



# SINGAPORE STANDARD

# Code of practice for bulk liquid oxygen storage installations on user premises





CP 34: 1985

(ICS 23.020.30; 23.020.10)

## SINGAPORE STANDARD

# Code of practice for bulk liquid oxygen storage installations on user premises

All rights reserved. Unless otherwise specified, no part of this Singapore Standard may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying and microfilming, without permission in writing from SPRING Singapore at the address below:

Standards SPRING Singapore 1 Fusionopolis Walk, #01-02 South Tower, Solaris Singapore 138628

Email: standards@spring.gov.sg

CP 34: 1985

This Singapore Standard having been approved by the Industry Standards Committee was endorsed by the Standards Council on 10 December 1985.

First published, 1986.

The Chemical Industry Standards Committee appointed by the Standards Council consists of the following members:

	Name	Organization					
Chairman:	Assoc Prof Sim Keng Yeow	Individual Capacity					
Deputy Chairman:	Dr Lim Choon Siew	Singapore Institute of Standards and Industr Research					
Secretary:	Mrs Tan-Chan Lean Hong	Singapore Institute of Standards and Industrial Research					
Members:	Mr Chua Teck Hock Mr Ho Bo Lum	Department of Scientific Services Individual Capacity					
ja,	Dr Lee Swee Yong	National University of Singapore					
	Mr Ng Huah Heng	Singapore Manufacturers' Association					
	Mr Ng Kok Pek	Institution of Engineers, Singapore					
	Dr Ng Tju Lik	Singapore National Institute of Chemistry					
	Dr Tan Thiam Chye	National University of Singapore					
,	Mr Yeow Kian Peng	Singapore Polytechnic					

The Technical Committee appointed by the Chemical Industry Standards Committee and responsible for the preparation of this standard, consists of representatives from the following organizations:

	Name	Organization					
Chairman:	Mr Go Heng Huat	Department of Industrial Safety					
Secretary:	Mrs Tan-Chan Lean Hong	Singapore Institute of Standards and Industrial Research					
Members:	Dr Lee Swee Yong	Chemical Industry Standards Committee					
	Mr Pang Mun Hung	Registry of Vehicles					
	Mr Derek G Pereira	Fire Safety Bureau, Singapore Fire Service					
	Mr Tan Guan Joo	Individual Capacity					

To keep abreast of technological changes and new technical developments in the manufacturing sector, Singapore Standards are subject to periodical review. Revisions of Singapore Standards are announced through the issue either of amendment slips or of revised editions.

# CONTENTS

											Page
For	eword	<u>-</u>	-		-	-	-	-	-	_	4
1.	Scope	-	N=	-	-	-	-	-	-	-	5
2.	Definitions	-	-	-	-	-	-	-		-	5
3.	Physical cor	nstants o	of oxyge	en	-		-	-	-	-	5
4.	Hazards and	d precau	tions	-	-	-	-	-	-		5
5.	Location of	bulk lic	quid oxy	gen sto	rage ins	tallation	1 -	-	-		7
6.	Distances be exposures	etween l	oulk liqu -	- niq oxA	gen stora	age cont	tainer ar	nd -	~	-	7
7.	Access		~	-	-	~	-	-	-	-	7
8.	Warning not	tices and	l cautio	n labelli	ng	-	-	-	-		8
9.	Modification	ns	-	<u>.</u>	-	-	-		-	· •	8
10.	Ventilation	-	-	-	-	-	-	-		-	8
11.	Couplings	-	-	-	-			-	-	-	9
12.	Fabrication	-	-	-	-	•	-	-	-	-	9
Tab	le	-	-	-	-	-	-	-	-	-	10
Figu	ıre	_	_	_	·						12

#### SINGAPORE STANDARD

# CODE OF PRACTICE FOR BULK LIQUID OXYGEN STORAGE INSTALLATIONS ON USER PREMISES

### **FOREWORD**

A Technical Committee had earlier drawn up a Singapore Standard on the caution labelling of hazardous substances. This Committee further identified that it was necessary to formulate Codes of Practice on the transportation and storage of three broad classes of hazardous substances namely (1) toxic chemicals and pesticides, (2) flammable substances and (3) industrial gases.

This Singapore Standard Code of Practice was drawn up by the Technical Committee on the Transportation and Storage of Industrial Gases and was approved by the Chemical Industry Standards Committee.

In preparing this Code of Practice, reference was made to the following publications:

- (1) IGC document contained in CPA/B1 (Issue No. 2) dated 27 August 1969 and further qualified by CPI Recommendations 1971 'Code of Practice for Bulk Liquid Oxygen on Customer's Sites'.
- (2) SOXAL publication 'The Safe Use of Oxygen in Industrial Process'.
- (3) NFPA 50: 1979 'Standard for Bulk Oxygen Systems at Consumer Sites'.
- (4) AS 1894: 1976 'Code of Practice for the Safe Handling of Cryogenic Fluids'.
- (5) Handbook of Compressed Gases, Compressed Gas Association, Inc., New York, Second Edition 1981.
- (6) AS 1940 : 1982 'The Storage and Handling of Flammable and Combustible Liquids'.

Acknowledgement is made for the use of information from these publications.

#### 1. SCOPE

1.1 This Code of Practice covers the general principles recommended for bulk liquid oxygen storage installations on industrial and institutional user premises where the supply to the user premises originates outside the user premises and is delivered by mobile equipment.

Where there is any doubt, the advice of the competent authority and the oxygen supplier should be sought.

- 1.2 This code covers an installation, on user premises, where the capacity of liquid is more than 500 litres or less than 100,000 litres.
- **1.3** More extensive safety precautions must be employed where extreme hazards are involved, as in highly congested areas or where associated equipment has only a small safety margin. The relevant authority may specify these additional safety requirements.
- 1.4 The observance of any Statutory provision remains the responsibility of the user.