

## Preliminary Product Information Sheet

### Microanalytical Reference Material

# GSP-2\*-NP

## Nano-particulate pressed powder pellet

#### Reference Values

Analyte	Value	Uncertainty (95% CL)	Unit	Analyte	Value	Uncertainty (95% CL)	Unit
Na <sub>2</sub> O	2.78	0.09	g/100g	Ga	22	2	μg/g
MgO	0.96	0.03	g/100g	Rb	245	7	μg/g
Al <sub>2</sub> O <sub>3</sub>	14.9	0.2	g/100g	Sr	240	10	μg/g
SiO <sub>2</sub>	66.6	0.8	g/100g	Y	28	2	μg/g
P <sub>2</sub> O <sub>5</sub>	0.29	0.02	g/100g	Zr	550	30	μg/g
K <sub>2</sub> O	5.38	0.14	g/100g	Nb	27	2	μg/g
CaO	2.10	0.06	g/100g	Ba	1340	44	μg/g
Sc	6.3	0.7	μg/g	La	180	12	μg/g
TiO <sub>2</sub>	0.66	0.02	g/100g	Ce	410	30	μg/g
V	52	4	μg/g	Nd	200	12	μg/g
Cr	20	6	μg/g	Sm	27	1	μg/g
Mn	320	20	μg/g	Eu	2.3	0.1	μg/g
Fe <sub>2</sub> O <sub>3</sub>	4.90	0.16	g/100g	Yb	1.6	0.2	μg/g
Co	7.3	0.8	μg/g	Pb	42	3	μg/g
Ni	17	2	μg/g	Th	105	8	μg/g
Cu	43	4	μg/g	U	2.40	0.19	μg/g
Zn	120	10	μg/g				

#### Information Values

Analyte	Value	Uncertainty (95% CL)	Unit	Analyte	Value	Uncertainty (95% CL)	Unit
Li	36	1	μg/g	Dy	6.1		μg/g
Be	1.5	0.2	μg/g	Ho	1.0	0.1	μg/g
F	3000		μg/g	Er	2.2		μg/g
Mo	2.1	0.6	μg/g	Tm	0.29	0.02	μg/g
Cs	1.2	0.1	μg/g	Lu	0.23	0.03	μg/g
Pr	51	5	μg/g	Hf	14	1	μg/g
Gd	12	2	μg/g	Tl	1.1		μg/g

All values including their uncertainties are taken from the certificate of analysis for the original powder. Information values did not fulfil all necessary statistical criteria of a reference value and should neither be considered for calibration nor validation.

\*The original manufacturer (USGS) is not liable for any issues occurring from the use of this material since they took no part in the manufacturing of the pellets.

### Intended Use

This microanalytical reference material (MRM) is designed for use by laboratories undertaking the determination of major and trace element mass fractions in granodiorite and equivalent matrices with LA-ICP-MS (Laser Ablation Inductively Coupled Plasma Mass Spectrometry),  $\mu$ XRF/XRF (Micro X-ray Fluorescence Spectroscopy) and LIBS (Laser-Induced Breakdown Spectroscopy). It is suitable for calibration and as a secondary reference material for the assessment of a measurement procedure and quality control. Note that the material may only be used for a single purpose in the same measurement process. For example, it must not be used for calibration and method validation at the same time.

### Description of the MRM

This MRM is a nanoparticulate pressed powder pellet of the granodiorite powder "GSP-2". The original powder, purchased from the United States Geological Survey (USGS), was subjected to our own material-specific milling protocol and pressed without any binders using a programmable hydraulic press. The fortification of contrasting colour surrounding the reference material is, according to the manufacturer, an "organic compound". The exact composition is not specified any closer. The certificate of analysis is available on demand.

### Handling advice and Storage

Avoid touching the pellet's surface directly in order to prevent contamination. Also, do not clean the surface with any liquids as it may compromise the pellet's integrity.

Please note the label marks the bottom of the pellet.

If using a pressed pellet not ordered specifically for  $\mu$ XRF and or XRF please consider the sample thickness. Store the MRM in a desiccator and or in a dark and dry environment.

The myStandards GmbH cannot be held responsible for changes that happen during storage of the material at the customer's premises, especially with respect to opened samples.

### Period of Validity

Provided the storage and handling conditions are met, no chemical alteration is known to exist, and the assigned values will remain stable. Therefore, the product information and assigned values for this MRM are valid for one year from the date of dispatch. This validity may be extended as further evidence of stability becomes available. The manufacturer will inform the customer if any alterations occur.

Date of dispatch: {LIEFERDATUM}

### Safety instructions

Nano-particulate powders can cause harm if ingested, inhaled or in contact with skin. In their pressed form however, they do not exhibit any dusting. If a pellet should accidentally break, we advise wearing a dust mask during clean up.

**Further Information**

This MRM has been produced in accordance with the recommendations specified in ISO Guides 30 to 35. Due to processing a part of the sample material may be seen on the fortification, this does not reduce the performance of the MRM. Please refrain from using this part of the pellet.

The pellets are sold exclusively via the myStandards GmbH and authorised subcontractors.

**Pellet serial number:** {SERIENNUMMER}  
**Manufactured for:** {METHODE}  
**Size:** {GROESSE}

**Document History**

<i>Version</i>	<i>Date</i>	<i>Changes applied</i>
1.0	12.09.2024	First publication

**References**

Wilson S., U.S. Geological Survey Certificate of Analysis Granodiorite, Silver Plume, Colorado, GSP-2, U.S. Geological Survey, 2017.

**Legal notice**

Our order, sales and delivery conditions apply. The valid version of our general terms and conditions (status 01.09.2019) - can be found on our website: <https://www.my-standards.com/terms-and-conditions/>. They are also available on request.