

Australian/New Zealand Standard™

Work in compressed air and hyperbaric facilities

Part 2: Hyperbaric oxygen facilities



AS/NZS 4774.2:2019

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee SF-046, Non-Diving Work in Compressed Air and Hyperbaric Treatment Facilities. It was approved on behalf of the Council of Standards Australia on 4 April 2019 and by the New Zealand Standards Approval Board on 3 April 2019.

This Standard was published on 6 May 2019.

The following are represented on Committee SF-046:

Australia and New Zealand Hyperbaric Medicine Group
Australian and New Zealand College of Anaesthetists
Engineers Australia
Hyperbaric Engineering Industry Forum
Hyperbaric Technicians and Nurses Association
Hyperbaric Technicians and Nurses Association New Zealand
SafeWork NSW
South Pacific Underwater Medicine Society
Waitemata District Health Board

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Site at www.standards.org.au or Standards New Zealand web site at www.standards.govt.nz and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of Standards Australia or the New Zealand Standards Executive at the address shown on the back cover.

Australian/New Zealand Standard™

Work in compressed air and hyperbaric facilities

Part 2: Hyperbaric oxygen facilities

Originally published in Australia as AS 4774.2—2002.
Jointly revised and designated as AS/NZS 4774.2:2019.

COPYRIGHT

© Standards Australia Limited

© The Crown in right of New Zealand, administered by the New Zealand Standards Executive

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

ISBN 978 1 76072 446 7

PREFACE

This Standard was prepared by Joint Standards Australia/Standards New Zealand Committee SF-046, Non-Diving Work in Compressed Air and Hyperbaric Treatment Facilities, to supersede AS 4774.2—2002.

This Standard was prepared in response to a request from the Hyperbaric Technicians and Nurses Association (HTNA).

The objective of this Standard is to provide designers, manufacturers, operators and maintainers of hyperbaric Oxygen facilities with requirements and recommendations so that safe hyperbaric exposures of all persons involved in the operation of such facilities may be conducted.

The inclusion of roles and responsibilities in AS/NZS 4774.2:2018, was approved by the Standards Development and Accreditation Committee (SDAC) on 2 August 2018, as a one-off exemption to the directives of Standardization Guide SG-006, Section 25, due to the safety and jurisdiction issues associated.

The principle differences between this and the previous edition are as follows:

- (a) Defined roles, duties and qualifications of hyperbaric facility staff, including definition of a hyperbaric safety director.
- (b) Updates to maintenance schedules and operational processes, to reflect changes in evolving practices and technologies
- (c) Inclusion of monoplace and multiplace chamber operator requirements
- (d) Processes for in-house training of hyperbaric chamber operator.
- (e) The introduction of the positions of hyperbaric medical officer (HMO) and senior hyperbaric medical officer (SHMO).

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendices. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE.....	5
1.2 APPLICATION	5
1.3 REFERENCED DOCUMENTS.....	5
1.4 RELATED DOCUMENTS.....	7
1.5 DEFINITIONS.....	7
1.6 RELATIONSHIP WITH LEGISLATION	7
SECTION 2 CHAMBER FACILITY	
2.1 GENERAL.....	10
2.2 CHAMBER FACILITY FIRE PROTECTION	10
2.3 EMERGENCY SYSTEMS	10
2.4 PATIENT SUPPORT CONSIDERATIONS.....	10
2.5 OTHER SPACE CONSIDERATIONS	10
SECTION 3 MULTIPLACE CHAMBER OPERATIONAL SYSTEMS	
3.1 GENERAL.....	11
3.2 AIR PRESSURIZATION SYSTEM	14
3.3 OXYGEN SUPPLY SYSTEM.....	15
3.4 MEDICAL GAS SYSTEMS.....	15
3.5 ENVIRONMENTAL CONDITIONING SYSTEM.....	17
3.6 COMMUNICATION SYSTEM.....	17
3.7 PATIENT MONITORING SYSTEM	17
3.8 LIGHTING SYSTEM.....	17
3.9 ELECTRICAL SYSTEMS.....	17
3.10 FIRE SUPPRESSION SYSTEM.....	18
3.11 SOUND ATTENUATION.....	18
3.12 CLOTHING AND TEXTILES	18
3.13 PROHIBITED AND RESTRICTED MATERIALS.....	18
SECTION 4 MONOPLACE CHAMBERS	
4.1 GENERAL.....	20
4.2 OXYGEN PRESSURIZATION SYSTEM.....	23
4.3 AIR PRESSURIZATION SYSTEM (if used).....	24
4.4 MEDICAL GAS SYSTEMS.....	25
4.5 ENVIRONMENTAL CONDITIONING SYSTEM	26
4.6 COMMUNICATION SYSTEM.....	26
4.7 PATIENT MONITORING SYSTEM	26
4.8 LIGHTING SYSTEM.....	26
4.9 ELECTRICAL SYSTEMS.....	27
4.10 FIRE SUPPRESSION SYSTEM.....	27
4.11 SOUND ATTENUATION.....	27
4.12 CLOTHING AND TEXTILES	27
4.13 PROHIBITED AND RESTRICTED MATERIALS.....	27
SECTION 5 PREVENTIVE MAINTENANCE AND CLEANING	
5.1 SYSTEM MAINTENANCE	29
5.2 CHAMBER CLEANING.....	29
5.3 LUBRICANTS	29
5.4 CONTAMINATION.....	29

SECTION 6 RISK MANAGEMENT FOR HYPERBARIC FACILITIES	
6.1	GENERAL..... 30
6.2	HAZARD IDENTIFICATION..... 30
6.3	RISK ASSESSMENT 30
6.4	RISK CONTROL..... 31
6.5	EMERGENCY PROCEDURES 31
6.6	REGULAR REVIEW OF EMERGENCY PROCEDURES 32
SECTION 7 PERSONNEL FOR HYPERBARIC FACILITIES	
7.1	GENERAL..... 33
7.2	MEDICAL PRACTITIONERS..... 33
7.3	HYPERBARIC ATTENDANT..... 35
7.4	SUPERVISION AND OPERATION OF HYPERBARIC CHAMBERS 35
7.5	MINIMUM STAFF QUALIFICATIONS 35
SECTION 8 STAFFING OF HYPERBARIC FACILITIES	
8.1	DETERMINATION OF APPROPRIATE STAFFING 38
8.2	HYPERBARIC SAFETY DIRECTOR 38
8.3	HYPERBARIC CHAMBER SUPERVISOR 38
8.4	PATIENT CARE 39
8.5	EQUIPMENT-SPECIFIC TRAINING..... 39
8.6	ALLOCATION OF ROLES..... 39
8.7	FACILITY MANAGEMENT 39
8.8	PATIENT MANAGEMENT AND CHAMBER OPERATION 40
8.9	STAFF FITNESS TO ENTER HYPERBARIC ENVIRONMENT 42
8.10	EXCEPTIONS TO FULL MEDICAL ASSESSMENT 42
SECTION 9 PREPARATION OF PATIENTS FOR HYPERBARIC OXYGEN THERAPY	
9.1	PATIENT ASSESSMENT AND PREPARATION..... 44
9.2	PATIENT ORIENTATION 44
SECTION 10 MINIMUM MEDICAL EQUIPMENT FOR A HYPERBARIC OXYGEN THERAPY FACILITY	
10.1	GENERAL..... 45
10.2	MINIMUM MEDICAL EQUIPMENT 45
APPENDICES	
A	MINIMUM MAINTENANCE SCHEDULE..... 46
B	HYPERBARIC ATTENDANT COURSE 48
C	MONOPLACE CHAMBER OPERATOR COURSE..... 53
D	HYPERBARIC CHAMBER SUPERVISOR TRAINING AND ORIENTATION 57
E	MULTIPLACE HYPERBARIC CHAMBER OPERATOR TRAINING 61
F	MEDICAL EXAMINATION FORMS 64
G	GUIDANCE FOR MEDICAL PRACTITIONERS 71
H	DOCUMENTS OF INTEREST 79

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Work in compressed air and hyperbaric facilities

Part 2: Hyperbaric Oxygen facilities

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out requirements for the design, construction, operation and maintenance of hyperbaric facilities and pressure vessels used for human occupancy, other than those used in conjunction with, and support of, underwater diving operations. The Standard also provides provisions for staffing and training of personnel.

Both monoplace and multiplace hyperbaric chambers are covered.

This Standard does not address hypobaric chambers.

Facilities such as sporting domes and medical or industrial clean rooms which operate at very low increased pressures are excluded from the scope of this Standard.

1.2 APPLICATION

This Standard is intended to be used by health authorities, hospitals, and health providers establishing or operating hyperbaric Oxygen facilities for clinical purposes. It is also intended to guide those societies and academic bodies involved in the provision of training or training curriculum for hyperbaric personnel. This Standard may also be used as a reference by those operating hyperbaric Oxygen facilities for land-based but non-clinical purposes, such as research or testing of personnel for fitness for work at pressure.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1210	Pressure vessels
1271	Safety valves, other valves, liquid level gauges and other fittings for boilers and unfired pressure vessels
1345	Identification of the contents of pipes, conduits and ducts
1894	The storage and handling of non-flammable cryogenic and refrigerated liquids
2096	Medical gas systems—Installation and testing of non-flammable medical gas pipeline systems
3873	Pressure equipment—Operation and maintenance
AS ISO/IEC	
17025	
AS/NZS	
1200	Pressure equipment