

## PRELIMINARY - U.S. Geological Survey Certificate of Analysis

### Granodiorite, Silver Plume, Colorado, GSP-2

Material used in the preparation of GSP-2 was collected by the U.S. Geological Survey, from the Silver Plume Quarry, which is located approximately 800 meters west of Silver Plume, Colorado. This is same location used to provide material for GSP-1. GSP-2 is a medium grained hypidiomorphic- granular rock consisting essentially of quartz, plagioclase, microcline, biotite, and muscovite. Details of the collection, preparation, and testing are available (Wilson, S.A., 1998).

Element concentrations were determined in a round robin study involving 20 international laboratories. Recommended values are listed when analytical results provided by three independent laboratories using a minimum of three independent analytical procedures are in statistical agreement. Information values with standard deviations are listed when at least four independent laboratories using two independent analytical procedures have provided information. Information values without standard deviations represent information from a single laboratory or analytical procedure.

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#### Recommended Values

Element	Wt %	±	Oxide	Wt %	±
Al	7.88	0.11	Al <sub>2</sub> O <sub>3</sub>	14.9	0.2
Ca	1.50	0.04	CaO	2.10	0.06
Fe <sub>tot</sub>	3.43	0.11	Fe <sub>2</sub> O <sub>3 tot</sub>	4.90	0.16
K	4.48	0.12	K <sub>2</sub> O	5.38	0.14
Mg	0.58	0.02	MgO	0.96	0.03
Na	2.06	0.07	Na <sub>2</sub> O	2.78	0.09
P	0.13	0.01	P <sub>2</sub> O <sub>5</sub>	0.29	0.02
Si	31.1	0.4	SiO <sub>2</sub>	66.6	0.8
Ti	0.40	0.01	TiO <sub>2</sub>	0.66	0.02

  

Element	µg/g	±	Element	µg/g	±
Ba	1340	44	Pb	42	3
Ce	410	30	Rb	245	7
Co	7.3	0.8	Sc	6.3	0.7
Cr	20	6	Sm	27	1
Cu	43	4	Sr	240	10
Eu	2.3	0.1	Th	105	8
Ga	22	2	U	2.40	0.19
La	180	12	V	52	4
Mn	320	20	Y	28	2
Nb	27	2	Yb	1.6	0.2
Nd	200	12	Zn	120	10
Ni	17	2	Zr	550	30

## Information Values

Element	µg/g	±	Element	µg/g	±
Be	1.5	0.2	Ho	1.0	0.1
Cs	1.2	0.1	Li	36	1
Dy	6.1		Lu	0.23	0.03
Er	2.2		Mo	2.1	0.6
F	3000		Pr	51	5
Gd	12	2	Ti	1.1	
Hf	14	1	Tm	0.29	0.02

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## Certificate Information

Denver, Colorado  
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Dr. Linda Gunderson  
Central Region Mineral Resources Team

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## Bibliography

*Wilson, S.A., 1998, Data compilation for USGS reference material GSP-2, Granodiorite, Silver Plume, Colorado: U.S. Geological Survey Open-File Report (in progress).*