**Nuclear Data Section**

**International Atomic Energy Agency**

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**Memo CP-D/1109**

**Date:** 6 May 2024

**To:** Distribution

**From:** N. Otsuka

**Subject:** Numbering scheme for compound codes (NRDC2023 A8)

I reviewed the current numbering scheme of the compound codes defined in Dictionary 209. This number is an integer (I6), of which the first three digits are for the atomic number (similar to numbering of a nuclide in Dictionary 227) and the last three digits are defined as summarized below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Current** | **Change to?** | **Symbol** | **Explanation** |
| 130 | 430 | ALY | alloy |
| 137 | 437 | HYD | hydride |
| 300 | 500 | AIR | air |
| 310 | 510 | AMM | ammonium |
| 320 | 520 | BNZ | benzene |
| 330 | 530 | CMP | compound (general) |
| 340 | 540 | CXX | organic compound (general) |
| 350 | 550 | D2O | heavy water |
| 360 | 560 | DXX | deuterium compound |
| 370 | 570 | ARM | aromatic compound |
| 380 | 580 | MTH | methyl compound |
| 390 | 590 | OXI | oxide |
| 400 | 600 | PFN | paraffin |
| 410 | 610 | PHL | phenyl compound |
| 420 | 620 | PLE | polyethylene |
| 430 | 630 | TXX | tritium compound |
| 440 | 640 | WTR | water |
| 450 | 650 | BUT | butyl compound |
| 460 | 660 | ETH | ethyl compound |
| 470 | 670 | PRO | propyl compound |

I would like to suggest the following changes:

* increase the first digit characterizing the compound to avoid interference with the mass number (up to ~300)
* add “0” as the seventh digit (to be consistent with Dictionary 227 for nuclide codes)

***Examples***

|  |  |  |  |
| --- | --- | --- | --- |
| **Code** | **Current** | **Change to?** | **Explanation** |
| 40-ZR-ALY | 40130 | 404300 | Zircalloy |
| 40-ZR-CMP | 40330 | 405300 | Zirconium compound (general) |
| 40-ZR-HYD | 40137 | 404370 | Zirconium hydride |
| 40-ZR-OXI | 40390 | 405900 | Zirconium oxide |
| 40-ZR-0 | 400000 |  | Natural zirconium |
| 40-ZR-90-G | 400900 |  | Zirconium-90 (ground state) |
| 40-ZR-90-M | 400901 |  | Zirconium-90 (metastable state) |
| 40-ZR-91 | 400910 |  | Zirconium-91 |

**Dictionary 209: Compounds (Proposed change)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Line** | **Contents** | **Format** | **Archive** | **Trans** | **CHEX** |
| 1 | Code | A10 | 13-22 | 1-10 | x |
|  | CINDA code | A5 | 44-48 | N/A |  |
|  | Internal numerical equivalent | I7 | 49-55 | N/A | x |
|  | ~~(Field not currently used)~~ | ~~A13~~ | ~~55-67~~ | ~~N/A~~ |  |
|  | ~~(presently not in use)~~ | ~~E5~~ | ~~68-72~~ | ~~N/A~~ |  |
|  | ~~(presently not in use)~~ | ~~E11~~ | ~~73-83~~ | ~~N/A~~ |  |
|  | Expansion | A25 | 84-108 | (12-38) |  |
|  | Compound flag\* compound | A1 | 114 | N/A |  |
| 2+ | ~~Output dictionary number for DANIEL~~~~(presently not used)~~ | ~~I2~~ | ~~44-45~~ | ~~N/A~~ |  |
|  | Comment | A55 | 46-100 | 12-66 |  |

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