# DIN EN 939:2016-09 (E)

## Chemicals used for treatment of water intended for human consumption - Hydrochloric acid

## Contents

Page


European foreword ..... 4

Introduction ..... 5

1 Scope ..... 6

2 Normative references ..... 6

3 Description ..... 6
3.1 Identification ..... 6
3.1.1 Chemical name ..... 6
3.1.2 Synonym or common names ..... 6
3.1.3 Relative molecular mass ..... 6
3.1.4 Empirical formula ..... 6
3.1.5 Chemical formula ..... 6
3.1.6 CAS Registry Number) ..... 7
3.1.7 EINECS reference) ..... 7
3.2 Commercial forms ..... 7
3.3 Physical properties ..... 7
3.3.1 Appearance ..... 7
3.3.2 Density ..... 7
3.3.3 Solubility ..... 7
3.3.4 Vapour pressure ..... 7
3.3.5 Boiling point at 100 kPa ..... 7
3.3.6 Melting or freezing point ..... 8
3.3.7 Specific heat ..... 8
3.3.8 Viscosity (dynamic) ..... 8
3.3.9 Critical temperature ..... 8
3.3.10 Critical pressure ..... 8
3.3.11 Physical hardness ..... 8
3.4 Chemical properties ..... 8

4 Purity criteria ..... 8
4.1 General ..... 8
4.2 Composition of commercial product ..... 8
4.3 Impurities and main by-products ..... 9
4.4 Chemical parameters ..... 9

5 Test methods ..... 9
5.1 Sampling ..... 9
5.2 Analysis ..... 9
5.2.1 Determination of hydrochloric acid content (main product) ..... 9
5.2.2 Impurities ..... 10
5.2.3 Chemical parameters ..... 14

6 Labelling - Transportation - Storage ..... 16
6.1 Means of delivery ..... 16
6.2 Labelling according to the EU legislation) ..... 16
6.3 Transportation regulations and labelling ..... 18
6.4 Marking ..... 18
6.5 Storage ..... 18

6.5.1 Containers ..... 18
6.5.2 Long term stability ..... 18
6.5.3 Storage incompatibilities ..... 18

Annex A (informative) General information on hydrochloric acid ..... 19

A.1 Origin ..... 19
A.1.1 Raw materials ..... 19
A.1.2 Manufacturing process ..... 19
A.2 Use ..... 19
A.2.1 Function ..... 19
A.2.2 Form in which it is used ..... 19
A.2.3 Treatment dose ..... 19
A.2.4 Mean of application ..... 19
A.2.5 Secondary effects ..... 19
A.2.6 Removal of excess product ..... 20
A.3 Routine analyses ..... 20

Annex B (normative) General rules relating to safety ..... 21

B.1 Rules for safe handling and use ..... 21
B.2 Emergency procedures ..... 21
B.2.1 First aid ..... 21
B.2.2 Spillage ..... 21
B.2.3 Fire ..... 21

Annex C (normative) Determination of arsenic, antimony and selenium (atomic absorption spectrometry hydride technique) ..... 22

C.1 Safety precautions ..... 22
C.2 General principle ..... 22
C.3 Interferences ..... 22
C.4 Reagents ..... 22
C.5 Apparatus ..... 24
C.6 Procedure ..... 26
C.6.1 Preparation of the apparatus ..... 26
C.6.2 Preparation of calibration solutions ..... 27
C.6.3 Preparation of test solutions and standard solutions ..... 27
C.6.4 Determination of arsenic with sodium borohydride ..... 27
C.6.5 Determination of selenium with sodium borohydride ..... 27
C.6.6 Determination of antimony with sodium borohydride ..... 28
C.7 Calculation ..... 28

Bibliography ..... 29