

# ISO 12494:2017-03 (E)

## Atmospheric icing of structures

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vii
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>2</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>2</b>
<b>4</b>	<b>Symbols .....</b>	<b>3</b>
<b>5</b>	<b>Effects of icing .....</b>	<b>4</b>
5.1	General .....	4
5.2	Static ice loads .....	4
5.3	Wind action on iced structures .....	4
5.4	Dynamic effects .....	4
5.5	Damage caused by falling ice .....	5
<b>6</b>	<b>Fundamentals of atmospheric icing .....</b>	<b>5</b>
6.1	General .....	5
6.2	Icing types .....	6
6.2.1	General .....	6
6.2.2	Glaze .....	8
6.2.3	Wet snow .....	8
6.2.4	Rime .....	8
6.2.5	Other types of ice .....	9
6.3	Topographic influences .....	9
6.4	Variation with height above terrain .....	10
<b>7</b>	<b>Icing on structures .....</b>	<b>11</b>
7.1	General .....	11
7.2	Ice classes .....	11
7.3	Definition of ice class, IC .....	12
7.4	Glaze .....	12
7.4.1	General .....	12
7.4.2	Glaze on lattice structures .....	12
7.5	Rime .....	13
7.5.1	General .....	13
7.5.2	Rime on single members .....	15
7.6	Rime on lattice structures .....	18
7.6.1	General .....	18
7.6.2	Direction of ice vanes on the structure .....	19
7.6.3	Icing on members inclined to the wind direction .....	19
<b>8</b>	<b>Wind actions on iced structures .....</b>	<b>20</b>
8.1	General .....	20
8.2	Single members .....	20
8.2.1	General .....	20
8.2.2	Drag coefficients for glaze .....	21
8.2.3	Drag coefficients for rime .....	23
8.3	Angle of incidence .....	27

8.4	Lattice structures .....	27
9	Combination of ice loads and wind actions .....	28
9.1	General .....	28
9.2	Combined loads .....	28
10	Unbalanced ice load on guys .....	29
11	Falling ice considerations .....	30
	Annex A (informative) Formulae used in this document .....	32
	Annex B (informative) Standard measurements for ice actions .....	35
	Annex C (informative) Theoretical modelling of icing .....	39
	Annex D (informative) Climatic estimation of ice classes based on weather data .....	50
	Annex E (informative) Hints on using this document .....	53
	Bibliography .....	57