

National Manual for Assets and Facilities Management Volume 10, Chapter 3

Personal Protective Equipment Procedure

Document No. EOM-KSS-PR-000003 Rev 001



Document Submittal History:

Revision:	Date:	Reason For Issue
000	28/03/2020	For Use
001	18/08/2021	For Use



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1.0 PURPOSE

Under KSA law, there is a duty of care placed all employers to ensure, so far as is reasonably practicable, that a safe working environment is maintained at all times, and one that is devoid of any causes for accidents, injury and occupational illnesses and diseases, for the benefit, of staff, visitors, suppliers and contractors or anyone who may access the facility for any legitimate reason. Employees must also co-operate with employers and co-workers to help everyone meet the legal requirements in regards to HSE.

The purpose of this procedure is to set clear guidance on the requirements of Personal Protective Equipment "PPE" in terms of selection, use and maintenance of PPE, as part of a rigorous and controlled HSE approach for managing and operating safely within the workplace.

2.0 SCOPE

The scope of this procedure covers all types of PPE that may be required to be used in works performed under all Government Construction Contracts executed throughout the Kingdom of Saudi Arabia. It applies to all work activities within the premises owned by the Employer', (Government Entity in this case) and considers PPE that will afford protection from damage to:

- Eyes (from e.g. flying particles or splashes of corrosive liquids)
- **Ears** (from noise excessively loud or prolonged exposure)
- Lungs (from e.g. breathing in contaminated air, air borne particles or hazardous materials)
- **Head** (from e.g. falling materials or contact with obstructions)
- **Hands, feet and arms** (from e.g. exposure to extremes of cold and heat, corrosive materials or from contact with electricity or moving equipment, tools or machinery)
- Whole body and skin (from e.g. falling materials, cuts and abrasions contact with corrosive liquids or from exposure to extremes of heat, cold or sun)

3.0 DEFINITIONS

Definitions	Description				
AIHA	American Industrial Hygiene Association.				
ANSI	American National Standards Institute.				
BSI	British Standards Industries.				
CE	Certified European quality certification mark of conformity for all products				
	manufactured (and sold) in the European Economic Area .				
Competent person	Through training or experience is knowledgeable of the various Health, Safety and Environment standards that apply to their workplace, is capable of identifying workplace hazards relating to their specific operations, and has the authority invested in him or her by their employer to correct the hazards to				
	protect their workers				
dB(A)	A-weighted decibels, Sound Pressure level commonly applied to instrument-measured sound levels to account for the relative loudness perceived by the human ear.				
Entity	A Saudi Government organization, which is responsible for the delivery of government, funded infrastructure construction projects.				
Equivalent	Alternative designs, materials, or methods to protect against a hazard, which the employer can demonstrate, will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.				
HSE	Health, Safety and Environment.				
JHA	Job Hazard Analysis.				
OSHA	Occupational Safety and Health Administration.				
PPE	Personal Protective Equipment.				
Premises	Any facility (built or being built) including the external areas or infrastructure contained within the boundary of ownership. This includes the internal and external environment of the premises being maintained or where works are being carried out.				



RPE	Respiratory Protective Equipment
SDS	Safety Data Sheet.

4.0 REFERENCES

- EOM-KSS-PR-000001 Project General Safe Working Requirements Procedure
- EOM-KSH-PR-000004 Project Respiratory Protective Equipment Procedure.
- EOM-KSS-PR-000005 Project Fall Protection Procedure.
- EOM-KSH-PR-000010 Project Hearing Conservation Program
- EOM-KSS-PR-000013 Project Working on or Near Water Procedure.
- EOM-KSS-PR-000021 Electrical Safety Procedure
- 04-04-18-165 SASO PPE Technical List Dated: 07/12/2018
- OSHA 29 CFR 1926.32 Definitions
- OSHA 29 CFR Subpart E Personal Protective and Life Saving Equipment.
- American Nation Standards Institute ANSI
- American Industrial Hygiene Association AIHA
- Kingdom of Saudi Arabia Labor Law 2005
- Health & Safety Executive UK Personal Protective Equipment Regulations 2002 and Personal Protective Equipment at Work Regulations 1992

5.0 RESPONSIBILITIES

5.1 Asset & Facility Manager or Responsible Contractor

- Overall responsibility for this procedure and ensuring compliance with all HSE processes including this process, by all personnel, regardless of whether employed directly by the Entity or via contractor or supplier.
- To provide PPE to all employed personnel or ensure that the contractor has supplied his own personnel with the correct PPE.
- Ensure that the required PPE is being properly used by personnel during the execution of their works
- Ensure that the necessary information, instructions and training relating to the effective use of the equipment are provided prior to commencing the works.
- Ensure a job hazard analysis is undertaken for the relevant area of works within the premises concerned.
- Ensure effective toolbox talks and job induction is carried out before commencing the work
- Ensure compliance with all Permits issued, for works where a potential hazards are anticipated, are complied with.

5.2 HSE Representative

- Auditing this procedure.
- Auditing all operational and construction works (including fit out or similar change request oriented work) for compliance with procedure and regulations by O&M staff/contractors/subcontractors concerned.
- Confirming that this procedure meets the government requirements and regulations in the location of the facility.
- Ensure that regular (random and planned) inspections are carried out to verify that all appropriate PPE is being used properly by their employees in all relevant tasks undertaken where PPE use is required.
 - Ensure regular inspections of PPE is undertaken, are not defective, and PPE which has gone beyond its shelf life are removed from use (hard hats, respiratory items etc.).



5.3 Operations & Maintenance Personnel

- Knowing and understanding the Environmental Safety and Health requirements of this Procedure that apply to the work they perform.
- Requesting additional information and further clarification before starting work if personnel receive assignments they do not understand.
- Employees must be provided with the necessary PPE as identified in the risk assessment for the particular work activity.
- When wearing different types of PPE at the same time (i.e. eye and hearing protection). compatibility between those PPE must be checked.
- Employees are responsible for the proper care and reasonable use of any PPE supplied to them.
- Employees not wearing, or refusing to wear PPE issued to them shall not be allowed to work, disciplinary actions against the employee may be taken under the managing entity policies and procedures and in accordance with the Saudi labor law.
- PPE shall be inspected by the User prior to each use.
- Respiratory Protective Equipment (RPE) shall be inspected as per EOM-KSH-PR-000004 Respiratory Protective Equipment Procedure

6.0 PROCESS

6.1 General

Under local and international legislation and regulations, there is a general obligation for making the workplace a safe environment and this includes providing instructions, procedures, training and responsibly. Use of Personal Protective Equipment (PPE) is a vital part of a robust Health & Safety 'safe system of work' model, and applies to all personnel who may be assigned to undertaking tasks where there is a potential of risk of incurring injury or harm.

Entity or responsible contractor must use all feasible engineering and work practice controls to control hazards at the source by means of elimination, substitution or alternative methods. Personal Protective Equipment use is to be considered as a last line of control but its use by all personnel shall be mandatory.

This process applies equally to works within the facility or premises regardless of whether this be works in the internal environment or outside and can apply to any location where those assigned mobile (peripatetic) personnel may be undertaking such activities as street maintenance or landscape maintenance.

PPE is equipment may include items such as safety helmets, gloves, eye protection e.g. goggles and glasses, face shields, dust masks, jackets, high-visibility clothing, safety footwear and safety harnesses. It also includes respiratory protective equipment (RPE).

Standard and additional personal protective and life-saving equipment requirements shall be determined based on a task risk assessment and pre-start task analysis which should identify the specific hazards introduced by a specific work activity, tools and equipment used and the work environment in accordance with the following:

- Ability of PPE to provide protection against risk without compromising individual safety.
- Compatibility with work activity.
- Suitable for the control of the risks identified.
- Appropriate for the workplace and the activity hazards.
- Suitable for the use by the individual in terms of:
 - o Ergonomics weight, size, shape of equipment.
 - Being capable of fitting the wearer correctly.
 - The personal circumstances of the wearer, i.e. Health and physical or mental disabilities or characteristics (e.g. wearing glasses, asthmatic etc.).
 - o Compatibility with other PPE being worn simultaneously.

PPE must comply with a recognized national and/or international standards of design and construction.



The responsible entity site rules should cover the work's PPE requirements. A proper visual notice signs outlining the required PPE should be posted at the site entrance/zones where such equipment is required, signs must be both languages Arabic and English (Figure 1).



Figure 1: Sample Gate PPE Sign

PPE shall be selected and provided by the employer, and used to provide protection for personnel, including visitors, against the following hazards:

- General Construction
- Mechanical Injury
- Inhalation and respiratory tract
- Skin contact
- Chemical
- Environmental.
- Biological.
- Radiological.

PPE shall be worn for operations and maintenance works, construction works or any activity that there is a risk of injury that can be prevented. The requirement applies to entrants to such facilities/sites. Required PPE typically includes but not limited to:

- Hard Hat.
- Safety footwear

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- Eye and face protection
- Respiratory protection
- Hearing protection
- Safety gloves
- Safety Jackets
- Coverall
- Hi-Visibility Vest

6.2 Clothing

Where no alternative Engineering or Work Practice Controls can be introduced, protective clothing will be worn by personnel when undertaking the assigned works. The typical hazards that can be prevented:

- Thermal burns from contact with hot surface can be prevented by using long sleeve shirts and cloth gloves.
- Chemical burns and/or skin absorption of allergens and toxins can be prevented or minimized by use of appropriate chemical protective clothing.
- Exposure to extremes of heat, cold and intense UV rays / sunlight

The following shall also be followed in accordance with this procedure and in relation to the site/work area risk assessment:

- Loose clothing will not be worn where it can contact or catch on energized conductors, moving parts, equipment, or other hazards of this type.
- Preference should be given to natural fibers in the clothing worn by personnel.
- Short trousers are prohibited as outerwear.
- Sleeveless shirts are prohibited as outerwear.
- Jewelry such as finger rings or necklaces are prohibited when there is a danger of entanglement with machinery or contacting energized conductors.

Please note that the above list is not exhaustive and supervisors and employees should follow a formal and dynamic risk assessment approach to identify all appropriate PPE and clothing requirements for their respective work sites and activities.

6.3 Eye and Face Protection

Suitable safety glasses, protective goggles, face shield or screens shall be worn by personnel involved in, assisting with or working adjacent to any activity where there may be a danger of projected debris, sparks or other particles, corrosive fluids or mists, excessive heat, intense light or other harmful radiation. Only 'OHSA approved' or international standard approved (e.g., ANSI, CE, BSI or equivalent), protective eyewear shall be worn.

Such work situations include, but are not limited to:

- Welding and other construction activities require special types of protection, including, in some cases, double protection (Table 1).
- Safety glasses will have approved side shields (slip-on side shields are prohibited).
- All grinding operations will be performed while wearing a full-face shield and safety glasses or goggles.
- Welders will wear both safety glasses and a welding hood while welding.
- Working with rotating equipment such as grinders, drills, lathe.
- Working with all types of civil engineering or other landscape maintenance works such a wood chippers, grinders, blowers, road drills etc.
- Cutting and welding.
- Chipping, chiseling or caulking.
- Using cartridge operated tools.
- Blasting abrasive and grit.
- · Working with chemicals.
- Mixing drilling fluids, acids or other toxic hazardous fluids.
- Working with paints, disinfectant, pesticides or other toxic or hazardous fluids.

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- Working with strong sources of electromagnetic radiation, welding, machines, etc.
- Working in the open with the risk of windblown particles.
- Inspecting ceiling voids (i.e. during removal of ceiling tiles from suspended ceilings) and utility 'risers' and working around HVAC fans and ducts.
- Handling, moving or disposal of materials and rubbish where such material has the potential to cause injury.

Safety glasses are required to be worn at all times, with the following exceptions:

- Vehicle and equipment operators inside enclosed cabs.
- Lunch/ break/rest areas
- When goggles are worn (unless the activity calls for double eye protection).

Safety glasses or goggles must be comfortable to wear during work activities and should be durable and easy to clean. They must not impede vision or movement or interfere with the function of other PPE worn such that the eyewear has to be removed temporarily or otherwise to execute the works.

Safety sunglasses should be worn in strong sun glare to reduce eyestrain and fatigue. However, caution is warranted when employees must frequently move from outdoor to indoor locations. Wearing of sunglasses is not permitted indoors. Non-light-sensing glasses with tinted lenses are prohibited inside buildings or other structures with limited illumination. This includes prescription glasses. Employees whose vision requires the use of corrective lenses will wear one of the following:

- Personal eye glasses whose protective lenses provide optical correction with permanent fixed side shields and conform to the requirements of a recognized national or international standard (e.g., ANSI, CE, BSI or equivalent).
- Safety goggles over their glasses, or goggles that incorporate a corrective lens mounted behind the protective lens, or safety over-glasses.

Type of Work	Filter Shade Numbers
Shielded metal-arc welding: 1/16-, 3/32-, 1/8-, 5/32-inch electrodes	10
Gas-shielded arc welding (nonferrous): 1/16-, 3/32-, 1/8-, 5/32-inch electrodes	11
Gas-shielded arc welding (ferrous): 1/16-, 3/32-,1/8-, 5/32-inch electrodes	12
Shielded metal-arc welding: 3/16-, 7/32-, 1/4-inch electrodes	12
Shielded metal-arc welding: 5/16-, 3/8-inch electrodes	14
Atomic hydrogen welding	10-14
Carbon arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, 6 inches and over	5 or 6
Gas welding (light) up to 1/8 inch	4 or 5
Gas welding (medium) 1/8 inch to 1/2 inch	5 or 6
Gas welding (heavy) 1/2 inch and over	6 or 8

Table 1: Welding Helmet Lens Shade Selection

6.4 Head Protection

Hard hats protect heads from falling and flying objects and from limited electrical shock and burns. Hard hats are required at all times while on a construction facility, with the following exceptions:

- Vehicle and equipment operators inside enclosed cabs
- Lunch / break I rest areas

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Hard hats shall be 'OSHA approved', or equivalent, and are to be worn in accordance with all manufacturer requirements. Painting hard hats shall be prohibited. Hard hats must be worn directly on the head to ensure proper function and head protection. The wearing of baseball caps or other headgear under the hard hat shall be prohibited.

Hard hats have 5 year expiration period/date from the date of manufacture but should be continually inspected. ANSI-led good practice would also require the replacement of the internal suspension after 2 years from the date of manufacture. Where a heavy impact incident occurs, the hard hat used must be discarded.

6.5 Respiratory Protection

Respiratory protection will be worn in accordance with the requirements established in EOM-KSH-PR-000004 Respiratory Protective Equipment Procedure. In summary, the following requirements shall apply:

Respiratory protective equipment shall be available to all persons who are exposed to any situation in which there is a possibility of the atmosphere being or becoming deficient in oxygen or containing any harmful substance (e.g., particle, dust mist, vapor or gas), including the following:

- Work in containers or vessels where a danger of oxygen deficiency or harmful gases may be present
- Work in shafts, sewers or enclosed septic tanks
- Work in refrigeration plants where the danger of escape of refrigerant gas exists
- Grit or abrasive blasting operations
- o Working in any environment where there is a risk of potential infection through inhalation
- Working outside during times of heavy dust storms
- Working in any environment where prolonged inhalation of fumes from vehicles, fuelpowered machinery or manufacturing processes may be possible

Respiratory protective equipment will be used, stored, and maintained in accordance with the manufacturer's requirements.

Respiratory protective equipment will be selected on the basis of hazards to which the employee will be exposed. Protection will be selected following a risk assessment of the work to be performed (e.g., Job Hazard Analysis JHA, method statement, etc.) and based on the information provided on the Safety Data Sheet (SDS) associated with the substance being used.

6.6 Hearing Protection

Hearing protection will be worn in accordance with the requirements established in EOM-KSH-PR-000010 Hearing Conservation Program Procedure. In summary, the following requirements shall apply:

- Suitable hearing protection shall be made available to all workers exposed to noise levels of 85 dB(A) or above.
- When noise levels reach 85 dB(A) for an eight-hour work period, implementation of Hearing Conservation Program requirements is mandatory.
- At least two types of hearing protectors will be made available to employees. In general, hearing
 protection worn frequently shall be issued on a personal basis. It is good practice to leave suitable
 hearing protection by the entrance into high-level noise areas.
- Other than disposable hearing protection, equipment shall be properly inspected and cleaned.
- The workplace Health, Safety and Environment HSE representative is responsible for establishing
 areas under control of the construction group where hearing protection may be required to be worn.
 This includes the use of protective equipment required when operating equipment that produces
 sound levels above 90 dB(A).
- If hearing protection requirements are not posted in an area, but it is suspected that hearing protection is needed there, the matter shall be reported to the HSE representative to conduct noise monitoring to confirm decibel levels.



 Personnel working in areas where the noise exposure meets or exceeds the following established limits will wear hearing protection.

6.7 Hand Protection

Safety gloves shall be made available for all manual labor. In general terms, wearing of short sleeves for Operation & Maintenance activities by personnel shall not be not permitted.

The type of protection worn shall be selected according to the hazard to be protected against. ANSI categorize cut resistance in 5 different levels. A Sample glove matrix is included (Figure 2).

These include but not limited to:

- Impacts, cuts, abrasions and infections.
- Extreme temperatures.
- Chemical, toxic, corrosive and other hazardous substances.

The HSE representative is responsible for the selection of appropriate safety gloves. Selection will be based upon the hazards and tasks to be performed.

Important Note: This matrix is only to be used as a suggestive general guide. Consult with your HSE representative and refer to ANSI Cut Resistance glove levels for further guidance							
Work /Glove type	Cut Resistant	Impact Protection /Cut Resistant	Abrasion Protection/ Leather	Chemical (Neoprene & Nitrile)	Hot Works	Latex / Nitrile	
Access to Site All employees/Visitors							
Carpentry/Form Work		**					
Chemical, Glues, Epoxies, Paint, Resins Handling				*			
Electrical Wiring (Not Energized)							
Heavy Duty Drilling							
Fuel Handling/Refueling				*			
Handling Sharp, Jagged Objects		**					
Jack Hammering							
Masonry Work (Wet Cement)				*			
Masonry Work (Excluding Wet Cement)							
Medical / First Aid							
Mechanical		**					
Oils, Fuels, Grease Handling				*			
Pipefitting		**					
Rebar, Steel Work		**					
Rigging		**					
Saw Cutting Protected Blade							
Scaffold Erection/Dismantling							
Using Electrical/Hand Tools							



Using Knife/Unprotected Blade						
Welding, Cutting, Burning (Hot Works)						
*Check Chemical Safety Data Sheet and complete chemical evaluation through SDS/and risk assessment to determine the type of gloves ** Where risk of impact is present LIVE ELECTRICAL WORK — Specific gloves to be prescribed by Electrical Field Engineer and HSE, in line with specific regulations and standards. ANTI-VIBRATION GLOVES — Specific gloves to be prescribed where the tool is not fitted with anti-vibration technology.						

Figure 2: Sample Glove Matrix

6.8 Body Protection

Specific and adequate body protection shall be supplied for work activities which present certain hazards to personnel, including but not limited to:

- Working in extremes of temperature, such as firefighting, heating furnace attendance, working in refrigeration plants, etc.
- Welding, burning, cutting, and grinding.
- Handling or mixing of acids and other toxic, corrosive or hazardous chemicals.
- Clean up and disposal of hazardous wastes (e.g. asbestos, hydrocarbons etc.).

6.9 Personal Fall Arrest Systems

Fall protection will be used in accordance with the requirements established in EOM-KSS-PR-000005 Fall Protection Procedure. In summary, the following requirements shall apply:

- Safety harnesses and lifelines shall be provided, worn and properly secured in work situations where any of the following dangers exist:
 - o Falling from a height greater than 1.2 meters.
 - o Succumbing to toxic atmospheres or oxygen deficiency.

Such situations include, but are not limited to:

- Working on scaffolding.
- Work on any high structure, whether in construction or maintenance, including petroleum processing plants.
- Drilling rigs, storage tanks, etc.
- · Work over water.
- Rescue work, in firefighting, from high structures and from hazardous atmospheres.

Only full body harnesses shall be used. All such safety harnesses and lifelines shall be manufactured and inspected in conformance to a recognized national or international standard.

6.10 Electrical Personal Protective Equipment

Only trained and qualified/competent personnel are to work with electrical installations. Appropriately qualified and competent personnel will undertake risk assessments on work near electrical installations, and appropriate PPE will be identified as part of that assessment.

Electrical PPE appropriate for the voltage to be encountered will be worn when working on or near lines. Refer to EOM-KSS-PR-000020 Electrical Safety Procedure

The following specific requirements apply to insulated PPE such as blankets, covers, line hose, gloves, and sleeves made of rubber:

- Insulated PPE will be inspected for damage before each day's use and immediately following
 any incident that can reasonably be suspected of having caused damage. Insulating gloves will
 be given an air test, along with the inspection.
- Insulated PPE with any of the following defects shall not be used:
 - A hole, tear, puncture, or cut.
 - Ozone cutting or ozone checking (the cutting action produced by ozone on rubber under mechanical stress into a series of interlacing cracks).



- o An embedded foreign object.
- Any of the following texture changes: swelling, softening, hardening, or becoming sticky or inelastic.
- Any other defect that damages the insulating properties.
- Insulated PPE found to have other defects that might affect its insulating properties will be removed from service and returned for testing.
- Insulated PPE will be cleaned to remove foreign substances.
- Insulated PPE will be stored in such a location and in such a manner as to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances and conditions.
- Protector gloves will be worn over insulating gloves, but need not be used with (ANSI) category level 1 gloves, under limited-use conditions, where small equipment and parts manipulation necessitate unusually great finger dexterity.
- Marking on gloves will be confined to the cuffs and be of non-conducting material.
- When safety gloves are damaged and require replacement, cut the fingers off the gloves

Refer to EOM-KSS-PR-000020 Electrical Safety Procedure.

6.11 Training

The entity or responsible contractor has a duty to train all their personnel in the use of PPE; the importance of identification and protection against hazards within the workplace and the requirement for working safely at all times.

6.12 Inspection and testing

All PPE shall be inspected at regular intervals, tested in accordance with entity's guidance, and conform to international standards.

6.13 Enforcement

Supervisors are responsible for ensuring that the requirements of these procedures are discussed with and implemented by their assigned personnel. All supervisors of work activities will ensure that all personnel in the work area comply with the requirements of this procedure.

Improper use or failure to use personal protective equipment and wearing apparel is considered a violation of safe work practices and work rules. Disciplinary action could be taken according to project/facility work rules.

In some cases, disciplinary action may also be directed beyond employees observed in the actual violation (e.g. Failure to report unsafe acts and those cases where it is determined that supervisors or foremen had knowledge that employees were consistently violating safety work practices and the supervisor failed to initiate any action to correct the situation).