Personal Protective Equipment - Eye and Face Protection

Background: Protection of the eyes and face from injury by physical or chemical agents or by radiation is vital in Occupational Safety programs, as 25 to 30% of injuries are on the eye or face. Proper selection and use of eye and face protective equipment shall be adopted taking into consideration the operation and hazard. Every employer shall provide and the employee shall use the eye and face protective equipment for the job. Eye and face protective equipment shall conform to International Standards.

Dubai Occupational Health and Safety Regulations Local Order 61 of 1991 requires the use of personal protective equipment.

The appropriate eye and face protection should be selected against the risk of physical and radiation injuries.
Examples of activities and the typical hazards are given in the Schedule A and B.

Schedule A

Processes with involve risk of injury to the eyes from particles or fragments thrown off or splash of chemicals.

1. The breaking, cutting, dressing or carving of bricks, stones, concrete, slag or similar material by means of a hammer, chisel, pick or similar handtool or by means of a power tool and the dry grinding of surfaces of any such materials by means of a wheel or disc driven by mechanical power.

2. The dividing into separate parts of metal, bricks, stones, concrete or similar material by means of high speed of saw or abrasive cutting off wheel or disc driven by mechanical power.

3. The turning of metal or articles.

4. Drilling by means of stationary or portable power tools.
5. The welding and cutting of metals by means of an electric, oxy-acetylene or similar process.

6. The hot fettling of steel castings.

7. The fettling metal castings involving the removal of metal including runners, gates and risers and the removal of any other material.

8. The chipping of metal, knocking out or cutting out or cutting off cold rivets, bolts, nuts, lugs, pins, collars etc. from any structure or plant, by means of a hammer, chisel, punch or similar handtool or by means of a portable power tool.

9. The cutting and scrufing of paint, scale, slag, rust or other corrosion from the surface of metal or other materials by means of hand or power tools.

10. The breaking of scrap metal by means of hammer or by any other tool driven by mechanical power.

11. The routing of metal.

12. Work with drop hammers and power hammers.

13. Work at a furnace where there is risk to the eyes from molten metal.

14. Pouring or skimming of molten metal.

15. Work involving risk to the eyes from hot sand being thrown off.

16. Truing or dressing of an abrasive wheel.

17. The handling in open vessel or manipulation of strong acids or dangerous corrosive liquids/chemicals or materials, and the operation, maintenance or dismantling of plant or any other part or plant which contains or contained such substances.

18. Any other process where there is a risk of injury to eyes from particles or fragments thrown off and splash of chemicals during the course of the process.

Schedule B

Process which involve risk of injury to the eyes by reason of exposure to excessive light or infra-red or ultra-violet radiations.

1. Welding and cutting of metals by means of an electrical, oxy-acetylene or similar process.

2. All work on furnaces where there is risk of exposure to excessive light or infra-red radiations.
3. Process such as rolling, casting or forging of metals where there is risk of exposure to excessive light or infra-red radiation.

4. Any other process wherein there is a risk of injury to the eyes from exposure to excessive light or ultra-violet or infra-red radiations.

Guidelines:

1. Equipment for the protection of the eyes and face are divided into two groups.

   i. Goggles/Spectacles ii. Visors/Faceshields

   The equipment shall be designed to protect the wearer from chemical and physical hazards such as splashes, vapours, foreign bodies and radiations from sources emitting ultra-violet, infra-red etc.

2. Table - 1 should be used as a guide in the selection of eye and face protection for certain operations.

3. Spectacles fitted with impact resistant lenses shall be used.

4. Spectacles without side shield are not acceptable since they provide only frontal protection. Spectacles must have side shield to restrict the entry of flying particles from the side of the wearer.

5. Goggles of the type suitable for the risk shall be worn.

   i. Goggles with mesh or perforated ventilation sides - General hazards

   ii. Goggles with shield and anti-fogging coating - chemical liquid or vapour hazards.

6. Goggles shall be worn over corrective lenses spectacles without disturbing the adjustment of the spectacle.

7. Spectacles - Toughened material:
   For those employees with sight defects, prescribed lenses shall be in toughened materials to withstand impacts from flying particles, etc.

8. Visors or Face shield:

   i. Visors or face shield fitted to head harness or safety helmets shall be worn in chemical process areas or chemical handling operations.

   ii. Hood made of chemical resistant materials with frontal plastic window and rear shielded ventilation ports should be preferred while handling acid and other corrosive liquids and vapours requiring higher degree of protection. If air is not respirable, use of air-fed hoods are recommended.

9. **Filters:**
Welding glasses or lenses shall be used to protect the eyes from visible and infra-red as well as ultra-violet radiations.
Recommended filters for welding wre given in the Table - 2.

10. Showers and eye wash fountains shall be provided for areas where there is risk of eye injuries due to chemicals handled. Eye wash bottles are generally kept in first aid kits.

11. **Further References:**

American National Standard ANSI Z 87.1 - Eye and face protection
British Standard Specification BS: 679 Filters for use during welding
BS: 2092 Specification for industrial eye protection
BS:1542 Equipment for eye and face protection against radiation arising during welding.

EN Standard Specifications

FURTHER INFORMATION IS AVAILABLE FROM
PUBLIC HEALTH AND SAFETY DEPARTMENT
Tel: 2064244 FAX: 2270160

TABLE 1 EYE AND FACE PROTECTION = SUITABLE	a	b	c	d	e	f	g	h	I	j	k	l	n	n	o	p	q	r	s	t	u
Suitable for -																					
Bitumen spraying																					
Boiler/furnace operations			*																		
Chipping concrete, stone etc.																					
Chipping paint			*																		
Cleaning - high pressure water jets			*																		
Cutting metal by hand (cold)																					
Dust laden atmospheres (non-toxic)																					
Electric Welding																					
Engineering workshops																					
Filling cylinders - LPG																					
Filling drums - chemicals																					
Filling drums - oil products																					
Filling gantries - chemicals																					
Fire - fighting																					
Gas welding /cutting																					
Grinding																					
Handling chemicals																					
Handling cryogenic materials																					
Laboratories - general																					
Metal machining																					
Mech. wood working																					
Paint spraying																					
Radiation heat																					
Spillages, oil - clean up etc.																					
Spillage, chemical - clean up																					
Steam cleaning																					

a.	***Goggles, Vent, Cup type, welding***	***b.***	***Safety Spectacles - with side shield***
c.	***Goggles, full view, general purpose***	***d.***	***Goggles, full view, dust/chemical***
e.		***f.***	***Eye/face shields, swing back***
g.	***Welders shields, with skull guard***	***h.***	***Welders shields, head gear***
i.	***Welders shields, hand type***	***j.***	***Eye/Face shield, clip-on type***
k.	***Reflective eye/face shield***	***l.***	
m.		***n.***	

TABLE 2
RECOMMENDED FILTERS FOR WELDING

SPECIFICATION **REF.: BS 679**		
RECOMMENDED FILTERS FOR GAS WELDING **Welding Process**	***Filters required for:*** **Welding without flux**	**Welding with flux**
Gas welding of aluminimum and aluminimum magnesium alloys: Lead welding or oxy-acetylene cutting	3/GW	3/GWF
Oxygen machine and hand cutting, oxygen gouging, flame descaling, silver soldering, fusion welding of zinc base die casting, bronze welding of light gauge copper pipe and light gauge steel sheet.	4/GW	4/GWF
Fusion welding of copper and copper alloys, of nickel and nickel alloys, of steel plate, all bronze welds in heavy gauge steel and cast iron, except pre-heated work, re-building work of relatively small parts and areas for fusion welding, all hard surfacing operations, including rail-surfacing	5/GW	5/GWF
Fusion welding of heavy steel, of heavy cast iron, fusion welding and bronze welding of pre-heated cast iron and steel castings. Re-building large steel areas, e.g. large cams, etc.	6/GW and 7/GW	6/GWF and 7/GWF
RECOMMENDED FILTERS FOR ELECTRIC WELDING **Welding Process**	Approx. Range of welding current (in amps)	Filter(s) required
Metal-arc welding (coated electrodes), Continuous covered - electrode welding, Carbon dioxide shielded continuous covered-electrode welding.	UP to 100	8/EW, 9/EW
	100-300	10/EW, 11/EW
	Over 300	12/EW, 13EW 14/EW
Metal-are welding (bare wire), Carbon-arc welding, Inert-gas metal-arc welding, Atomic hydrogen welding	Up to 200	10/EW, 13/EW
	Over 200	12/EW, 11/EW 14/EW
Automatic CO2 shielded metal-arc welding (bare wire)	Over 500	15/EW, 16/EW

Inert-gas tungsten -arc welding	Up to 15 15-75 75-100 100-200 200-250 250-300	8/EW 9/EW 10/EW 11/EW 12/EW 13/EW, 14/EW