

## New Nuclides Dictionary 227: Status

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### Background:

NRDC 2003 decided to introduce a new nuclides dictionary 227 which is produced by a program from NuDat / Wallet Cards (NRDC 2003, Conclusion C10 and Actions A11, A12).

In August 2004, NDS received from NNDC a complete new dictionary 227. As agreed in 2003, it consists of the following fields:

### Dictionary 227: NUCLIDES

#### MASTER RECORD:

KEY1: EXFOR CODE (A12)

(?) KEY2: field 1: A-Symbol as in NSR (A12)  
field 2: ZZZAAAM (A7) (*Note that **all** metastable states have just 'M'*)  
field 3: Spin / Parity (E9)  
field 4: Half-life (E11)  
field 5: Half-life units (A4)  
field 6: Abundance (E11)  
field 7: Atomic Weight (E13)

(Field formats to be verified!)

See **Appendix 1** for an extract of the new dictionary (complete file is available from the NDS open area, subdirectory TRANS.DICTS, file DICT.227).

### Comments:

While this is a good starter file, several additions are needed:

- Format: I noticed that it is in **backup format** rather than archive format (main difference is the '227' in every line in the first 3 positions). I would prefer to have it in archive format so I can treat it the same way with all others.

- Between the key and the first field, there are **10 extra spaces** compared with the format of all other dictionaries. I propose to delete them.

- Shouldn't we keep the '**Z**' flag for those nuclides which have a **particle code**, to indicate that e.g. 1-H-1 is forbidden in SF2 etc.?

Or how will this be checked in future?

- The "**pseudo-nuclides**" such as **0-G-0** and 0-ET-0 need to be added.

- What is your opinion of checking for **validity in SF1**? I know we have 0-NN-1 as target, but what about 0-G-0 or 0-P0-0 as targets? Or should this be checked another way?

- Additional remark: Current dictionary 27 has also the **natural isotopic mixtures** with A=0, which are not included here. How will the validity of A=0 be checked?

When these questions are solved and a first complete version is used in place of the old dictionary 27, we need a **procedure for NDS** to create a new version of this dictionary every 3 months from NuDat / Wallet Cards.

## Appendix 1: Extract from Dictionary 227

	Key	F.1	F.2	Field3	Field 4	F.5	Field 6	Field 7
227	TRA 200408 1-H-1	1H	10010	+0.5			99.985	1007825.032
227	TRA 200408 1-H-2	2H	10020	+1.			0.015	2014101.777
227	TRA 200408 1-H-3	3H	10030	+0.5	12.32	Y		3016049.277
227	TRA 200408 0-NN-1	1n	10	+0.5	10.24	M		1008664.915
227	TRA 200408 1-H-4	4H	10040	-2.	4.6	MEV		
227	TRA 200408 1-H-5	5H	10050		5.7	MEV		
227	TRA 200408 1-H-6	6H	10060		1.4	MEV		
227	TRA 200408 2-HE-3	3HE	20030	+0.5			0.000137	3016029.319
227	TRA 200408 2-HE-4	4HE	20040	+0.			99.999863	
227	TRA 200408 2-HE-5	5HE	20050	-1.5	0.60	MEV		
227	TRA 200408 2-HE-6	6HE	20060	+0.	806.7	MS		
227	TRA 200408 2-HE-7	7HE	20070		160.	KEV		
227	TRA 200408 2-HE-8	8HE	20080	+0.	119.0	MS		
227	TRA 200408 2-HE-9	9HE	20090		65.	KEV		
227	TRA 200408 2-HE-10	10HE	20100	+0.	0.17	MEV		
227	TRA 200408 3-LI-4	4LI	30040	-2.	6.03	MEV		4027185.558
227	TRA 200408 3-LI-5	5LI	30050	-1.5	~1.5	MEV		5012537.800
227	TRA 200408 3-LI-6	6LI	30060	+1.			7.59	
227	TRA 200408 3-LI-7	7LI	30070	-1.5			92.41	
227	TRA 200408 3-LI-8	8LI	30080	+2.	838.	MS		
227	TRA 200408 3-LI-9	9LI	30090	-1.5	178.3	MS		
227	TRA 200408 3-LI-10	10LI	30100		1.2	MEV		
227	TRA 200408 3-LI-11	11LI	30110	-1.5	8.59	MS		
227	TRA 200408 3-LI-12	12LI	30120		<10.	NS		
227	TRA 200408 4-BE-5	5BE	40050					5040790.
227	TRA 200408 4-BE-6	6BE	40060	+0.	92.	KEV		6019726.317
227	TRA 200408 4-BE-7	7BE	40070	-1.5	53.22	D		
227	TRA 200408 4-BE-8	8BE	40080	+0.	6.8	EV		
227	TRA 200408 4-BE-9	9BE	40090	-1.5			100.	
227	TRA 200408 4-BE-10	10BE	40100	+0.	1.51E+6	Y		
227	TRA 200408 4-BE-11	11BE	40110	+0.5	13.81	S		
227	TRA 200408 4-BE-12	12BE	40120	+0.	21.3	MS		
227	TRA 200408 4-BE-13	13BE	40130		2.7E-21	S		
227	TRA 200408 4-BE-14	14BE	40140	+0.	4.35	MS		

227	TRA	200408	5-B-7	7B	50070		1.4	MEV		7029917.901
227	TRA	200408	5-B-8	8B	50080	+2.	770.	MS		8024607.233
227	TRA	200408	5-B-9	9B	50090	-1.5	0.54	KEV		
227	TRA	200408	5-B-10	10B	50100	+3.			19.8	
227	TRA	200408	5-B-11	11B	50110	-1.5			80.2	
227	TRA	200408	5-B-12	12B	50120	+1.	20.20	MS		
227	TRA	200408	5-B-13	13B	50130	-1.5	17.33	MS		
227	TRA	200408	5-B-14	14B	50140	-2.	12.5	MS		
227	TRA	200408	5-B-15	15B	50150		9.93	MS		
227	TRA	200408	5-B-16	16B	50160	-0.	<190.	PS		
227	TRA	200408	5-B-17	17B	50170		5.08	MS		
227	TRA	200408	5-B-18	18B	50180		<26.	NS		
227	TRA	200408	5-B-19	19B	50190		>200.	NS		
227	TRA	200408	6-C-8	8C	60080	+0.	230.	KEV		8037675.025
227	TRA	200408	6-C-9	9C	60090		126.5	MS		9031036.689
227	TRA	200408	6-C-10	10C	60100	+0.	19.26	S		10016853.228
227	TRA	200408	6-C-11	11C	60110	-1.5	20.39	M		
227	TRA	200408	6-C-12	12C	60120	+0.			98.89	
227	TRA	200408	6-C-13	13C	60130	-0.5			1.11	
227	TRA	200408	6-C-14	14C	60140	+0.	5700.	Y		
227	TRA	200408	6-C-15	15C	60150	+0.5	2.449	S		
227	TRA	200408	6-C-16	16C	60160	+0.	0.747	S		
227	TRA	200408	6-C-17	17C	60170		193.	MS		
227	TRA	200408	6-C-18	18C	60180		92.	MS		
227	TRA	200408	6-C-19	19C	60190		49.	MS		
227	TRA	200408	6-C-20	20C	60200	+0.	14.	MS		
227	TRA	200408	6-C-21	21C	60210		<30.	NS		
227	TRA	200408	6-C-22	22C	60220	+0.	9.	MS		
227	TRA	200408	7-N-10	10N	70100					10041653.674
227	TRA	200408	7-N-11-M	11N	70111	+0.5	1.58	MEV		11026090.956
227	TRA	200408	7-N-12	12N	70120	+1.	11.000	MS		12018613.197
227	TRA	200408	7-N-13	13N	70130	-0.5	9.965	M		
227	TRA	200408	7-N-14	14N	70140	+1.			99.634	
227	TRA	200408	7-N-14-M	14N	70141	-4.	13.2	FS		
227	TRA	200408	7-N-14-M	14N	70142	+5.	73.	FS		
227	TRA	200408	7-N-14-M	14N	70143	+3.	9.	FS		
227	TRA	200408	7-N-15	15N	70150	-0.5			0.366	
227	TRA	200408	7-N-15-M	15N	70151	+4.5	12.	FS		
227	TRA	200408	7-N-16	16N	70160	-2.	7.13	S		