Reference tables for International and Russian national symbology according to [1] *WMO Sea-Ice Nomenclature, Supplement № 4, WMO/OMM/ВМО -No.259, 1989*, [2] *Manual on ice air reconnaissance* (Rukovodstvo po proizvodstvu ledovoi aviatsionnoi razvedki), GIMIZ, 1974 and [3] *Ice Chart Colour Standard, WMO/Td-No.1215, 2004*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| egg_codeInternational egg-symbolDrifting ice, Russian symbolDrifting ice, Russian symbolFast ice, Russian symbol | **Table 1. Total concentration of ice (C)**

|  |  |
| --- | --- |
| Concentration | Symbol |
| Ice free |  |  |
| Less than one tenth | 0 |  |
| 1/10 | 1 |  |
| 2/10 | 2 |
| 3/10 | 3 |
| 4/10 | 4 |  |
| 5/10 | 5 |
| 6/10 | 6 |
| 7/10 | 7 |  |
| 8/10 | 8 |
| 9/10 | 9 |  |
| More than 9/10 less than 10/10 | 9+ |
| 10/10 | 10 |  |
| Undetermined or unknown | x | ? ? |

**Concentration (C)**C – Total concentration of ice in the area, reported in tenths (see symbols in table 1). Note: Ranges of concentration may be reported.Ca Cb Cc – Partial concentrations of thickest (Ca), second thickest (Cb) and third thickest (Cc) ice, in tenths. Note: Less than 1/10 is not reported. 10/10 of one stage of development is reported by C, Sa and Fa or C Sa Fp FsNote: **a**cc. to **Russian national symbology** fast ice is indicated by **hatching** **Stage of development (S)** Sa Sb Sc – Stage of development of thickest (Sa), second thickest (Sb) and third thickest Sc) ice, of which the concentrations are reported by Ca, Cb, Cc respectively (see symbols in table 2). Notes: (1) If more than one class of stage of development remains after selection of Sa and Sb, Sc should indicate the class having the greatest concentration of the remaining classes (see also Note (2))(2) Reporting of Sa, Sb and Sc should generally be restricted to a maximum of three significant classes. In exceptional cases, further classes can be reported as follows: So – stage of development of ice thicker than Sa but having a concentration of less than 1/10;Sd – stage of development of any other remaining class.(3) No concentration are reported for So and Sd.(4) **a**cc. to **Russian national symbology** depiction of stages of development (SFa SFb SFc) is combined with depiction of forms of ice **Form of ice (F)** **(a) First variant-**Fa Fb Fc – Form of ice (floe size) corresponding to Sa, Sb and Sc respectively (see symbols in table 3.3). Notes: (1) Absence of information on any one of these forms of ice should be reported with an “x” at the corresponding position.(2) When icebergs are present in sufficient numbers to have concentration figure, this situation can be reported with Fa = 9, the appropriate symbol for Sa and the corresponding partial concentration Ca.(3) In situation when only two stages of development are present, a dash (-) should be added in place of Fc to separate these situations from those when Fp and Fs are being reported. **(b) Second variant** Fp Fs – Predominant (Fp) and secondary (Fs) floe size, reported independently from Sa, Sb and Sc respectively (see symbols in table 3.3). Note: If only the predominant floe size (form of ice) is reported, only the symbol for Fp shall be reported.**(c) Russian national symbology**Acc. to **Russian national symbology** depiction of stages of development (SFa SFb SFc) is combined with depiction of forms of ice  |

**Table 2. Stage of development and thickness (Sa Sb Sc So Sd)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № WMONomen. | Stage of development | Ice thickness interval | Symbol | Sample coding | Color code |
| [1] | [2] | Drifting ice | Fast ice | [3] |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 4.2.8 | Ice free | - | 0 |  |  |  |  |
| 2.1 | New ice | - | 1 |  |  |  |  |
| 2.2 | Nilas | < 10 cm | 2 |  |  |  |  |
| 2.2.1 | Dark nilas | 0-5 cm | 2 |  |  |  |  |
| 2.2.2 | Light nilas | 5-10 cm | 2 |  |  |  |  |
| 2.2.3 | Ice rind | 0-5 cm | 2 |  |  |  |  |
| 2.4 | Young ice | 10-30 cm | 3 |  |  |  |  |
| 2.4.1 | Grey ice | 10-15 cm | 4 |  |  |  |  |
| 2.4.2 | Grey-white ice | 15-30 cm | 5 |  |  |  |  |
| 2.5 | First-year ice (FY) | 30-200 cm | 6 |  |  |  |  |
| 2.5.1 | FY thin ice (white ice) | 30-70 cm | 7 |  |  |  |  |
| 2.5.1.1 | FY thin ice (white ice) first stage | 30-50 cm | 8 |  |  |  |  |
| 2.5.1.2 | FY thin ice (white ice) second stage | 50-70 cм | 9 |  |  |  |  |
| 2.5.2 | FY medium ice | 70-120 cм | 1• |  |  |  |  |
| 2.5.3 | FY thick ice | > 120 cм | 4• |  |  |  |  |
| 2.6 | Old ice (MY) |  | 7• |  |  |  |  |
| 2.6.1 | FY residual ice | 50—180 cm | 6• |  |  |  |  |
| 2.6.2 | Second-year ice  | 180-280 cm | 8• |  |  |  |  |
| 2.6.3 | Multi-year ice | > 300 cm | 9• |  |  |  |  |
| 10.4 | Drifting ice of land origin |  | ▲• |  |  |  | ▲▲ |
|  | Ice of undefined stage of development |  | x |  |  |  | ? ? |
|  | Indicator of ice thickness intervals (cm) beginning from the oldest |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 3. - Form of ice (Fa Fb Fc Fp Fs)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| № WMO Nomen. | Form of ice | Floe size | Symbol |  |
|  | 1 | 2 | 3 | 4 |
| 4.3.1 | Pancake ice | - | 0 |  |
| 4.3.3.1 | Small ice cake; brash ice | < 2 m | 1 |  |
| 4.3.3 | Ice cake | 2-20 m | 2 |  |
| 4.3.2.5 | Small floe | 20-100 m | 3 |  |
| 4.3.2.4 | Medium floe | 100-500 m | 4 |  |
| 4.3.2.3 | Big floe | 500 m-2 km | 5 |  |
| 4.3.2.2 | Vast floe | 2-10 km | 6 |  |
| 4.3.2.1 | Giant floe | > 10 km | 7 |  |
| 3.1 | Fast ice | - | 8 | See table 2 |
| 10.4.2 | Icebergs, bergy bits, growlers or floebergs | - | 9 | See table 4 |
|  | Undetermined or unknown | - | x |  |

 | **Table 4. – Calved ice of land origin (icebergs)**

|  |  |  |
| --- | --- | --- |
| №. WMO Nomen. | Iceberg form | Symbol |
| 1 | 2 | 3 |
| 10.4.2.1 | Glacier berg |  |
| 10.4.2.2 | Tabular berg |  |
|  | Dome-shaped berg |  |
|  | Inclined berg |  |
|  | Destructing berg |  |
| 10.4.4 | Bergy bit |  |
| 10.4.5 | Growler |  |
|  | Icebergs concentration |  |
| 10.4.3 | Ice island |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 5. Sea ice surface characteristics and openings in ice**

|  |  |  |
| --- | --- | --- |
| № WMO Nomen. | Characteristic | Symbol |
| 1 | 2 | 3 |
| 8.2.3.1 | Hummocks concentration (points)  |  |
| 8.2.2. | Ridge |  |
| 8.6 | Snow on ice concentration (points) and predominant direction of zastrugi (arrow) |  |
| 9.0 | Stages of melting (points) |  |
| 6.4 | Rafted ice and raftness concentration (points) |  |
| 4.4.8.1.1 | Jammed brash barrier |  |
| 7.1.1 | Crack (ice stage of development covering the crack, number within area/width) |  |
| 7.1.2-7.1.5 | Fracture (ice stage of development covering the crack, number within area/width) |  |
| 7.3 | Lead (ice stage of development covering the crack, number within area/width) |  |
| 5. | Ice drift |  |
| 5.1 | Diverging |  |
| 5.2 | Compacting (points) |  |
| 5.3 | Shearing |  |

 | **Table 6. Terms related to surface shipping**

|  |  |  |
| --- | --- | --- |
| № WMO Nomen. | Characteristic | Symbol |
| 1 | 2 | 3 |
|  | Recommended place for the ship |  |
| 12.1 | Ship beset by ice |  |
|  | Recommended route for the ship |  |
|  | Route of ship drift |  |

 |