**Nuclear Data Section**

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**To:** Distribution

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**Subject: REACTION SF6 for fission product yields in arbitrary units**

The particle-induced fission product yield FY(Z,A) is proportional to the corresponding production cross section σ(Z,A), for example,

(92-U-235(N,F)ELEM/MASS,CUM,SIG)=  
(92-U-235(N,F)ELEM/MASS,CUM,FY)\*(92-U-235(N,F),,SIG).

Its normalization (barn or %) determines the parameter code for REACTION SF6 (SIG or FY), but we do not have a rule for data in arbitrary units.

To minimize inconsistency in REACTION spelling, I propose use of FY (or NU for fission neutron production) rather than SIG when the yield is given in arbitrary units and an appropriate quantity code has been defined in dictionary 236.

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| **Subentry #** | **Proposed corrections** |
| 14095.002-026 (pt.2) | *Delete* the data set (delayed gamma yield per fission), but add the gamma energy and intensity under DECAY-DATA of the same subentry. |
| A0028.002-003 | Replace CUM,SIG,,REL with CUM.FY,,REL |
| A0677.004 | *Delete* this subentry. Their absolute values are compiled in 002 and 003. |
| A0684.002 | Replace ,SIG,,REL with SEC,FY,,REL |
| B0118.002-003 (pt.2) | Replace IND/M+,SIG,,REL/AV,EXP with IND,FY,,REL. Delete the theoretical yields. |
| C0370.006-007 | Replace CUM,SIG,,REL with CUM,FY,,REL |
| E2337.005 | Replace CHN,SIG,,REL with PRE,FY,,REL. Also ACCEL -> VDGT. |
| M0167.048-052 | Replace 0-NN-1,DL,SIG,,BRA/REL with ,DL,NU,,BRA/REL. |
| O0374.002-005 | Replace ,KE,FF,REL,EXP with SEC,FY/DE/LF+HF,,REL. E -> TKE |
| O0374.006-009 | Replace ,SIG,,REL,EXP with SEC,FY,,REL |
| O0374.010-013 | Replace ,KE,FF,REL,EXP with SEC,KE,LF+HF,REL |
| O0727.011 | Replace IND/M+,SIG,,REL with IND,FY,,REL. |
| O0727.025 | Replace CUM,SIG,,REL with CUM,FY,,REL |
| O0727.026-028 | Replace IND,SIG,,REL with IND,FY,,REL |
| O0825.003-013 | Replace IND,SIG,,REL with IND,FY,,REL |
| O0829.002 | Delete this data set. The denominator (cross section of symmetric mass division products) is not a constant of the incident energy. Also the data might be from Ref.[6] (EXFOR O0020). |
| O1141.002 | Replace ,SIG,REL with IND,FY,,REL. |
| O1392.004, 013 | Replace CUM,SIG,,REL with CUM,FY,,REL |
| O1545.002-003 | Replace ,SIG,,REL with IND,FY,,REL |
| O1981.002-007 | Replace ,SIG,,REL with IND,FY,,REL |

In this opportunity, I also checked whether the quantity code defined with the unit family FYDA, FYDE or FYAE are always combined with FY or NU in SF6, and found the following three exceptions belonging to FYDA:

|  |  |  |
| --- | --- | --- |
| **Quantity codes** | **Subentry #** | **Remarks** |
| PR,DA,N | 23118.004 | Used with SF8=REL. No data. Use PR,NU/DA,,REL. |
| PR,DA,N+LF | 22756.007-008 | Used with SF8=SF8=MSC.  Use PR,NU/DA,N+LF,MXW/MSC. |
| PR/TER,DA,N | (Not in use) |  |

I propose deletion of these three quantity codes from the dictionary 236.

**Dictionary 236 (Quantities)**

PR,DA,N (Delete)

PR,DA,N+LF (Delete)

PR/TER,DA,N (Delete)

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