DIN EN 16603-34:2014-11 (E)

Space engineering - Part 34: Environmental control and life support (ECLS); English version EN 16603-34:2014

Contents

Page

Foreword 5

1 Scope 6

2 Normative references 7

3 Terms, definitions and abbreviated terms 8

3.1 Terms from other standards 8

3.2 Terms specific to the present standard 8

3.3 Abbreviated terms 10

4 Requirements 11

4.1 Overview 11

4.2 Mission and system 11

4.2.1 General 11

4.2.2 Mission 11

4.2.3 System 12

4.3 General 13

4.3.1 Forms of life 13

4.3.2 ECLSS engineering 14

4.3.3 Environmental condition 14

4.4 Functional 14

4.4.1 Overview 14

4.4.2 Maintain environment 15

4.4.3 Respond to environmental contingencies 20

4.4.4 Provide resources 22

4.4.5 Manage waste 27

4.4.6 Support EVA operations 30

4.4.7 Provide health related services 32

4.5 Design 33

4.5.1 Overview 33

4.5.2 Data management control 33

4.6 Interface 34

4.6.1 General 34
4.6.2 Ground support equipment (GSE) 34
4.6.3 Mission interfaces 34
4.7 Verification 36
4.7.1 General 36
4.7.2 Verification by similarity 37
4.7.3 Verification by inspection 37
4.7.4 Verification by analysis 37
4.8 Product assurance and safety 37
4.9 Deliverables 38
4.9.1 Hardware 38
4.9.2 Documentation 38

Annex A (informative) **Parameters specification and monitoring 39**
A.1 Specification of parameters 39
A.2 Monitoring of parameters 42

Annex B (informative) **Reference information for parameters 43**
B.1 Previous flight data 43
B.2 ISS data 49
B.2.1 Atmosphere 49
B.2.2 ECLS loads 50
B.2.3 Water quality 51
B.2.4 Radiation doses 52

Annex C (informative) **References 54**

Bibliography 55

Tables

Table 4-1: Classification of pressurized volume 15

Table A-1 : List of parameters to be specified 39
Table A-2 : List of parameters to be monitored 42
Table B-1 : Previous flight data 44
Table B-2 : American programmes - Requirements 45
Table B-3 : American programmes - Functions 46
Table B-4 : Russian programmes - Requirements 47
Table B-5 : Russian programmes - Functions 48
Table B-6 : Atmosphere data 49

Table B-7 : Metabolic loads 50
Table B-8 : Water quality specifications 51
Table B-9 : Current ionizing radiation equivalent dose limits 52
Table B-10 : Organ dose limits for deterministic effects (all ages) 52
Table B-11 : Current career exposure limits 53