

DIN EN 17818:2024-04 (E)

Devices for in-situ generation of biocides - Active chlorine generated from sodium chloride by electrolysis

Contents	Page
European foreword	4
Introduction	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	7
4 Requirements.....	10
4.1 General.....	10
4.2 Design.....	10
4.2.1 Temperature.....	10
4.2.2 Backflow prevention.....	10
4.2.3 Safety	10
4.3 Performance	10
4.4 Instructions.....	10
5 Electrolysis system and components.....	10
5.1 General.....	10
5.2 Electrolysis cell.....	10
5.3 Control unit.....	11
5.4 Optional items.....	11
5.4.1 Flow detector.....	11
5.4.2 System for dissipating stray electrical currents.....	11
5.4.3 Chlorine production adjustment feature	11
5.4.4 Temperature probe.....	12
5.4.5 Conductivity / TDS probe.....	12
5.4.6 Buffer tank.....	12
6 Process variants	12
6.1 Overview of process variants	12
6.2 Electrolysis systems with non-divided electrolysis cell	14
6.2.1 General.....	14
6.2.2 Processes with lower generation capacity and short-term operation.....	14
6.2.3 Processes with high generation capacity and/or long-term operation.....	17
6.3 Electrolysis system with divided electrolysis cell (membrane or diaphragm).....	19
6.3.1 General.....	19
6.3.2 Process with acidic chlorine solution.....	20
6.3.3 Process with neutral chlorine solution.....	22
6.3.4 Process with alkaline chlorine solution	24
7 Safety requirements	25
7.1 General requirements.....	25
7.2 Hydrogen.....	25
7.3 Chlorine gas	26
7.4 Excess products and solutions	26
7.5 Buffer tank.....	26
7.6 Safety bunds.....	27
7.7 Prevention against backflow	27

8	Equipment of the room or area for installation of the electrolysis system.....	27
9	Operation and maintenance	28
10	Test requirements.....	28
10.1	General	28
10.2	Scope of testing.....	29
10.2.1	General	29
10.2.2	System documentation	29
10.2.3	Chemical characterization.....	29
10.2.4	Determination of the active chlorine content (main constituent).....	33
10.2.5	Determination of the chlorate content (ClO₃⁻).....	35
10.2.6	Determination of the bromate content (BrO₃⁻)	36
10.2.7	Determination of the chloride content (Cl⁻)	36
Annex A	(informative) Natural decay of stored hypochlorite solutions	38
A.1	General	38
A.2	Decay reactions	38
A.3	Factors influencing chlorine decay and chlorate formation.....	39
A.3.1	Influence of temperature and storage time	39
A.3.2	Chlorate formation vs. time and temperature	40
A.3.3	Influence of initial concentration vs. days of storage.....	41
A.4	Influence of pH.....	41
A.5	Influence of decay catalysers (pollutants) and prevention.....	42
	Bibliography	43