

لیست اینزوتوپها

$^{232}_{90}\text{Th}$ (44)	$^{138}_{54}\text{Xe}$ (54)	$^{48}_{22}\text{Ti}$ (22)	(1) هیدروژن: ($A=1$ $Z=1$)
$^{235}_{92}\text{U}$ (45)	$^{181}_{73}\text{Ta}$ (73)	$^{93}_{41}\text{Nb}$ (41)	
$^{238}_{92}\text{U}$ (46)	$^{187}_{75}\text{Re}$ (75)	$^{98}_{42}\text{Mo}$ (42)	(2) هلیوم 3 ($A=3$ $Z=2$)
$^{244}_{94}\text{Pu}$ (49)	$^{188}_{76}\text{Os}$ (76)	$^{98}_{43}\text{Tc}$ (43)	(3) لیتیم 6 ($A=6$ $Z=3$)
$^{241}_{95}\text{Am}$ (50)	$^{192}_{78}\text{Pt}$ (78)	$^{101}_{44}\text{Ru}$ (44)	(4) برلیوم 9 ($A=9$ $Z=4$)
$^{244}_{96}\text{Cm}$ (51)	$^{194}_{79}\text{Au}$ (79)	$^{104}_{46}\text{Pd}$ (46)	$^{10}_5\text{B}$ (5)
$^{247}_{97}\text{Bk}$ (52)	$^{199}_{80}\text{Hg}$ (80)	$^{106}_{47}\text{Ag}$ (47)	$^{12}_6\text{C}$ (6)
$^{251}_{98}\text{Fm}$ (53)	$^{102}_{48}\text{Cd}$ (48)	$^{113}_{49}\text{In}$ (49)	$^{14}_7\text{N}$ (7)
$^{252}_{99}\text{Es}$ (54)	$^{103}_{49}\text{V}$ (49)	$^{117}_{50}\text{Sn}$ (50)	$^{16}_8\text{O}$ (8)
$^{254}_{101}\text{Md}$ (56)	$^{110}_{50}\text{Cd}$ (50)	$^{121}_{51}\text{Sb}$ (51)	$^{19}_9\text{F}$ (9)
$^{257}_{102}\text{No}$ (57)	$^{114}_{52}\text{Te}$ (52)	$^{123}_{52}\text{Te}$ (52)	$^{20}_{10}\text{Ne}$ (10)
$^{264}_{104}\text{Rf}$ (59)	$^{115}_{53}\text{I}$ (53)	$^{127}_{54}\text{Xe}$ (54)	$^{23}_{11}\text{Na}$ (11)
$^{267}_{105}\text{Db}$ (60)	$^{117}_{54}\text{Xe}$ (54)	$^{129}_{55}\text{Cs}$ (55)	$^{24}_{12}\text{Mg}$ (12)
$^{271}_{106}\text{Sg}$ (61)	$^{118}_{55}\text{Cs}$ (55)	$^{130}_{56}\text{Ba}$ (56)	$^{26}_{13}\text{Al}$ (13)
$^{274}_{107}\text{Bh}$ (62)	$^{119}_{56}\text{Ba}$ (56)	$^{132}_{57}\text{La}$ (57)	$^{28}_{14}\text{Si}$ (14)
$^{277}_{108}\text{Hs}$ (63)	$^{120}_{57}\text{La}$ (57)	$^{134}_{58}\text{Ce}$ (58)	$^{31}_{15}\text{P}$ (15)
$^{281}_{109}\text{Mt}$ (64)	$^{121}_{58}\text{Ce}$ (58)	$^{136}_{59}\text{Pr}$ (59)	$^{32}_{16}\text{S}$ (16)
$^{285}_{110}\text{Ds}$ (65)	$^{122}_{59}\text{Pr}$ (59)	$^{138}_{60}\text{Nd}$ (60)	$^{35}_{17}\text{Cl}$ (17)
$^{288}_{111}\text{Uu}$ (66)	$^{123}_{60}\text{Nd}$ (60)	$^{140}_{61}\text{Pm}$ (61)	$^{39}_{19}\text{K}$ (19)
$^{292}_{112}\text{Uub}$ (67)	$^{124}_{61}\text{Pm}$ (61)	$^{142}_{62}\text{Sm}$ (62)	$^{40}_{20}\text{Ca}$ (20)
$^{294}_{113}\text{Uut}$ (68)	$^{125}_{62}\text{Sm}$ (62)	$^{144}_{63}\text{Eu}$ (63)	$^{45}_{21}\text{Sc}$ (21)
$^{297}_{114}\text{Uuq}$ (69)	$^{126}_{63}\text{Eu}$ (63)	$^{146}_{64}\text{Gd}$ (64)	
$^{301}_{115}\text{Uubk}$ (70)	$^{127}_{64}\text{Gd}$ (64)	$^{148}_{65}\text{Ter}$ (65)	
$^{304}_{116}\text{Uubh}$ (71)	$^{128}_{65}\text{Ter}$ (65)	$^{150}_{66}\text{Dy}$ (66)	
$^{307}_{117}\text{Uubg}$ (72)	$^{129}_{66}\text{Dy}$ (66)	$^{152}_{67}\text{Ho}$ (67)	
$^{310}_{118}\text{Uubm}$ (73)	$^{130}_{67}\text{Ho}$ (67)	$^{154}_{68}\text{Er}$ (68)	
$^{312}_{119}\text{Uubn}$ (74)	$^{131}_{68}\text{Er}$ (68)	$^{156}_{69}\text{Tm}$ (69)	
$^{315}_{120}\text{Uubd}$ (75)	$^{132}_{69}\text{Tm}$ (69)	$^{158}_{70}\text{Yb}$ (70)	
$^{318}_{121}\text{Uubg}$ (76)	$^{133}_{70}\text{Yb}$ (70)	$^{160}_{71}\text{Lu}$ (71)	
$^{321}_{122}\text{Uubh}$ (77)	$^{134}_{71}\text{Lu}$ (71)	$^{162}_{72}\text{Hf}$ (72)	
$^{324}_{123}\text{Uubk}$ (78)	$^{135}_{72}\text{Hf}$ (72)	$^{164}_{73}\text{Ta}$ (73)	
$^{327}_{124}\text{Uubm}$ (79)	$^{136}_{73}\text{Ta}$ (73)	$^{166}_{74}\text{W}$ (74)	
$^{330}_{125}\text{Uubn}$ (80)	$^{137}_{74}\text{W}$ (74)	$^{168}_{75}\text{Re}$ (75)	
$^{333}_{126}\text{Uubd}$ (81)	$^{138}_{75}\text{Re}$ (75)	$^{170}_{76}\text{Os}$ (76)	
$^{336}_{127}\text{Uubg}$ (82)	$^{139}_{76}\text{Os}$ (76)	$^{172}_{77}\text{Ir}$ (77)	
$^{339}_{128}\text{Uubh}$ (83)	$^{140}_{77}\text{Ir}$ (77)	$^{174}_{78}\text{Pt}$ (78)	
$^{342}_{129}\text{Uubk}$ (84)	$^{141}_{78}\text{Pt}$ (78)	$^{176}_{79}\text{Au}$ (79)	
$^{345}_{130}\text{Uubm}$ (85)	$^{142}_{79}\text{Au}$ (79)	$^{178}_{80}\text{Hg}$ (80)	
$^{348}_{131}\text{Uubn}$ (86)	$^{143}_{80}\text{Hg}$ (80)	$^{180}_{81}\text{Tl}$ (81)	
$^{351}_{132}\text{Uubd}$ (87)	$^{144}_{81}\text{Tl}$ (81)	$^{182}_{82}\text{Pb}$ (82)	
$^{354}_{133}\text{Uubg}$ (88)	$^{145}_{82}\text{Pb}$ (82)	$^{184}_{83}\text{Bi}$ (83)	
$^{357}_{134}\text{Uubh}$ (89)	$^{146}_{83}\text{Bi}$ (83)	$^{186}_{84}\text{Po}$ (84)	
$^{360}_{135}\text{Uubk}$ (90)	$^{147}_{84}\text{Po}$ (84)	$^{188}_{85}\text{At}$ (85)	
$^{363}_{136}\text{Uubm}$ (91)	$^{148}_{85}\text{At}$ (85)	$^{190}_{86}\text{Rn}$ (86)	
$^{366}_{137}\text{Uubn}$ (92)	$^{149}_{86}\text{Rn}$ (86)	$^{192}_{87}\text{Fr}$ (87)	
$^{369}_{138}\text{Uubd}$ (93)	$^{150}_{87}\text{Fr}$ (87)	$^{194}_{88}\text{Ra}$ (88)	
$^{372}_{139}\text{Uubg}$ (94)	$^{151}_{88}\text{Ra}$ (88)	$^{196}_{89}\text{Ac}$ (89)	
$^{375}_{140}\text{Uubh}$ (95)	$^{152}_{89}\text{Ac}$ (89)	$^{198}_{90}\text{Th}$ (90)	
$^{378}_{141}\text{Uubk}$ (96)	$^{153}_{90}\text{Th}$ (90)	$^{200}_{91}\text{Pa}$ (91)	
$^{381}_{142}\text{Uubm}$ (97)	$^{154}_{91}\text{Pa}$ (91)	$^{202}_{92}\text{U}$ (92)	
$^{384}_{143}\text{Uubn}$ (98)	$^{155}_{92}\text{U}$ (92)	$^{204}_{93}\text{Np}$ (93)	
$^{387}_{144}\text{Uubd}$ (99)	$^{156}_{93}\text{Np}$ (93)	$^{206}_{94}\text{Pu}$ (94)	
$^{390}_{145}\text{Uubg}$ (100)	$^{157}_{94}\text{Pu}$ (94)	$^{208}_{95}\text{Am}$ (95)	
$^{393}_{146}\text{Uubh}$ (101)	$^{158}_{95}\text{Am}$ (95)	$^{210}_{96}\text{Cm}$ (96)	
$^{396}_{147}\text{Uubk}$ (102)	$^{159}_{96}\text{Cm}$ (96)	$^{212}_{97}\text{Bk}$ (97)	
$^{399}_{148}\text{Uubm}$ (103)	$^{160}_{97}\text{Bk}$ (97)	$^{214}_{98}\text{Cf}$ (98)	
$^{402}_{149}\text{Uubn}$ (104)	$^{161}_{98}\text{Cf}$ (98)	$^{216}_{99}\text{Es}$ (99)	
$^{405}_{150}\text{Uubd}$ (105)	$^{162}_{99}\text{Es}$ (99)	$^{218}_{100}\text{Fm}$ (100)	
$^{408}_{151}\text{Uubg}$ (106)	$^{163}_{100}\text{Fm}$ (100)	$^{220}_{101}\text{Md}$ (101)	
$^{411}_{152}\text{Uubh}$ (107)	$^{164}_{101}\text{Md}$ (101)	$^{222}_{102}\text{No}$ (102)	
$^{414}_{153}\text{Uubk}$ (108)	$^{165}_{102}\text{No}$ (102)	$^{224}_{103}\text{Lr}$ (103)	
$^{417}_{154}\text{Uubm}$ (109)	$^{166}_{103}\text{Lr}$ (103)	$^{226}_{104}\text{Rf}$ (104)	
$^{420}_{155}\text{Uubn}$ (110)	$^{167}_{104}\text{Rf}$ (104)	$^{228}_{105}\text{Db}$ (105)	
$^{423}_{156}\text{Uubd}$ (111)	$^{168}_{105}\text{Db}$ (105)	$^{230}_{106}\text{Sg}$ (106)	
$^{426}_{157}\text{Uubg}$ (112)	$^{169}_{106}\text{Sg}$ (106)	$^{232}_{107}\text{Bh}$ (107)	
$^{429}_{158}\text{Uubh}$ (113)	$^{170}_{107}\text{Bh}$ (107)	$^{234}_{108}\text{Hs}$ (108)	
$^{432}_{159}\text{Uubk}$ (114)	$^{171}_{108}\text{Hs}$ (108)	$^{236}_{109}\text{Mt}$ (109)	
$^{435}_{160}\text{Uubm}$ (115)	$^{172}_{109}\text{Mt}$ (109)	$^{238}_{110}\text{Ds}$ (110)	
$^{438}_{161}\text{Uubn}$ (116)	$^{173}_{110}\text{Ds}$ (110)	$^{240}_{111}\text{Uu}$ (111)	
$^{441}_{162}\text{Uubd}$ (117)	$^{174}_{111}\text{Uu}$ (111)	$^{242}_{112}\text{Uub}$ (112)	
$^{444}_{163}\text{Uubg}$ (118)	$^{175}_{112}\text{Uub}$ (112)	$^{244}_{113}\text{Uubk}$ (113)	
$^{447}_{164}\text{Uubh}$ (119)	$^{176}_{113}\text{Uubk}$ (113)	$^{246}_{114}\text{Uubm}$ (114)	
$^{450}_{165}\text{Uubk}$ (120)	$^{177}_{114}\text{Uubm}$ (114)	$^{248}_{115}\text{Uubn}$ (115)	
$^{453}_{166}\text{Uubd}$ (121)	$^{178}_{115}\text{Uubn}$ (115)	$^{250}_{116}\text{Uubd}$ (116)	
$^{456}_{167}\text{Uubg}$ (122)	$^{179}_{116}\text{Uubd}$ (116)	$^{252}_{117}\text{Uubg}$ (117)	
$^{459}_{168}\text{Uubh}$ (123)	$^{180}_{117}\text{Uubg}$ (117)	$^{254}_{118}\text{Uubh}$ (118)	
$^{462}_{169}\text{Uubk}$ (124)	$^{181}_{118}\text{Uubh}$ (118)	$^{256}_{119}\text{Uubk}$ (119)	
$^{465}_{170}\text{Uubm}$ (125)	$^{182}_{119}\text{Uubk}$ (119)	$^{258}_{120}\text{Uubm}$ (120)	
$^{468}_{171}\text{Uubn}$ (126)	$^{183}_{120}\text{Uubm}$ (120)	$^{260}_{121}\text{Uubn}$ (121)	
$^{471}_{172}\text{Uubd}$ (127)	$^{184}_{121}\text{Uubn}$ (121)	$^{262}_{122}\text{Uubd}$ (122)	
$^{474}_{173}\text{Uubg}$ (128)	$^{185}_{122}\text{Uubd}$ (122)	$^{264}_{123}\text{Uubg}$ (123)	
$^{477}_{174}\text{Uubh}$ (129)	$^{186}_{123}\text{Uubg}$ (123)	$^{266}_{124}\text{Uubh}$ (124)	
$^{480}_{175}\text{Uubk}$ (130)	$^{187}_{124}\text{Uubh}$ (124)	$^{268}_{125}\text{Uubk}$ (125)	
$^{483}_{176}\text{Uubm}$ (131)	$^{188}_{125}\text{Uubk}$ (125)	$^{270}_{126}\text{Uubm}$ (126)	
$^{486}_{177}\text{Uubn}$ (132)	$^{189}_{126}\text{Uubm}$ (126)	$^{272}_{127}\text{Uubn}$ (127)	
$^{489}_{178}\text{Uubd}$ (133)	$^{190}_{127}\text{Uubn}$ (127)	$^{274}_{128}\text{Uubd}$ (128)	
$^{492}_{179}\text{Uubg}$ (134)	$^{191}_{128}\text{Uubd}$ (128)	$^{276}_{129}\text{Uubg}$ (129)	
$^{495}_{180}\text{Uubh}$ (135)	$^{192}_{129}\text{Uubg}$ (129)	$^{278}_{130}\text{Uubh}$ (130)	
$^{498}_{181}\text{Uubk}$ (136)	$^{193}_{130}\text{Uubh}$ (130)	$^{280}_{131}\text{Uubk}$ (131)	
$^{501}_{182}\text{Uubm}$ (137)	$^{194}_{131}\text{Uubk}$ (131)	$^{282}_{132}\text{Uubm}$ (132)	
$^{504}_{183}\text{Uubn}$ (138)	$^{195}_{132}\text{Uubm}$ (132)	$^{284}_{133}\text{Uubn}$ (133)	
$^{507}_{184}\text{Uubd}$ (139)	$^{196}_{133}\text{Uubn}$ (133)	$^{286}_{134}\text{Uubd}$ (134)	
$^{510}_{185}\text{Uubg}$ (140)	$^{197}_{134}\text{Uubd}$ (134)	$^{288}_{135}\text{Uubg}$ (135)	
$^{513}_{186}\text{Uubh}$ (141)	$^{198}_{135}\text{Uubg}$ (135)	$^{290}_{136}\text{Uubh}$ (136)	
$^{516}_{187}\text{Uubk}$ (142)	$^{199}_{136}\text{Uubh}$ (136)	$^{292}_{137}\text{Uubk}$ (137)	
$^{519}_{188}\text{Uubm}$ (143)	$^{200}_{137}\text{Uubk}$ (137)	$^{294}_{138}\text{Uubm}$ (138)	
$^{522}_{189}\text{Uubn}$ (144)	$^{201}_{138}\text{Uubm}$ (138)	$^{296}_{139}\text{Uubn}$ (139)	
$^{525}_{190}\text{Uubd}$ (145)	$^{202}_{139}\text{Uubn}$ (139)	$^{298}_{140}\text{Uubd}$ (140)	
$^{528}_{191}\text{Uubg}$ (146)	$^{203}_{140}\text{Uubd}$ (140)	$^{300}_{141}\text{Uubg}$ (141)	
$^{531}_{192}\text{Uubh}$ (147)	$^{204}_{141}\text{Uubg}$ (141)	$^{302}_{142}\text{Uubh}$ (142)	
$^{534}_{193}\text{Uubk}$ (148)	$^{205}_{142}\text{Uubh}$ (142)	$^{304}_{143}\text{Uubk}$ (143)	
$^{537}_{194}\text{Uubm}$ (149)	$^{206}_{143}\text{Uubk}$ (143)	$^{306}_{144}\text{Uubm}$ (144)	
$^{540}_{195}\text{Uubn}$ (150)	$^{207}_{144}\text{Uubm}$ (144)	$^{308}_{145}\text{Uubn}$ (145)	
$^{543}_{196}\text{Uubd}$ (151)	$^{208}_{145}\text{Uubn}$ (145)	$^{310}_{146}\text{Uubd}$ (146)	
$^{546}_{197}\text{Uubg}$ (152)	$^{209}_{146}\text{Uubd}$ (146)	$^{312}_{147}\text{Uubg}$ (147)	
$^{549}_{198}\text{Uubh}$ (153)	$^{210}_{147}\text{Uubg}$ (147)	$^{314}_{148}\text{Uubh}$ (148)	
$^{552}_{199}\text{Uubk}$ (154)	$^{211}_{148}\text{Uubh}$ (148)	$^{316}_{149}\text{Uubk}$ (149)	
$^{555}_{200}\text{Uubm}$ (155)	$^{212}_{149}\text{Uubk}$ (149)	$^{318}_{150}\text{Uubm}$ (150)	
$^{558}_{201}\text{Uubn}$ (156)	$^{213}_{150}\text{Uubm}$ (150)	$^{320}_{151}\text{Uubn}$ (151)	
$^{561}_{202}\text{Uubd}$ (157)	$^{214}_{151}\text{Uubn}$ (151)	$^{322}_{152}\text{Uubd}$ (152)	
$^{564}_{203}\text{Uubg}$ (158)	$^{215}_{152}\text{Uubd}$ (152)	$^{324}_{153}\text{Uubg}$ (153)	
$^{567}_{204}\text{Uubh}$ (159)	$^{216}_{153}\text{Uubg}$ (153)	$^{326}_{154}\text{Uubh}$ (154)	
$^{570}_{205}\text{Uubk}$ (160)	$^{217}_{154}\text{Uubh}$ (154)	$^{328}_{155}\text{Uubk}$ (155)	
$^{573}_{206}\text{Uubm}$ (161)	$^{218}_{155}\text{Uubk}$ (155)	$^{330}_{156}\text{Uubm}$ (156)	
$^{576}_{207}\text{Uubn}$ (162)	$^{219}_{156}\text{Uubm}$ (156)	$^{332}_{157}\text{Uubn}$ (157)	
$^{579}_{208}\text{Uubd}$ (163)	$^{220}_{157}\text{Uubn}$ (157)	$^{334}_{158}\text{Uubd}$ (158)	
$^{582}_{209}\text{Uubg}$ (164)	$^{221}_{158}\text{Uubd}$ (158)	$^{336}_{159}\text{Uubg}$ (159)	
$^{585}_{210}\text{Uubh}$ (165)	$^{222}_{159}\text{Uubg}$ (159)	$^{338}_{160}\text{Uubh}$ (160)	
$^{588}_{211}\text{Uubk}$ (166)	$^{223}_{160}\text{Uubh}$ (160)	$^{340}_{161}\text{Uubk}$ (161)	
$^{591}_{212}\text{Uubm}$ (167)	$^{224}_{161}\text{Uubk}$ (161)	$^{342}_{162}\text{Uubm}$ (162)	
$^{594}_{213}\text{Uubn}$ (168)	$^{225}_{162}\text{Uubm}$ (162)	$^{344}_{163}\text{Uubn}$ (163)	
$^{597}_{214}\text{Uubd}$ (169)	$^{226}_{163}\text{Uubn}$ (163)	$^{346}_{164}\text{Uubd}$ (164)	
$^{600}_{215}\text{Uubg}$ (170)	$^{227}_{164}\text{Uubd}$ (164)	$^{348}_{165}\text{Uubg}$ (165)	
$^{603}_{216}\text{Uubh}$ (171)	$^{228}_{165}\text{Uubg}$ (165)	$^{350}_{166}\text{Uubh}$ (166)	
$^{606}_{217}\text{Uubk}$ (172)	$^{229}_{166}\text{Uubh}$ (166)	$^{352}_{167}\text{Uubk}$ (167)	
$^{609}_{218}\text{Uubm}$ (173)	$^{230}_{167}\text{Uubk}$ (167)	$^{354}_{168}\text{Uubm}$ (168)	
$^{612}_{219}\text{Uubn}$ (174)	$^{231}_{168}\text{Uubm}$ (168)	$^{356}_{169}\text{Uubn}$ (169)	
$^{615}_{220}\text{Uubd}$ (175)	$^{232}_{169}\text{Uubn}$ (169)	$^{358}_{170}\text{Uubd}$ (170)	
$^{618}_{221}\text{Uubg}$ (176)	$^{233}_{170}\text{Uubd}$ (170)	$^{360}_{171}\text{Uubg}$ (171)	
$^{621}_{222}\text{Uubh}$ (177)	$^{234}_{171}\text{Uubg}$ (171)	$^{362}_{172}\text{Uubh}$ (172)	
$^{624}_{223}\text{Uubk}$ (178)	$^{235}_{172}\text{Uubh}$ (172)	$^{364}_{173}\text{Uubk}$ (173)	
$^{627}_{224}\text{Uubm}$ (179)	$^{236}_{173}\text{Uubk}$ (173)	$^{366}_{174}\text{Uubm}$ (174)	
$^{630}_{225}\text{Uubn}$ (180)	$^{237}_{174}\text{Uubm}$ (174)	$^{368}_{1$	

YrA R_{ca} (AT)

450 - 7

YEA CM (7)

41
Y. 22 65 (41)

151 TH 6

YIV RN (18)

AT
Yd Ra (92)

24-11-1944

YFY (m) (a)

94 CM (11)

90/11 (11)
92/12 (12)

9A 57

FM (h)

A blank coordinate system with a vertical axis labeled $\frac{B}{A}$ and a horizontal axis labeled A .