

PPE Performance During Hot-Weather Work

Personal protective equipment, or PPE, is selected based on the hazard it must address, whether that involves impact, chemicals, electrical exposure, visibility, or another jobsite risk.

Hot conditions do not change the required level of protection, but they can make the equipment harder to wear for extended periods. A worker carrying materials across a sun-exposed roof in coveralls, gloves, and safety footwear generates heat through physical effort while also gaining heat from the surrounding environment. Depending on its design, the PPE may restrict airflow, reduce sweat evaporation, and limit the body's ability to release heat.

When Heat Changes How PPE Is Worn

Heat can affect more than comfort. It can also affect how consistently protective equipment is worn.

A worker who becomes too hot may loosen a garment, unzip a coverall, roll up a sleeve, or remove gloves between tasks. These actions may provide temporary cooling, but they can also expose the worker to the hazard the equipment was intended to address.

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The design and construction of the PPE can affect how it feels during extended wear. Protective materials may limit airflow or moisture movement, while full-body garments, gloves, safety footwear, and additional layers can add insulation, weight, and bulk. Equipment that is manageable for a short period may become much harder to tolerate over several hours.

Repeated adjustments may indicate that the fit, wear time, task conditions, or type of PPE should be reviewed. The required protection should remain in

place, but the conditions in which the PPE is worn should also be considered.

Claims such as lightweight, breathable, and moisture-wicking may provide useful product information, but they should be supported by applicable standards and test data.

Workload and Conditions at the Site

Physical effort affects how much heat the body produces. Climbing ladders, carrying tools, and moving across a large roof in direct sunlight create a different heat burden than a brief visual inspection, even when both tasks are described as roof inspections.

Wet-bulb globe temperature (WBGT) accounts for temperature, humidity, radiant heat, and air movement. OSHA recommends measuring WBGT where the work is taking place and considering it along with workload, acclimatization, and clothing or PPE that limits heat loss. When an applicable clothing adjustment factor is added, the result is known as the effective WBGT.

A reading taken in the shade may not represent conditions nearby in full sun. Weather-station data can help with planning, but an on-site reading reflects conditions at the work area.

Questions to Ask About PPE Used in Heat

When PPE will be worn outdoors, near hot equipment, or during strenuous work, consider:

- How long will the equipment be worn?
- How much of the body does it cover?
- Does the material limit airflow or moisture movement?
- How much weight and bulk does it add?
- Will it be layered with other PPE?
- What level of physical effort does the work require?
- Will it be used in direct sun or near radiant heat?
- What test data support comfort or performance claims?
- Which standards and certification requirements apply?

These questions help place product selection and use in the context of the conditions workers are likely to face.

Testing Personal Protective Equipment

Intertek provides testing services for a wide range of PPE, including protective apparel, gloves and sleeves, safety footwear, helmets and head protection, fall protection equipment, and respiratory protection.

Testing can evaluate PPE against applicable safety and performance requirements, including those related to mechanical, chemical, biological, and environmental hazards. Intertek also provides third-party test reports accepted by certification and regulatory bodies, including the Safety Equipment Institute.

To learn more about Intertek's PPE testing services, click here.

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