

# DIN EN 17443:2021-10 (E)

## Winter service equipment - Brine production systems - Requirements and test methods

---

Contents	Page
European foreword.....	4
Introduction .....	5
1    Scope .....	6
2    Normative references.....	6
3    Terms and definitions .....	6
4    Materials.....	7
4.1    Chlorides .....	7
4.2    Water .....	7
5    Requirements .....	8
5.1    Brine production capacity .....	8
5.2    Brine concentration .....	8
5.3    Brine purity.....	8
5.3.1    General.....	8
5.3.2    Content of water insoluble matter.....	9
5.3.3    Size of suspended particles .....	9
5.4    Other requirements .....	9
5.4.1    Additional components.....	9
5.4.2    Pumping system .....	10
5.4.3    Blending systems.....	11
5.4.4    Protection of the environment.....	11
6    Sampling.....	11
7    Test methods .....	11
7.1    General.....	11
7.2    Brine production capacity .....	11
7.2.1    Direct method.....	11
7.2.2    Indirect method .....	12
7.3    Brine concentration .....	12
7.4    Brine purity.....	13
7.4.1    General.....	13
7.4.2    Content of water insoluble matter.....	13
7.4.3    Size of suspended particles .....	13
8    Safety requirements at design stage and for use .....	13
Annex A (informative) Systems for continuous and batch production of brine (examples, schematic drawings).....	14
A.1    Water flow through stationary bulk salts (NaCl, CaCl <sub>2</sub> , MgCl <sub>2</sub> ) .....	14
A.1.1    Upward water flow design .....	14
A.1.2    Downward water flow design.....	15
A.2    Forced circulation design (batch operation) .....	15
A.3    Blending systems.....	16

<b>A.3.1</b>	<b>Dilution of concentrated brines.....</b>	<b>16</b>
<b>A.3.2</b>	<b>Mixing of NaCl brine with other brines (CaCl<sub>2</sub>, MgCl<sub>2</sub>) and additives .....</b>	<b>16</b>
<b>Annex B</b> (normative)	<b>Sampling of the produced brine.....</b>	<b>17</b>
<b>B.1</b>	<b>Sampling of the produced brine .....</b>	<b>17</b>
<b>B.2</b>	<b>Labelling and distribution of samples .....</b>	<b>17</b>
<b>B.3</b>	<b>Sampling report .....</b>	<b>18</b>
<b>Annex C</b> (informative)	<b>Conversion factors: Used amount of water/produced quantity of brine .....</b>	<b>19</b>
<b>C.1</b>	<b>Dissolution of dry sodium chloride.....</b>	<b>19</b>
<b>C.2</b>	<b>Dissolution of calcium chloride, 77 % (flakes) .....</b>	<b>19</b>
<b>C.3</b>	<b>Dissolution of calcium chloride, anhydrous, 96 % (prills).....</b>	<b>20</b>
<b>C.4</b>	<b>Dissolution of magnesium chloride, hexahydrate, 47 % (flakes, pellets).....</b>	<b>20</b>
<b>Bibliography</b>		<b>21</b>