

**Final version****Consultative Committee for Thermometry****Recommendation T 1 (2005) to the CIPM****Clarification of the definition of the kelvin, unit of thermodynamic temperature****The Consultative Committee for Thermometry,****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,

**recommends**

- that the definition of the kelvin refer to water of a specified isotopic composition,
- that this composition be:
  - 0.000 155 76 mole of  $^2\text{H}$  per mole of  $^1\text{H}$ ,
  - 0.000 379 9 mole of  $^{17}\text{O}$  per mole of  $^{16}\text{O}$ , and
  - 0.002 005 2 mole of  $^{18}\text{O}$  per mole of  $^{16}\text{O}$ ,

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 by the following amount-of-substance ratios<sup>1</sup>: 0.000 155 76 mole of  $^2\text{H}$  per mole of  $^1\text{H}$ , 0.000 379 9 mole of  $^{17}\text{O}$  per mole of  $^{16}\text{O}$  and 0.002 005 2 mole of  $^{18}\text{O}$  per mole of  $^{16}\text{O}$ ”.

---

<sup>1</sup> The quantity name was inserted subsequently to the 23<sup>rd</sup> meeting of the CCT, on the advice of the CCU (17<sup>th</sup> meeting).