

OP-380 Alpha and Beta Total Efficiency for Field Instruments

Instrument ratemeter
 ratemeter s/n
 Instrument probe
 probe s/n
 ratemeter/probe bar code
 Probe active area, cm²
 Detector-to-Source Distance

44-110
Contact

Parameters

Efficiency Determination Date
 Source radioisotope
 Beta Source End Point Energy, MeV
 Source ID/Serial number/bar code
 Source reference date
 Source active area, cm²
 Source half-life, years
 Surface initial 2-pi particle emission rate of source, sec⁻¹
 Normalized initial 2-pi particle emission rate of source, sec⁻¹ cm⁻²
 Instrument net counts minute⁻¹
 Normalized 2-pi emission rate of source, determination date, sec⁻¹ cm⁻²
 Probe Area Correction Factor, cm²
 ε_i, Instrument Efficiency
 ε_s, Source Efficiency
 Total Efficiency

H-3
0.0186
OR256/1390
1-Nov-06
100
1.232E+01
1.110E+03
1.110E+01
#DIV/0!
4.527E+03
0
#DIV/0!
0.25
#DIV/0!

Bkg count time, min	Instrument bkg counts	Source count time, min	Instrument source counts
avg, cpm	#DIV/0!	avg, cpm	#DIV/0!

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Instrument ratemeter
 ratemeter s/n
 Instrument probe
 probe s/n
 ratemeter/probe bar code
 Probe active area, cm²
 Detector-to-Source Distance

2221
176947
44-110
PR178079
N/A
126
Contact

Parameters

Efficiency Determination Date
 Source radioisotope
 Beta Source End Point Energy, MeV
 Source ID/Serial number/bar code
 Source reference date
 Source active area, cm²
 Source half-life, years
 Surface initial 2-pi particle emission rate of source, sec⁻¹
 Normalized initial 2-pi particle emission rate of source, sec⁻¹ cm⁻²
 Instrument net counts minute⁻¹
 Normalized 2-pi emission rate of source, determination date, sec⁻¹ cm⁻²
 Probe Area Correction Factor, cm²
 ε_i, Instrument Efficiency
 ε_s, Source Efficiency
 Total Efficiency

25-Apr-13
H-3
0.0186
OR256/1390
1-Nov-06
100
1.232E+01
1.110E+03
1.110E+01
1.595E+04
7.709E+00
100
0.3448
0.25
0.0862

Bkg count time, min	Instrument bkg counts	Source count time, min	Instrument source counts
1	228	1	18348
	262		16867
	221		16634
	196		16522
	209		15193
	232		14764
	245		16369
	210		15311
	232		14290
	216		17437
avg, cpm	225.1	avg, cpm	16173.5

0.344835041

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Instrument ratemeter	2221
ratemeter s/n	271437
Instrument probe	44-110
probe s/n	PR327576
ratemeter/probe bar code	N/A
Probe active area, cm ²	126
Detector-to-Source Distance	Contact

Parameters	
Efficiency Determination Date	8-May-13
Source radioisotope	H-3
Beta Source End Point Energy, MeV	0.0186
Source ID/Serial number/bar code	OR256/1390
Source reference date	1-Nov-06
Source active area, cm ²	100
Source half-life, years	1.232E+01
Surface initial 2-pi particle emission rate of source, sec ⁻¹	1.110E+03
Normalized <u>initial</u> 2-pi particle emission rate of source, sec ⁻¹ cm ⁻²	1.110E+01
Instrument net counts minute ⁻¹	1.777E+04
Normalized 2-pi emission rate of source, <u>determination date</u> , sec ⁻¹ cm ⁻²	7.693E+00
Probe Area Correction Factor, cm ²	100
ε _i , Instrument Efficiency	0.3849
ε _s , Source Efficiency	0.25
Total Efficiency	0.0962

Bkg count time, min	Instrument bkg counts	Source count time, min	Instrument source counts
1	277	1	18538
	294		18460
	252		18265
	321		18621
	264		18071
	293		17591
	260		16781
	301		17871
	273		18149
	353		18229
avg, cpm	288.8	avg, cpm	18057.6