RECOMMENDATION OF THE INTERNATIONAL COMMITTEE FOR WEIGHTS AND MEASURES

Clarification of the definition of the kelvin, unit of thermodynamic temperature
RECOMMENDATION 2 (CI-2005)

The International Committee for Weights and Measures (CIPM),

considering

- that the kelvin, unit of thermodynamic temperature, is defined as the fraction 1/273.16 of the thermodynamic temperature of the triple point of water,
- that the temperature of the triple point depends on the relative amount of isotopes of hydrogen and oxygen present in the sample of water used,
- that this effect is now one of the major sources of the observed variability between different realizations of the water triple point,

decides

- that the definition of the kelvin refer to water of a specified isotopic composition,
- that this composition be:

  0.000 155 76 mole of ^{2}H per mole of ^{1}H,
  0.000 379 9 mole of ^{17}O per mole of ^{16}O, and
  0.002 005 2 mole of ^{18}O per mole of ^{16}O,

which is the composition of the International Atomic Energy Agency reference material Vienna Standard Mean Ocean Water (VSMOW), as recommended by IUPAC in "Atomic Weights of the Elements: Review 2000".

- that this composition be stated in a note attached to the definition of the kelvin in the SI brochure as follows:

  "This definition refers to water having the isotopic composition defined exactly by the following amount-of-substance ratios: 0.000 155 76 mole of ^{2}H per mole of ^{1}H, 0.000 379 9 mole of ^{17}O per mole of ^{16}O and 0.002 005 2 mole of ^{18}O per mole of ^{16}O".

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