
Overview

This standard is about interpreting information, adopting safe, healthy and environmentally responsible working practices, selecting and using materials, components and equipment, setting up, operating and shutting down plant, machinery, equipment or vehicles for preventing, clearing or reducing the impact of ice or snow

This standard is for people working independently or as part of a team to operate plant, machinery, equipment or vehicles that reasonably prevents, clears or reduces the impact of ice or snow, it can be used by operatives, supervisors and managers

Operate plant, machinery, equipment or vehicles to prevent, clear or reduce the impact of ice or snow

Performance criteria

- You must be able to:
- P1 interpret the given operating information relating to the use of plant or machinery, equipment or vehicle and confirm its relevance
 - P2 organise with others the sequence in which the work is to be carried out
 - P3 comply with the relevant, current legislation, special legal status documents, official guidance and organisational procedures to maintain safe and healthy work practices
 - P4 request resources to sustain plant or machinery, equipment or vehicle operations to complete the programme of work
 - P5 select plant, machinery, equipment or vehicle resources for the methods of work and operations to be carried out
 - P6 comply with organisational procedures to minimise the risk of damage to the work and surrounding area
 - P7 comply with the given contract information to carry out the work efficiently to the required specification
 - P8 complete the work within the allocated time, in accordance with the programme of work

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Knowledge and understanding

Performance Criteria 1

Interpretation of information

You need to know and understand:

- K1 the organisational procedures developed to report and rectify inappropriate **information** and unsuitable **resources**, and how they are implemented
- K2 the types of **information**, their source and how they are interpreted
- K3 the organisational procedures to solve **problems** with the **information** and why it is important they are followed

Performance Criteria 2

Organise with others

You need to know and understand:

- K4 **communication** of ideas between team members
- K5 organisation of **resources** in conjunction with the progress of work
- K6 the **skills** required to carry out the work

Performance Criteria 3

Safe work practices

You need to know and understand:

- K7 the level of understanding operatives must have of **information** for relevant, current **legislation, Approved Codes of Practice and official guidance** and how it is applied
- K8 how **emergencies** should be responded to and who should respond
- K9 the organisational **security procedures** for plant, machinery, equipment and vehicles, tools and personal belongings
- K10 what the accident reporting procedures are and who is responsible for making the report
- K11 why, when and how **health and safety control equipment** should be used
- K12 how to comply with environmentally responsible working practices to meet the requirements of current **legislation and official guidance**

Performance Criteria 4

Request resources

You need to know and understand:

K13 the organisational procedures for requisitioning consumables and other **resources**

Performance Criteria 5

Selection of resources

You need to know and understand:

K14 the characteristics, quality, uses, sustainability, limitations and defects associated with plant, machinery, equipment and vehicle **resources** and how defects should be rectified

K15 how the **resources** should be used and how any **problems** associated with the **resources** are reported

K16 the organisational procedures to select **resources**, why they have been developed and how they are used

K17 the **hazards** associated with the **resources** and **methods of work** and how they are overcome

Performance Criteria 6

Minimise the risk of damage

You need to know and understand:

K18 how to **protect work** from damage and the purpose of protection

K19 why **disposal of waste** should be carried out safely and how it is achieved

Performance Criteria 7

Meet the contract specification

You need to know and understand:

K20 how **methods of work**, to meet the specification, are carried out and **problems** reported

K21 how **maintenance** of plant, machinery, towed equipment, vehicles, tools and equipment is carried out

Performance Criteria 8

Allocated time

You need to know and understand:

K22 what the **programme** is for the work to be carried out in the estimated, allocated time and why deadlines should be kept

Additional Information

Scope/range related to performance criteria

Performance Criteria 1

- 1 interpretation of drawings, specifications, schedules, method statements, risk assessments, weather forecasts, maps, navigation aids and manufacturers' information related to the plant, machinery, towed equipment, equipment or vehicles operations and the work to be carried out

Performance Criteria 2

- 2 organisation of own work
- 3 communication with team members and other associated occupations about the plant, machinery, towed equipment, equipment or vehicle operation and the work to be carried out

Performance Criteria 3

- 4 avoidance of risk by complying with the given safety information relating to at least six of the following
 - 4.1 methods of work
 - 4.2 safe use of health and safety control equipment
 - 4.3 current training, competence and authority
 - 4.4 safe use and storage of plant, machinery, towed equipment or vehicles
 - 4.5 safe use and storage of tools and equipment
 - 4.6 safe use of access equipment
 - 4.7 dealing with customers (pedestrians and road users)
 - 4.8 specific risks to health

Performance Criteria 4

- 5 follow organisational procedures for the requisition of consumables, materials and other resources

Performance Criteria 5

- 6 selection of resources associated with own work
 - 6.1 tools and ancillary equipment

Performance Criteria 6

- 7 protection of the work and its surrounding area from damage
- 8 maintain a clean work space
- 9 disposal of waste in accordance with current legislation

Operate plant, machinery, equipment or vehicles to prevent, clear or reduce the impact of ice or snow

Performance Criteria 7

- 10 demonstration of work skills to measure, check, align, adjust, set, clear, and record
- 11 use and maintain hand tools and ancillary equipment
- 12 operate at least one of the following winter service plant, machinery, equipment or vehicles to reasonably prevent, clear or reduce the impact of ice or snow to given working instructions
 - 12.1 up to 3500kg
 - 12.2 from 3500kg to 7500kg (medium LGV)
 - 12.3 over 7500kg (HGV)
 - 12.4 snowplough up to 3500kg
 - 12.5 snowplough up to 7500kg
 - 12.6 snowplough over 7500kg
 - 12.7 snowblower dedicated
 - 12.8 snowblower demountable
 - 12.9 pedestrian controlled mechanised equipment
 - 12.10 pedestrian controlled equipment
 - 12.11 towed equipment
 - 12.12 specialist equipment (ice breaker, melters)
- 13 reasonably prevent, clear or reduce the impact of ice or snow for at least one of the following
 - 13.1 dual carriageway roads
 - 13.2 single carriageway roads
 - 13.3 cycle ways
 - 13.4 footways and, or footpaths
 - 13.5 off highway areas (car parks, vehicle yards, airports, platforms, stadiums, loading bays, or quaysides)

Operate plant, machinery, equipment or vehicles to prevent, clear or reduce the impact of ice or snow

14 operate plant, machinery, towed equipment, vehicles or equipment to reasonably prevent, clear or reduce the impact of ice or snow to given working instructions by at least one of the following methods

14.1 spreading

14.2 spraying

14.3 ploughing

14.4 blowing

14.5 clearing

15 record and, or, report activities and progress

16 shut down and secure plant, machinery, towed equipment, vehicle or equipment

Performance Criteria 8

17 completion of own work within the estimated, allocated time to meet the needs of other occupations and client

Operate plant, machinery, equipment or vehicles to prevent, clear or reduce the impact of ice or snow

Scope/range related to knowledge and understanding

Communication

- 1 discussions, sketches, electronic data and briefings

Disposal of waste

- 2 environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance

Emergencies

- 3 operative's response to situations in accordance with organisational authorisation and personal skills when involved with
 - 3.1 fires, spillages, injuries
 - 3.2 emergencies relating to occupational activities
 - 3.3 cases of hypothermia and cold weather related injuries (causes, symptoms and treatment)

Hazards

- 4 those identified by method of work, risk and COSHH assessments, manufacturers' technical information, statutory regulations and official guidance

Health and safety control equipment

- 5 identified by the principles of prevention for occupational use, types and purpose of each type, work situations and general work environment
 - 5.1 collective protective measures
 - 5.2 local exhaust ventilation (LEV)
 - 5.3 personal protective equipment (PPE)

Information

- 6 drawings, specifications, schedules, method statements, risk assessments, weather forecasts, maps, navigation aids, manufacturers' information and current regulations governing the operation of plant, machinery, equipment and vehicles

Legislation, Approved Codes of Practice and official guidance

- 7 this relates to the operative's responsibilities regarding potential accidents, health hazards and the environment, working alone and mobile work whilst working in the workplace, in confined spaces, at height, with tools and equipment, with materials and substances, with movement and storage of materials, by manual handling and mechanical lifting

Operate plant, machinery, equipment or vehicles to prevent, clear or reduce the impact of ice or snow

Maintenance

- 8 operative care of plant, machinery, towed equipment or vehicles, hand tools, ancillary equipment and accessories

Methods of work

- 9 application of knowledge for safe and healthy work practices, procedures and skills relating to the method and area of work and materials used to
 - 9.1 identify the characteristics of the winter service plant, machinery, equipment and vehicles and attachments for preventing, clearing and reducing the impact of ice and snow
 - 9.2 complete pre-start, running and post stop checks
 - 9.3 identify valid certification for maintenance and inspection
 - 9.4 prepare, set up and adjust for operational requirements, safety and security
 - 9.5 carry out function checks for, spreading, spraying, ploughing, blowing and clearing
 - 9.6 confirm routes and locations requiring priority treatment
 - 9.7 identify the suitability of de-icing and anti-icing materials
 - 9.8 recognise the criteria for storing de-icing and anti-icing materials
 - 9.9 recognise the eutectic point and its effect on treatment materials
 - 9.10 identify the environmental impact that can be caused by winter service operations, salt and de-icing and anti-icing materials
 - 9.11 check calibration of de-icing and anti-icing equipment, sprayers and spreaders
 - 9.12 identify spread rates for treatment, spraying and clearing patterns
 - 9.13 clear and treat dual carriageway roads, single carriageway roads, cycle ways, footways and footpaths (including tunnels and portals), off highway areas (car parks, vehicle yards, airports, platforms, stadiums loading bays and quaysides), tramways, level crossings, segregated areas, running surfaces, drainage channels, culverts, gullies and offlets
 - 9.14 avoid damage to structures, infrastructure (highway features, railway crossings and temporary works), utilities service apparatus, vehicles, cycles, people and animals

Operate plant, machinery, equipment or vehicles to prevent, clear or reduce the impact of ice or snow

- 9.15 adjust operations for varying weather conditions, surfaces, local requirements and constraints
- 9.16 work in public areas
- 9.17 load and replenish spread materials and return unused materials
- 9.18 recognise and determine when specialist skills and knowledge are required and report accordingly
- 9.19 record and report activities, progress and achievements
- 9.20 clean, clear and lubricate equipment after operations
- 9.21 monitor wear and tear on equipment
- 9.22 deal with blockages
- 9.23 deal with plant, machinery, equipment and vehicle breakdowns
- 9.24 deal with communication equipment failures
- 9.25 use access equipment (including; gantries, platforms and vehicle ladders)
- 9.26 shut down and secure plant, machinery, equipment and vehicles
- 9.27 use hand tools, ancillary equipment and accessories
- 10 team work and communication
- 11 needs of other occupations associated with operating plant, machinery, equipment and vehicles used to prevent, clear and reasonably reduce the impact of ice or snow

Problems

- 12 those arising from information, resources and methods of work
 - 12.1 own authority to rectify
 - 12.2 organisational reporting procedures

Programme

- 13 types of progress, timetables and estimated times
- 14 organisational procedures for reporting circumstances which will affect the work programme

Protect work

- 15 protect work against damage from general workplace activities, other occupations and adverse weather conditions

Resources

- 16 materials, components and equipment relating to types, quantity, quality, sizes and the sustainability of standard and specialist
 - 16.1 consumables
 - 16.2 de-icing and anti-icing materials
 - 16.3 attachments, ancillaries and aids for spreading, spraying, ploughing, blowing and clearing
 - 16.4 route planning and navigation aids
 - 16.5 monitoring, measuring and recording equipment
 - 16.6 hand tools, ancillary equipment and accessories
- 17 Identify weight, bearing, pressure, quantity, volume, length and area associated with the method and procedure to operate plant, machinery, equipment and vehicles used to prevent, clear or reduce the impact of ice or snow

Security procedures

- 18 site, workplace, company and operative

Skills

- 19 own occupation and occupations related to the work

Glossary

Abrasive, grit – Natural or artificial materials (e.g. gravel, cinders or sand) used to increase the adhesion of a slippery surface.

Anti-caking agent – Component added to spreading material to prevent coagulation.

Barn – Structure built to cover the stored de-icing salt to protect from the effects of the weather.

Bin – Receptacle for the storage of small quantities of spreading material, on steep inclines.

Brine – Aqueous chloride solution, usually sodium, but can be calcium, magnesium or potassium.

Brine production facility – System for the production of water based de-icing solutions.

BS3247 – The British Standard for De-icing salt.

De-icing, anti-icing agent – Granular material or solution used to lower the freezing point in order to remove ice or prevent it from forming.

Depression of freezing point temperature – The lowering of the freezing point of a liquid by the addition

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of a solute. This is a fixed property of a given combination of liquid and solid and is the mode of action of de-icing agents.

Eutectic point – Temperature below which salt will not melt ice (-21 C).

Grit – Natural mineral spreading medium consisting of particles of stone.

Gritter – Vehicle with conveyor or auger conveyor for spreading salt onto the road surface.

Gritting/Spreading agent - Agent used to increase adhesion between tyres and the road surface, so preventing skidding.

Marine salt, sea salt – Sodium chloride from solar evaporation of sea water. It contains associated impurities such as calcium sulphate and magnesium chloride.

Mechanical shovel bucket loader – Wheel loader for loading a spreader with spreading materials (Loading Shovel).

Open stockpile – Open storage on a thick base for groundwater protection.

Precautionary treatment – Treating road surfaces with salt, prior to an expected snow or ice event.

Pre-wetted salt – Salt which is wetted prior to spreading, usually using sodium chloride or calcium chloride brine solution. This improves adherence to the road, and may encourage rapid thawing action, especially in dry air conditions.

Residual salt – Salt on the road surface.

Rock salt, halite – Sodium chloride mined from natural salt beds. May contain impurities such as calcium sulphate and silicates.

Salt saturator - Specially designed vessel for continuous production of saturated sodium chloride brine.

Sand – Natural mineral spreading medium (also 'crushed' sand).

Silo – Raised storage vessel which allows direct filling of spreading vehicles.

Spreading material – Material spread in order to counter slippery conditions (sand, salt, grit, granulates, brine).

Tank storage – Reservoir for the storage of liquid de-icers.

Thaw time – The time taken for the ice or snow to melt after treatment.

Thawing component – Portion of spreading medium responsible for thawing.

Vacuum salt – Pure sodium chloride prepared by the evaporation of brine under vacuum conditions. The brine is usually extracted by controlled solution mining of rock salt beds, but may be naturally occurring

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