Australian Standard®

Gas recovery or combined recovery and recycling equipment

Part 3: Fluorocarbon refrigerants from commercial/domestic refrigeration and airconditioning systems

This Australian Standard was prepared by Committee ME/75, Gas Recovery and Reclaiming Equipment. It was approved on behalf of the Council of Standards Australia on 15 October 1996 and published on 5 December 1996.

The following interests are represented on Committee ME/75:

Air Conditioning and Mechanical Contractors Association of N.S.W.

Airconditioning and Refrigeration Equipment Manufacturers Association of Australia

Appliance Industry Association

Association of Fluorocarbon Consumers and Manufacturers

Australian Automotive Aftermarket Association

Australian Chamber of Manufactures

Australian Industrial Gas Manufacturers Association

Australian Institute of Refrigeration, Air Conditioning and Heating

Commercial Refrigeration Manufacturers Association of Australia

Department of Environment and Natural Resources S.A

Department of Fair Trading, N.S.W.

Environment Protection Authority of N.S.W.

Fire Protection Industry Association of Australia

Metal Trades Industry Association of Australia

Motor Trades Association of Australia

Motor Vehicle Repair Industry Council

New South Wales TAFE Commission

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PREFACE

This Standard was prepared by the Standards Australia Committee ME/75 on Gas Recovery and Reclaiming Equipment.

In view of concern about the effect that chlorofluorocarbons (CFCs) and halons, used in refrigeration, airconditioning and firefighting equipment have on the stratospheric ozone layer it has become mandatory to recover these ozone depleting substances rather than vent them to atmosphere during servicing of equipment.

Recycling the refrigerant to remove contaminants will assure that system operation with recycled refrigerant will provide the same level of performance as those systems using new refrigerant.

This Standard is Part 3 in a series of Standards which provide minimum equipment requirements for recovery or combined recovery and recycling equipment. The objective of this Part is to provide manufacturers of recovery or combined recovery and recycling equipment to be used on commercial and domestic systems with minimum equipment requirements. Test methods to determine equipment performance are also included. Other Parts are specific to other industries such as automotive, or fire protection.

It is recommended that synthetic substances used as alternatives to CFCs and halons, including HCFCs and HFCs, should be recovered, or recovered and recycled.

In preparing this Standard, cognizance was taken of ISO Committee Draft, ISO/DIS 11650, *Performance of Refrigerant Recovery and/or Recycling Equipment* and AS 4211.1(Int)—1994: *Gas recovery or combined recovery and recycling equipment* Part 1: *Automotive air-conditioning systems.*

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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FOREWORD

Chemicals called chlorofluorocarbons (CFCs) were first synthesized in the 1920s and found rapid acceptance as refrigerants, replacing toxic chemicals such as methyl chloride and sulfur dioxide. By the 1950s, CFCs had become so cheap that it was not economical to recover them from most equipment being leak tested, serviced or decommissioned. Even when it was economic to recover the bulk of the refrigerant from large equipment, recovery of the residual vapour was rarely attempted.

In 1974, scientists hypothesized that CFCs could cause depletion of ozone in the stratosphere. Because CFCs are stable compounds, their vapours when released will disperse throughout the lower atmosphere without being destroyed by natural processes and slowly migrate into the stratosphere where they are degraded by ultraviolet radiation releasing chlorine which catalytically destroys ozone.

In 1987, concern about the potential effect of ozone depletion led to an international treaty called the Montreal Protocol on Substances that Deplete the Ozone Layer. By 1988, scientific evidence had implicated chlorine from CFCs and bromine from halons in the annual hole in the Antarctic ozone layer and had shown that a total phasing out of ozone depleting substances was necessary to protect the global ozone layer. Recovery and recycling became widely adopted as a means of reducing emissions of CFCs and halons.

CFCs and halons were phased out in 1995 in accordance with the amended Montreal Protocol. Another class of chemical, hydrochlorofluorocarbons (HCFCs), which have a low but still significant ozone depletion potential, will continue in use for some decades. Users of HCFCs are urged by the Montreal Protocol to implement recovery and recycling programs.

Among the replacements for CFCs and HCFCs is a third class of chemical called hydrofluorocarbons (HFCs) which, like CFCs and HCFCs, are greenhouse gases with significant global warming potential. There is an environmental need for such chemicals to be recovered and recycled.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies the minimum equipment requirements for safe and efficient recovery or combined recovery and recycling of refrigerants, in both the liquid and vapour state, that have been directly removed from and are intended for reuse in, any commercial or domestic HVAC/R system which contains a refrigerant. It outlines minimum equipment specifications, and test methods to determine equipment performance.

NOTE: The equipment specified in this Standard is not intended for use with ammonia or flammable refrigerants, e.g. hydrocarbons and the like.

1.2 APPLICATION This Standard is intended for use by both users and manufacturers of equipment which is used to either recover, or recover and recycle refrigerant from any commercial and domestic HVAC/R system which contains a refrigerant.

The equipment specified in this Standard may not be suitable for the recovery of large volumes of low pressure refrigerants, e.g. R11, R113 and R123. However, the recycling process is appropriate.

1.3 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1210 Unfired Pressure Vessels (known as the SAA Unfired Pressure Vessels Code)
1677 Refrigerating systems
1939 Degrees of protection provided by enclosures for electrical equipment (IP Code)
2030 The approval, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases (known as SAA Gas Cylinders Code)
2030.1 Part 1 Cylinders for compressed gases other than acetylene
2473 Valves for compressed gas cylinders (threaded outlet)
2613 Safety devices for gas cylinders
2971 Serially produced pressure vessels
3100 Approval and test specification — General requirements for electrical equipment
3920 Assurance of product quality
3920.1 Pressure equipment manufacture

ARI
740 Refrigerant recovery/recycling equipment