

# COLD STORE WAREHOUSING

(See also: [Personal Protective Equipment\(63\)](#);  
[Warehousing\(87\)](#))

**COLD STORE  
WAREHOUSING**

## INTRODUCTION

Cold stores operate at various temperatures below freezing. Air temperatures may be as low as -30°C. The hazards associated with such harsh environments include:-

- accidental locking in
- accidental release of refrigerant
- cold injury
- increased risk of accidents
- special medical risks
- ice build up
- increased risk of equipment failure

Work in cold environments will therefore require risk assessment under the Management of Health, Safety and Welfare Regulations 1999.

## SAFEGUARDS AND PRECAUTIONS

1. Cold stores should meet the standards in BS4434 'Specification for safety aspects in the **design, construction and installation** of refrigerating appliances and systems' (1989)
2. Precautions against **locking in** to include:
  - Only authorised and fully instructed people allowed in
  - 'No unauthorised entry' signage
  - At least 1 emergency exit, adequately signed and unobstructed
  - A trapped-person alarm, mains operated with battery back-up, suitably marked and located
  - Emergency lighting (battery operated)
  - Maintenance and testing of devices provided
  - Working practices to include thorough check before locking
3. **Refrigerant Release**
  - General precautions include:-
    - Proper maintenance and operation by trained and competent person(s)
    - For plants exceeding 25kW, to have a written scheme for the periodic examination, by a competent person, of protective devices, pressure vessels and pipelines, and parts of pipework in which a defect may give rise to danger (See Pressure Systems element of this manual)

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- Written emergency procedure, communicated to all appropriate staff
- Refrigerants can be classified into 3 main groups as follows:-

GROUP	EXAMPLES	HAZARDS (●) & PRECUATIONS (◇)
1	Halocarbons	<ul style="list-style-type: none"> <li>• Stable, low toxicity and flammability favourable thermo physical properties and compatibility with other materials.</li> <li>• Toxic decomposition products may result from contact with flames or hot surfaces.</li> <li>• Can displace oxygen and cause suffocation.</li> <li>◇ Vapour detector and alarm.</li> <li>◇ Ventilation fans to operate if the concentration in the plan room exceeds the occupational exposure limits.</li> </ul>
2	Ammonia	<ul style="list-style-type: none"> <li>• Toxic and flammable</li> <li>◇ Vapour detector and alarm</li> <li>◇ Ventilation fans to operate if the concentration in the plant room exceeds 1% (V/V)</li> <li>◇ Detailed advice is contained in Guidance Note PM 81: "Safe Management of ammonia refrigeration systems"</li> </ul>
3	Ethane, propane, butane, isobutane, ethylene, propylene.	<ul style="list-style-type: none"> <li>• High flammability/explosion risk</li> <li>◇ Vapour detector and alarm</li> <li>◇ Ventilation fans to operate if the concentration in the plant room exceeds 25% of the lower explosive limit.</li> </ul>

- For Groups 2 and 3 refrigerants, the vapour detectors should also isolate all unprotected electrical circuits.
- Electrical equipment likely to operate in flammable concentrations should comply with the requirements for hazardous (potentially explosive) areas.
- Self-contained or airline breathing apparatus should be provided where refrigerant vapour is likely to be present at a significant level (selection, maintenance, examination and testing, training implications).

#### 4. Working at low temperatures

- Provision of suitable thermal/protective clothing
- Access to warm rooms with hot drinks for breaks, the length and frequency of which will depend on the nature of the work, the working temperature and exposure time.
- Cabs of any lift trucks to be heated and enclosed.

## 5. **Special medical risks**

People working in cold stores should be physically capable of undertaking the work. A pre-employment medical examination is recommended, and health checks should be carried out subsequently as deemed necessary.

## 6. **Ice build up**

Any ice build up should be removed regularly (e.g. daily)

## 7. **Equipment failure**

Any special hazards of equipment (including racking systems) used at low temperatures should be identified and suitable precautions taken to control any associated risks.

The Refrigerated Food Industry Confederation (RFIC) has produced guidance on safety in the use of pallets, pallet converters, palletainers and racking.

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## **CHECKLIST - COLD STORE WAREHOUSING**

- |    |  |     |    |
|----|--|-----|----|
| 1. | Has the cold store been designed, constructed and installed in accordance with BS4434 (1989)   | YES | NO |
| 2. | Have risk assessments been carried out with regard to:-  |     |    |
|    | - accidental locking in?   | YES | NO |
|    | - refrigerant release?   | YES | NO |
|    | - working at low temperatures?   | YES | NO |
|    | - equipment and racking used at low temperatures?  | YES | NO |
|    | - ice build up?  | YES | NO |
| 3. | Have appropriate precautions been taken to control the above risks?  | YES | NO |
| 4. | Do you carry out pre-employment medical examinations for cold store workers?   | YES | NO |
| 5. | Are regular health checks on cold store workers carried out and are workers requested to advise management of any changes to their general health? | YES | NO |
| 6. | Are cold store workers adequately informed, instructed or trained as necessary regarding work in a cold environment?                               | YES | NO |

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## **REFERENCES/FURTHER DETAILS**

- \*1. Booklet HS (G) 76: Health and Safety in Retail and Wholesale Warehouses. (HSE) ISBN 0 - 11 - 885731 - 2
- \*2. Guidance Note PM81: Safe Management of Ammonia Refrigeration Systems. (HSE) ISBN 0 - 7176 - 1066 - 7
- \*3. Specialist Inspector Report No. 48 - Occupational Hygiene Aspects on the Safe Use and Selection of Refrigeration Fluids. (HSE).
- \*4. The RFIC Guide to Safety in the Use of Pallets, Pallet Converters, Palletainers and Racking. ISBN 0 - 900 - 555 - 114 (Copies from: The Cold Storage and Distribution Federation (CSDF), Downmill Road, Bracknell, Berkshire, RG12 1GH. Tel (01344) 869533).
- \*5. The RFIC Booklet - Guidance on work in cold indoor environments. (Copies from CSDF above)
- \*6. HELA Circular LAC 31/1 - Ammonia compressors and refrigeration plant. [www.hse.gov.uk/lau/lacs/31-1.htm](http://www.hse.gov.uk/lau/lacs/31-1.htm)

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- \* Available to view by prior arrangement at Nuneaton and Bedworth Borough Council, Environmental Health Services, Council House, Coton Road, Nuneaton. CV11 5AA
  - \*\* Free copy available from Nuneaton and Bedworth Borough Council at the above address.

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