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Format

- Columns 1 - 2 Chemical symbol of the target element, left adjusted for single letter symbols.
- Columns 3 - 5 Isotope mass number, right adjusted with leading zeros. Leave blank for natural elements containing a mixture of isotopes.

Coding rules

1. Single isotopes

Experiments and calculations giving information for specific isotopes, either using isotopically enriched target, or by identification of isotopes from the reactions themselves, should be coded with the specific isotope numbers.

Monoisotopic and nearly monoisotopic elements should be coded with the appropriate isotope number. A list of elements in this category is given below.

Inclusion of an element in this list implies that an experiment using a natural element target will only yield useful information about

Examples

Isotope	Code
A1-27	AL027
W-186	W 186

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<u>SYMBOL</u>	<u>Z</u>	<u>ELEMENT</u>	<u>SYMBOL</u>	<u>Z</u>	<u>ELEMENT</u>
AR	18	ARGON	MN	25	MANGANESE
AC	89	ACTINIUM	MO	42	MOLYBDENUM
AG	47	SILVER	N	7	NITROGEN
AL	13	ALUMINIUM	NA	11	SODIUM
AM	95	AMERICIUM	NB	41	NIوبيUM
AS	33	ARSENIC	ND	60	NEODYMIUM
AT	85	ASTATINE	NE	10	NEON
AU	79	GOLD	NI	28	NICKEL
B	5	BORON	NN	0	NEUTRON
BA	56	BARIUM	NO	102	NOBELIUM
BE	4	BERYLLIUM	NP	93	NEPTUNIUM
BI	83	BISMUTH	O	8	OXYGEN
BK	97	BERKELIUM	OS	76	OSMIUM
BR	35	BROMINE	P	15	PHOSPHORUS
C	6	CARBON	PA	91	PROTACTINIUM
CA	20	CALCIUM	PB	82	LEAD
CD	48	CADMIUM	PD	46	PALLADIUM
CE	58	CERIUM	PM	61	PROMETHIUM
CF	98	CALIFORNIUM	PO	84	POLONIUM
CL	17	CHLORINE	PR	59	PRASEODYMIUM
CM	96	CURIUM	PT	78	PLATINUM
CO	27	COBALT	PU	94	PLUTONIUM
CR	24	CHROMIUM	RA	88	RADIUM
CS	55	CESIUM	RB	37	RUBIDIUM
CU	29	COPPER	RE	75	RHENIUM
DY	66	DYSPROSIUM	RH	45	RHODIUM
ER	68	ERBIUM	RN	86	RADON
ES	99	EINSTEINIUM	RU	44	RUTHENIUM
EU	63	EUROPIUM	S	16	SULFUR
F	9	FLUORINE	SB	51	ANTIMONY
FE	26	IRON	SC	21	SCANDIUM
FM	100	FERMIUM	SE	34	SELENIUM
FR	87	FRANCIUM	SI	14	SILICON
GA	31	GALLIUM	SM	62	SAMARIUM
GD	64	GADOLINIUM	SN	50	TIN
GE	32	GERMANIUM	SR	38	STRONTIUM
H	1	HYDROGEN	TA	73	TANTALIUM
HE	2	HELIUM	TB	65	TERBIUM
HF	72	HAFNIUM	TC	43	TECHNECIUM
HG	80	MERCURY	TE	52	TELLURIUM
HO	67	HOLMIUM	TH	90	THORIUM
I	53	IODINE	TI	22	TITANIUM
IN	49	INDIUM	TL	81	THALLIUM
IR	77	IRIDIUM	TM	69	THULIUM
K	19	POTASSIUM	U	92	URANIUM
KR	36	KRYPTON	V	23	VANADIUM
KU	104	KURCHATOVIIUM	U	74	TUNGSTEN
LA	57	LANTHANUM	XE	54	XENON
LI	3	LITHIUM	Y	39	YTTRIUM
LR	103	LAWRENCIUM	YB	70	YTTERBIUM
LU	71	LUTETIUM	ZN	30	ZINC
MD	101	MENDELEVIUM	ZR	40	ZIRCONIUM
MG	12	MAGNESIUM			

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Monoisotopic or effectively monoisotopic elements

** NNOO1	* 0 016	C0059	PR141
H 001	F 019	AS075	TB159
H 002	NA023	Y 089	H0165
H 002	AL027	NB093	TM169
* HE 004	P 031	RH103	* TA181
BE 009	SC045	I 127	AU197
* C 012	* V 051	CS133	BI209
* N 014	MN055	* LA139	TH232

* nearly monoisotopic

** artificial code for 'neutron' as target

2. Natural elements and their isotopes

If a measurement was performed on a sample consisting of a natural isotopic mixture, but properties of some of the isotopes of that element are deduced, prepare entries for both the natural element and the appropriate isotopes.

The value of this convention is more obvious for some older works reported in CINDA. Current measuring techniques allow reactions on individual isotopes to be distinguished without necessarily accumulating comparative data for all constituents of the target. However, the convention is kept in order to preserve the consistency of the file.

3. Isotopes far from the stability line

The relation between Z and A of isotopic targets is checked on input, so as to eliminate misprint errors.

When entries are made for unusual target isotopes (multiple neutron capture, some fission products, some theoretical calculations) it is possible that these entries too will be rejected on a first check. Please repeat the designation of such targets in the right-hand margin of your entry sheet, to make it clear that the unusual isotope was not generated by a slip of the pen or a misprint error.

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4. Hydrogen Isotopes

The hydrogen isotopes deuterium and tritium are entered as :

H 002

H 003

5. Neutrons

Neutrons as targets are coded as : NNOO1.

6. Inverse reactions

In some cases the principle of detailed balance allows the cross section of an inverse neutron-induced reaction to be calculated. However, it is not usually possible to extract useful information unless an absolute value is given of the cross-section leading directly to the ground state of a stable product nucleus. If useful information can be deduced about a neutron-induced reaction, enter the work under this reaction with the word INVERSE (or INV.) immediately after the author's name in the comment.

7. Gamma-induced reactions

Photo-neutron production (for some light nuclei) and photo-fission are an exception to the rule on coding inverse reactions. Enter the target nucleus. See Section II.2 for restrictions on this type of entry.

8. Compound nucleus properties

Entries should be coded under the target nucleus (i.e. the compound nucleus less one neutron). This is particularly important for Resonance parameters, capture gamma spectra. Level density information is an exception and should be coded under the nucleus for which the level density is given.

9. Spontaneous Fission

For spontaneous fission, enter the isotope concerned (this is an exception to the convention on entering targets).

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10. Mixed fission products as a target

The cross-sections of many important fission products are known with very poor accuracy, such that it has been preferable in some cases to measure or calculate an aggregate cross-section for the fission products produced in the environment similar to that of the reactor for which results are required.

Work of this type is entered under the target code FPROD. This code refers to an aggregate target NOT a measured yield.

11. Systematic trends over a range of nuclei

Work on systematic trends over a range of values of Z or A should be entered with a target code MANY in addition to separate entries for individual nuclei for which values are given.

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12. Chemical compounds

Properties of chemical compounds are entered under the principal element (columns 1 - 2) followed by either a specific chemical code or the code CMP (columns 3 - 5) for compounds not in the following list.

<u>CODE</u>	<u>INTERNAL</u>	<u>COMPOUND</u>
H BNZ	401	Benzene (C ₆ H ₆)
H CXX	403	Organic compounds other than BNZ, MTH, PFN, PHL, PLE
H MTH	405	Methane (CH ₄)
H PFN	407	Paraffin (= kerosene)
H PHL	409	Phenyl (all, ter- poly-)
H PLE	411	Polyethylene
H WTR	413	Water (H ₂ O), ice, steam
H DXX	435	Deuterium compounds except D ₂ O and Zr-deuteride. Includes mixed H-D compounds.
H D ₂ O	437	Heavy water, D ₂ O and HDO
H TXX	445	Tritium compounds except Zr-tritide. Includes mixed H-T and D-T compounds.
BEOXI	417	Beryllium oxide
N AIR	419	Air
N AMM	421	Ammonia compounds
SIOXI	417	Silicon oxide (glass, mica)
ZRH ₂	423	Zirconium hydride (+ deuteride and tritide)
U OXI	417	Uranium oxide

For compounds not in this list, the choice of principal element should be the element of greatest interest to reactor or solid-state physicists, or that responsible for the major component of the measured quantity. If important information is lost in making such a choice, separate entries can be made for each important element, but such multiple entries should be avoided.

The name or formula of the compound should always be given as fully as possible in the comment field (in parentheses).

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Metal alloys should be coded under the most abundant element and CMP with the characteristics in the comment field. Brass should be coded under both CUCMP and ZNCMP.

STEEL should be coded under natural iron with a specification in the comment field.

Single element compounds; GRAPHITE, MOLECULAR HYDROGEN, etc., should NOT be coded as compounds.

If information is also deduced for the constituent elements of a compound, entries should also be made for these elements.