

# ISO 23953-2:2015-11 (E)

## Refrigerated display cabinets - Part 2: Classification, requirements and test conditions

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms, definitions, symbols and abbreviated terms .....</b>	<b>1</b>
<b>3.1</b>	<b>General .....</b>	<b>1</b>
<b>3.2</b>	<b>Compression-type refrigeration systems .....</b>	<b>2</b>
<b>3.3</b>	<b>Indirect refrigeration-type systems .....</b>	<b>3</b>
<b>4</b>	<b>Requirements .....</b>	<b>3</b>
<b>4.1</b>	<b>Construction .....</b>	<b>3</b>
<b>4.1.1</b>	<b>General .....</b>	<b>3</b>
<b>4.1.2</b>	<b>Materials .....</b>	<b>5</b>
<b>4.1.3</b>	<b>Thermal insulation .....</b>	<b>5</b>
<b>4.1.4</b>	<b>Refrigerating system .....</b>	<b>6</b>
<b>4.1.5</b>	<b>Electrical components .....</b>	<b>6</b>
<b>4.1.6</b>	<b>Temperature display .....</b>	<b>6</b>
<b>4.2</b>	<b>Operating characteristics .....</b>	<b>7</b>
<b>4.2.1</b>	<b>Absence of odour and taste .....</b>	<b>7</b>
<b>4.2.2</b>	<b>Classification according to temperature .....</b>	<b>8</b>
<b>4.2.3</b>	<b>Defrosting .....</b>	<b>8</b>
<b>4.2.4</b>	<b>Water vapour condensation .....</b>	<b>8</b>
<b>4.2.5</b>	<b>Energy consumption .....</b>	<b>8</b>
<b>4.2.6</b>	<b>Specific Energy Consumption .....</b>	<b>9</b>
<b>5</b>	<b>Tests .....</b>	<b>9</b>
<b>5.1</b>	<b>General .....</b>	<b>9</b>
<b>5.2</b>	<b>Tests outside test room .....</b>	<b>9</b>
<b>5.2.1</b>	<b>Seal test for doors and lids on low temperature applications .....</b>	<b>9</b>
<b>5.2.2</b>	<b>Linear dimensions, areas .....</b>	<b>9</b>
<b>5.3</b>	<b>Tests inside test room .....</b>	<b>10</b>
<b>5.3.1</b>	<b>General conditions .....</b>	<b>10</b>
<b>5.3.2</b>	<b>Preparation of test cabinet and general test procedures .....</b>	<b>19</b>
<b>5.3.3</b>	<b>Temperature test .....</b>	<b>45</b>
<b>5.3.4</b>	<b>Water vapour condensation test .....</b>	<b>50</b>
<b>5.3.5</b>	<b>Electrical energy consumption test .....</b>	<b>51</b>
<b>5.3.6</b>	<b>Heat extraction rate measurement when condensing unit is remote from cabinet .....</b>	<b>51</b>
<b>6</b>	<b>Test report .....</b>	<b>60</b>
<b>6.1</b>	<b>General .....</b>	<b>60</b>
<b>6.2</b>	<b>Tests outside test room .....</b>	<b>60</b>
<b>6.2.1</b>	<b>Seal test of doors and lids .....</b>	<b>60</b>
<b>6.2.2</b>	<b>Linear dimensions, areas and volumes .....</b>	<b>60</b>
<b>6.2.3</b>	<b>Test for absence of odour and taste .....</b>	<b>61</b>
<b>6.3</b>	<b>Tests inside test room .....</b>	<b>61</b>
<b>6.3.1</b>	<b>General test conditions .....</b>	<b>61</b>
<b>6.3.2</b>	<b>Cabinet preparation .....</b>	<b>61</b>
<b>6.3.3</b>	<b>Temperature test .....</b>	<b>62</b>
<b>6.3.4</b>	<b>Water vapour condensation test .....</b>	<b>62</b>

6.3.5	Electrical energy consumption test .....	63
6.3.6	Heat extraction rate measurement when the condensing unit is remote from the cabinet .	63
7	Marking .....	65
7.1	Load limit .....	65
7.2	Marking plate .....	66
7.3	Information to be supplied by the manufacturer .....	66
Annex A (normative)	Total display area (TDA) .....	68
Annex B (informative)	Comparison between laboratory and in-store conditions .....	76
Annex C (informative)	Test for absence of odour and taste .....	78
Annex D (normative)	Performance and energy rating of commercial refrigerated display cabinets ..	80
Bibliography	.....	89