is important ensure any tools that you use are in sound working order and do not pose a risk

1. Orange high visibility jacket and trousers

- To standard **BS EN 471 2003 Class 3** i.e. - Highest Protection Level of HiVis Clothing,
- Must have a band of retro-reflective material not less than 50mm wide.
- Minimum background material 0.80m sq. Minimum retro-reflective material 0.20m sq.

2. Hard Hat

- To standard **BS EN 397 2012** – Also essential that:
 - Hats are worn at all times where risk of injury is present
 - The hat fits the person wearing it ensuring it is worn properly
 - The head protection has been obtained from a reputable supplier
- This is a European standard for head protection. The standard was published by CEN (European Committee for Standardization) in June 2014. It covers construction helmets, industrial headwear, and sports helmets.
- **Expiration date** every hard hat has a maximum lifespan. Hard hats must only be worn until this date, which was determined by the manufacturer. It is to be noted that a hard

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hat may have none, one or multiple dates on them. The below seeks to explain this in more detail.

- The **manufacturing date marking** is usually located on the inside of the helmet. An arrow pointing to a number between 1 and 12 represents the produced month, while the centred number indicates the hard hat's year of manufacture. This is the key date that should be taken note of. However other dates as below may be present and in the absence of a manufacturing date can be used as follows.
- Some helmets have the date stated per quarter. E.g. an arrow to 1,2,3 or 4 and that surrounds the year
- If there is no marking inside the helmet, then check for a moulding **date** on the outside of the shell itself — this is usually marked somewhere near where your head would rest.
- On some hard hats you will find a label with two numbers. The first number refers to the year that the manufacturer guarantees their product's safety. The second number refers to the year that they recommend replacing the hat (even though it may still be safe). These recommendations are based on the fact that after several years, the material used in constructing hard hats can become brittle and not as effective
- Irrespective of the above, the **EN397** standard specifies that a hard hat **must** be replaced after five years of use or one year of use in high-risk environments such as construction or quarry sites where there is a risk of falling objects. Based on the nature of The Russell Society's activities and recognising that helmets may be infrequently used, or even used for other purposes outside of The Russell Society, it was decided by the RS Council that hard hats **must be replaced when 3 years old**.
- When buying a new helmet, check the manufacturing or other dates on it as it is not uncommon to find that it is a few years old.
- If there is no label on your hard hat, then it was not manufactured within the last five years. It should be replaced immediately because it does not offer adequate protection from falling objects.
- Hard hat manufacturers recommend replacing any helmet that's been dropped on the floor or struck by object. A drop from waist height can cause enough damage to destroy an internal shock absorber or crack plastic components, compromising protection.
- The following are some tips to extend the life of your hard hat:
 - Keep it clean and dry.
 - Avoid using solvents or harsh chemicals on your hard hat.
 - Do not drop or throw your hard hat on the floor, as that can cause dents and cracks.

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- Always replace your helmet if there is any visible damage, such as cracks or dents in the shell, or a missing chin strap clip.
- Replace your helmet every three years, even if it doesn't appear to have any visible damage.

3. Safety Boots

- Safety boots **must be of the lace up walking boot type** rather than trainer, rigger or wellington boot styles, to ensure basic ankle protection.
- From Q1 2024 the boots should be to **BS EN ISO 20345:2022 S3 or S7**. The previous 2011 standard will run in parallel for 5 years. The new standard mandates:-
 - Toe protection up to 200 joule impact
 - **A** anti-static protection
 - **FO** resistant to fuel oil
 - Has energy absorption in the heel
 - **WPA** preventing water penetration and absorption of the uppers
 - **P** metal midsole penetration resistance. If non-metal then should be **PL** or **PS**
 - Cleated outsoles
 - Slip resistant. New minimum standard replacing SRA, SRB, SRC
 - **E** energy absorption

Additional codes may also be present for

- **AN** ankle Protection, optional
- **CR** cut resistance
- **SR** higher level of slip resistance
- **SC** anti scuff toe protection
- **LG** ladder grip
- **WR** water resistance
- **CR** cut resistance
- **M** metatarsal protection
- **HRO** heat resistant sole

When **replacing your boots** you must go for boots that comply with the new 2022 standard preferably with non-metal composite toe protection as these are considered safer, lighter and generally more comfortable and for standard **S3L** which has a composite insert.

It should be noted that some sites e.g. Breedon and Cloud Hill Quarry, specify composite rather than steel toe protection

4. Safety Eyewear

The standard **BS EN 166** ensures safety glasses meet the necessary general requirement for protective spectacles, goggles, and visors.

- If you wear prescription glasses, then a wraparound shield or goggles should also be worn

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- **Frame and Lenses:** BS EN 166 specifies requirements for both the frame and lenses of safety glasses.
- **Optical Class:** Safety glasses are classified into three optical classes:
 - Class 1: For continuous wear.
 - Class 2: For occasional use.
 - Class 3: For very brief use only.
- **Strength Rating:** The strength rating indicates the glasses' impact limit and temperature tolerance:
 - **S:** Minimum strength, capable of withstanding small objects at 12 meters per second.
 - **F:** Slightly higher strength rating, able to endure small objects at 45 meters per second.
 - **B:** Medium impact level, tolerating small objects at 120 meters per second.

5. Heavy Duty Gloves

These are necessary to protect hands from sharp rocks and to improve grip. They also help dampen any accidental strikes from tools.

5. Tools

It is important ensure any tools that you use are in sound working order and do not pose a risk e.g.

- Chisels should not be cracked at the working end or have a roll over (mushroom) burr at the striking end. If left in this state bits can fly off like shrapnel when struck and cause serious injury
- Hammers, sledge hammers and picks should have their heads firmly affixed to the shaft as otherwise the head could fly off causing injury