

PbRedux Data Dictionary

Variable Name Description Units Type

INITIAL VALUES

Measured Ratios:

r206_204m	$^{206}\text{Pb}/^{204}\text{Pb}$ measured	mol/mol	double
r206_207m	$^{206}\text{Pb}/^{207}\text{Pb}$ measured	mol/mol	double
r206_208m	$^{206}\text{Pb}/^{208}\text{Pb}$ measured	mol/mol	double
r206_205m	$^{206}\text{Pb}/^{205}\text{Pb}$ measured	mol/mol	double
r207_205m	$^{207}\text{Pb}/^{205}\text{Pb}$ measured	mol/mol	double
r208_205m	$^{208}\text{Pb}/^{205}\text{Pb}$ measured	mol/mol	double
r238_235m	$^{238}\text{U}/^{235}\text{U}$ measured	mol/mol	double
r233_235m	$^{233}\text{U}/^{235}\text{U}$ measured	mol/mol	double

Fraction Parameters (from sample data table)

fraction	current fraction	---	string
sampleMass	sample weight	grams	double
tracerMass	tracer weight	grams	double
commonPbAge	estimated age	Ga	double
collector	collector scheme used for analysis (D, FD, F)	---	string
tracerName	tracer used for analysis (e.g. ET535A)	---	string
fcPb	Is reported Pb data fractionation corrected?	---	bool
fcU	Is reported U data fractionation corrected?	---	bool

Tracer quantities and ratios

concPb205t	concentration of ^{205}Pb in tracer	mol/g	double
r206_205t	$^{206}\text{Pb}/^{205}\text{Pb}$ tracer	mol/mol	double
r204_205t	$^{204}\text{Pb}/^{205}\text{Pb}$ tracer	mol/mol	double
r207_206t	$^{207}\text{Pb}/^{206}\text{Pb}$ tracer	mol/mol	double
r204_206t	$^{204}\text{Pb}/^{206}\text{Pb}$ tracer	mol/mol	double
concU235t	concentration of ^{235}U in tracer	mol/g	double
r238_235t	$^{238}\text{U}/^{235}\text{U}$ tracer	mol/mol	double
r233_235t	$^{233}\text{U}/^{235}\text{U}$ tracer	mol/mol	double

Laboratory blank quantities and ratios

r206_204b	$^{206}\text{Pb}/^{204}\text{Pb}$ blank	mol/mol	double
r207_204b	$^{207}\text{Pb}/^{204}\text{Pb}$ blank	mol/mol	double
r208_204b	$^{208}\text{Pb}/^{204}\text{Pb}$ blank	mol/mol	double
r207_206b	$^{207}\text{Pb}/^{206}\text{Pb}$ blank	mol/mol	double

Initial common Pb ratios

r206_204c	$^{206}\text{Pb}/^{204}\text{Pb}$ initial	mol/mol	double
r207_204c	$^{207}\text{Pb}/^{204}\text{Pb}$ initial	mol/mol	double
r208_204c	$^{208}\text{Pb}/^{204}\text{Pb}$ initial	mol/mol	double
r207_206c	$^{207}\text{Pb}/^{206}\text{Pb}$ initial	mol/mol	double

Laboratory-specific information

alphaPb	coefficient for linear Pb fractionation correction	%/amu	double
alphaU	coefficient for linear U fractionation correction	%/amu	double
labPbBlankMass	maximum or assumed laboratory Pb blank	grams	double
labUBlankMass	assumed laboratory U blank	grams	double
initPbmodelName	initial Pb model	---	string

Physical Constants

lamda235	^{235}U decay constant	/year	double
lamda238	^{238}U decay constant	/year	double
gmol204, gmol235, etc.	gram atomic mass of ^{204}Pb , ^{235}U , etc.	grams/mol	double

****Note: uncertainties in all measured quantities are expressed as 1 standard error of the mean during calculations, and written as “sigma<variablename>”**

INTERMEDIATE CALCULATIONS

molPb205t	moles of ^{205}Pb in fraction's tracer solution	moles	double
molU235t	moles of ^{235}U in fraction's tracer solution	moles	double
r204_205fc	fractionation corrected $^{204}\text{Pb}/^{205}\text{Pb}$ meas. ratio	mol/mol	double
molPb204tc	total common moles ^{204}Pb —moles ^{204}Pb from lab blank and initial common Pb	moles	double
blankPbgramsMol	total grams of blank given 1 mol ^{204}Pb	grams	double
molPb204b, molPb206b, etc.	moles of ^{204}Pb , ^{206}Pb , etc. lab blank	moles	double
molPb204c, molPb206c, etc.	moles of ^{204}Pb , ^{206}Pb etc. initial common Pb	moles	double
molU235b	^{235}U lab blank	moles	double
molU238b	^{238}U lab blank	moles	double
molPb206s, molU238s, etc.	moles of radiogenic ^{206}Pb , etc. and sample ^{238}U	moles	double

OUTPUTS

totCommonPbMass	total common Pb	grams	double
initCommonPbgrams	grams of initial common Pb	grams	double
r207_206s	$^{207}\text{Pb}/^{206}\text{Pb}$ ratio in sample (tracer, blank, and initial common Pb subtracted)	mol/mol	double
r206_238s	$^{206}\text{Pb}/^{238}\text{U}$ ratio in sample (after subtraction)	mol/mol	double
r207_235s	$^{207}\text{Pb}/^{235}\text{U}$ ratio in sample (after subtraction)	mol/mol	double
age207_206	$^{207}\text{Pb}/^{206}\text{Pb}$ age	Ma	double
age206_238	$^{206}\text{Pb}/^{238}\text{U}$ age	Ma	double
age207_235	$^{207}\text{Pb}/^{235}\text{U}$ age	Ma	double
gramPb204b, etc.	grams of ^{204}Pb in lab blank, etc.	grams	double