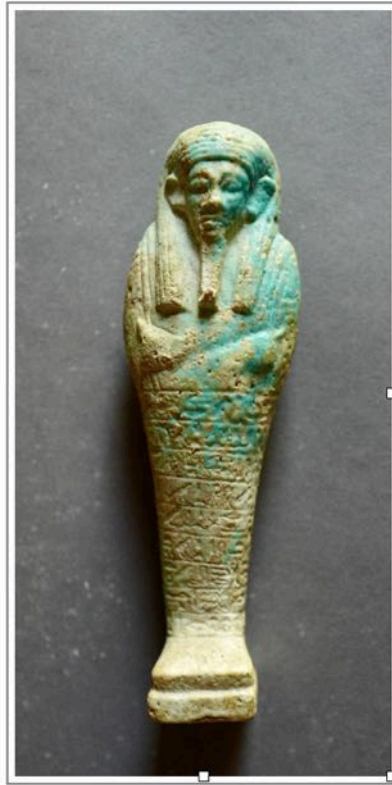




# **T h e r m o l u m i n e c e n c e R e p o r t**

**N o . : 0 2 U s h - G r**



## **A n a l y s i s R e s u l t**

On the basis of standard methods and techniques used in the thermoluminescence process, I calculate the last time of firing of the object samples to be:

**2 7 5 0 Years (+/- 20 % )**

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	A	B	C	D	E	F	G	H	I	
1	<b>TL-Alter / Ushepti</b>									
2										
3										
4	<b>Eingabe</b>									
5										
6	Proben Nr.	Nr.: 01Ush-KI								
7										
8	Arch. Dosis [Gy]									
9	Korngröße korr.	0,10								
10	Counts per ksec	ppm U=		5,00		Wenn U/Th > 0, dann Counts = 0				
11	U [ppm]	ppm Th=		5,00		<i>Boden:</i>				
12	Th [ppm]					U [ppm]				
13	K <sub>2</sub> O [%] estimated	0,6		by experience		Th [ppm]				
14	Rb [ppm]	120		"		K <sub>2</sub> O [%]				
15	a-Wert	0,1		"		Rb [ppm]				
16	ODL [mGy/a] in situ	1,7				H <sub>2</sub> O [%]				
17	Wassergehalt [%]	2				0,000		Cos[mGy/a]		
18										
19	Korngröße D [µm]	5								
20										
21										
22	1. D<50 µm	5		AU= 0,94651		AH= 0,95414				
23				BK= 0,00174		BT= 0,02249		BU= 0,01294 BP=		
24										
25	2. 50<D<160 µm	0		AU= 1,36275		AH= 1,36314				
26				BK= -0,00005		BT= 0,03883		BU= 0,02309 BP=		
27										
28	3. D>160 µm	0		AU= #DIV/0!		AH= -17,87616				
29				BK= -0,00005		BT= 0,09057		BU= 0,04216 BP=		
30										
31			H <sub>2</sub> O uncorr		H <sub>2</sub> O korr.		%			
32	Dosisleistung	Alpha		1,3679		0,000				
33	ohne Attn. Koeff.	Beta		1,2256		0,000				
34		Gamma		1,0000		0,9777				
35		Summe		1,0000		3,5712		[mGy/a]		
36										
37	<b>Alter</b>	<b>[a]</b>		<b>-2016</b>		<b>A.D./B.C.</b>		<b>+/- a</b>		
38								<b>Alpha-DL</b>		
39	polymin. fg	28		1988		A.D.		61		
40								1,3679		
41	Quarz fg 0-50 µm	28		1988		A.D.		63		
42								1,2969		
43								1,2127		
44										
45										
46										
47										
48	Tagesdosis	1,281 Gy/min							für SICK 10698	
49										
50	<b>Fehlerrechnung</b>									
51										
52	fractions:									
53										
54	f-alpha			errors		random		systematic		
55	f-beta	0		Δ Alpha		3,0		2,5		
56	f-betaThU	0,8665		Δ K <sub>2</sub> O		3,0		1		
57	f-betaK	0,4056		Δ H <sub>2</sub> O		3,0		2		
58	f-gamma	1		Δ ODL		10,0		2		
59	f-gammaThU	0,24365		Δ Sr-90				4		
60										
61	random:									
62										
63	s <sub>1</sub> <sup>2</sup>	48400,00								
64	s <sub>2</sub> <sup>2</sup>	108,24				input		Wenn D>100 µm:		
65	s <sub>3</sub> <sup>2</sup>	11,70		Δ D <sub>a</sub>		0,22		f-alpha und		
66	sum s <sub>i</sub> <sup>2</sup>	48519,93		220,27		Δ a-value		Δ a-Wert = 0		
67										
68	svstematic:									

**T h e r m o l u m i n e s c e n c e R e p o r t**

**N o . : 0 1 U s h - K 1**



**A n a l y s i s R e s u l t**

On the basis of standard methods and techniques used in the thermoluminescence process, I calculate the last time of firing of the object samples to be:

**under 50 Years (+/- 20 % )**

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## RESULTS OF ANALYSES OF SOLID

Maxxam ID		CDY595		CDY596	
Sampling Date					
	UNITS	01 UOH	RDL	02 UOH	RDL
Bromine	ppm	<3	3	<4	4
Antimony (Sb)	ppm	11	1	2	1
Arsenic (As)	ppm	17	1	5	1
Barium (Ba)	ppm	<250	250	<250	250
Cadmium (Cd)	ppm	<100	100	<30	30
Calcium (Ca)	ppm	200000	50000	-37500	-50000.000
Cerium (Ce)	ppm	24	3	<3	3
Cesium (Cs)	ppm	5	2	<2	2
Chromium (Cr)	ppm	56	10	<10	10
Cobalt (Co)	ppm	59.1	0.5	6.2	0.5
Europium (Eu)	ppm	<2	2	<1	1
Gold (Au)	ppm	0.148	0.005	0.143	0.005
Hafnium (Hf)	ppm	77.0	0.5	2.3	0.5
Iridium (Ir)	ppm	<0.1	0.1	<0.1	0.1
Iron (Fe)	ppm	<4000	4000	<1100	1100
Lanthanum (La)	ppm	13.4	0.1	1.2	0.1
Lutetium (Lu)	ppm	0.1	0.1	<0.1	0.1
Mercury (Hg)	ppm	<5	5	<5	5
Molybdenum (Mo)	ppm	<20	20	<5	5
Nickel (Ni)	ppm	<750	750	<220	220
Potassium (K)	%	0.6	0.1	<0.1	0.1
Rubidium (Rb)	ppm	<120	120	<35	35
Samarium (Sm)	ppm	1.5	0.1	<0.1	0.1
Scandium (Sc)	ppm	2.9	0.1	0.2	0.1
Selenium (Se)	ppm	<50	50	<50	50
Silver (Ag)	ppm	<15	15	<5	5
Sodium (Na)	ppm	27400	50	3070	50
Tantalum (Ta)	ppm	<6	6	<2	2
Tellurium (Te)	ppm	<25	25	<10	10
Terbium (Tb)	ppm	5	1	<1	1
Thorium (Th)	ppm	5	1	<1	1
Tin (Sn)	ppm	<2000	2000	<650	650
Titanium (Ti)	ppm	<6500	6500	<2500	2500
Tungsten (W)	ppm	43	2	24	2
Uranium (U)	ppm	5	1	<1	1
Ytterbium (Yb)	ppm	<1	1	<1	1
Zinc (Zn)	ppm	1380	100	<100	100
Zirconium (Zr)	ppm	<3500	3500	<500	500

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch



Solid list 01 UOH = 01Ush-KI

02 UOH = 02Ush- Gr.