

**New quantities for secondary particle spectra**

Attached: CP-D/357, CP-D/355

The following new quantities were agreed and introduced in **dictionary 32** (REACTION SF6):

KEP      Most probable kinetic energy of outgoing particle  
 KEM      Temperature of Maxwellian distribution of outgoing particles

For a secondary particle spectrum measured relative to a Maxwellian distribution of a given temperature, the **dictionary 34** (Modifiers) code

MXD

was introduced. A corresponding new **dictionary 36** quantity is

PR,DE,N,MXD

The reference Maxwellian temperature must be given under the new heading (**Dictionary 24**)

KT-NORM.

See the attached memos for more details.

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**Memo CP-D/357**

**Date:** 4 March 2003  
**To:** Distribution  
**From:** O. Schwerer  
  
**Subject:** **Maxwellian distribution of outgoing particles:  
New proposal (Additions to dictionaries 24, 32, 34, 36)**  
  
**Reference:** **Memos CP-D/353** (18 February 2003),  
**4C-4/138** (16 January 2003), **4C-4/134** (2 December 2002)  
**Entries 40472 and 40535 (PRELIM 4129)**

**1) DE,N,MXW and PR,DE,N,MXW: "Maxwell distribution of outgoing neutrons"**

Actually in subentry 40535002 this is only used in denominator of a ratio; measured was ratio of neutron spectrum to calculated Maxwellian distribution.

Such data cannot be coded with MXW is SF8 because this means that the data were measured for an INCIDENT Maxwellian spectrum.

Since the denominator of the measured ratio is a calculated quantity which is a function of single number (spectrum temperature), it should not be coded as an explicit ratio but as single REACTION with a new modifier in SF8.

I propose to use MXD with the definition in **Dictionary 34**:

MXD = spectrum relative to Maxwellian distribution of given temperature

which would have to be given under a new data heading to be added to **Dictionary 24**:

KT-NORM Temperature of reference Maxwellian spectrum

Subentry 40535002 would then be coded:

REACTION ( 98-CF-252( 0, F ), PR, DE, N, MXD )

COMMON  
KT-NORM  
MEV  
1.42  
ENDCOMMON  
DATA

(continued as in PRELIM 4129)

To be added to **Dictionary 36**:

PR,DE,N,MXD      Prompt neutron spectrum relative to Maxwellian distr. of given temperature

**2) ,DE/TMP,N and PR,DE/TMP,N "Maxwell distribution of neutrons"**

Similar to the above, except that the spectrum temperature is now the DATA coded under REACTION rather than a separate parameter.

I think it needs a new code for SF6, which would be used similarly as AKE and the newly proposed (CP-D/355) KEP (Most probable kinetic energy).

Therefore I propose to add to **Dictionary 32**:

KEM      Temperature of Maxwellian distribution of outgoing particles

The **dictionary 36** entries replacing those of 4C-4/134 and 138 would be

,KEM,N              Temperature of Maxwellian distribution of outgoing neutrons  
PR,KEM,N            Temperature of Maxwellian distribution of prompt neutrons

The REACTION of subentry 40472.002 would then be coded

(98-CF-252(0,F),PR,KEM,N)

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Memo CP-D/355

**Date:** 21 February 2003

**To:** Distribution

**From:** M. Lammer

**Subject:** 1) **Dictionary 24: re MASS-RATIO**  
2) **Dictionaries 32, 36: New code KEP**

1) I assume that the DATA heading keyword

MASS-RATIO Ratio of Atomic Masses of Fission Fragments

Implicitly means: "Ratio of Atomic Masses of **Binary** Fission Fragments", as I intend to use it for ternary alpha particle data given as function of the (coincident) binary fragment mass ratio, (where the binary fragments are not coded in the reaction string).

I propose to add "Binary" to the explanation in dictionary 24.

2) I propose a new code for Reaction SF6, Dictionary 32:

KEP Most probable kinetic energy of outgoing particle

analogous to AKE, AP and ZP. In the same entry EXFOR30916 mentioned above, most probable kinetic energy values are given for ternary alpha particles (in addition to average kinetic energy).

The use (Dictionary 36) would be the same as for AKE. In particular, the following dictionary 36 quantities are proposed for the present case:

,KEP,A Most probable kinetic energy of alphas  
PRE,KEP,A Most probable kinetic energy of pre-neutron emission alphas  
TER,KEP,A Most probable kinetic energy of alphas from ternary fission

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