

Contents	Page
1 Introduction.....	1
2 Scope .....	1
3 Definitions.....	1
4 General characteristics.....	1
4.1 Single component medical gases.....	1
4.2 Multi-component medical gases.....	3
4.3 Regulations and other standards.....	3
5 Containers .....	3
5.1 Bulk storage systems .....	3
5.2 High pressure cylinders and valves.....	4
5.3 Large cryogenic containers and valves .....	7
5.4 Small cryogenic containers and portables.....	7
5.5 Labeling.....	8
6 Safe practices and handling.....	9
6.1 General practices .....	9
6.2 Moving .....	11
6.3 Storing .....	11
6.4 Product withdrawal .....	13
6.5 Transfilling .....	15
7 Equipment .....	17
7.1 Supply systems .....	17
7.2 Pressure regulators .....	17
8 References .....	17

## Tables

Table 1—Color marking of compressed gas containers for medical use.....	6
Table 2—Cryogenic outlet connections .....	7
Table 3—DOT requirements for compressed gas container labels .....	8
Table 4—TC requirements for compressed gas container labels .....	8

## Appendices

Appendix A—Medical air (Informative).....	20
Appendix B—Medical carbon dioxide (Informative) .....	21
Appendix C—Medical helium (Informative) .....	22
Appendix D—Medical nitrogen (Informative) .....	23
Appendix E—Medical nitrous oxide (Informative) .....	24
Appendix F—Medical oxygen (Informative) .....	25
Appendix G—Dimensions and gaseous capacities of standard medical gas containers (Informative) .....	26

## Appendices tables

Table A-1—Properties of medical air .....	20
Table B-1—Properties of medical carbon dioxide .....	21
Table B-2—Approximate gauge pressure in a cylinder of carbon dioxide when both liquid and vapor are present .....	21
Table C-1—Properties of medical helium .....	22
Table D-1—Properties of medical nitrogen .....	23
Table E-1—Properties of medical nitrous oxide .....	24
Table E-2—Approximate gauge pressure in a cylinder of nitrous oxide when both liquid and vapor are present .....	24

Table F-1—Properties of medical oxygen.....	25
Table G-1—Gaseous volume of nonliquefied gases in various cylinder styles at select pressures .....	26
Table G-2—Contents of liquefied gases in uninsulated cylinders by weight and equivalent gas volume.....	27
Table G-3—Liquid contents by weight and equivalent gaseous volume <sup>1)</sup> .....	27
Table G-4—Liquid contents by weight and equivalent gaseous volume for liquid oxygen base units .....	28
Table G-5—Liquid contents by weight and equivalent gaseous volume for liquid oxygen respiratory portables .....	28
Table G-6— Medical liquid nitrogen dewars contents by volume and weight.....	29