Pilbara Standards

Granitic Blank Reference Material: Product Information Sheet

# PBS 33

*Table 1: PBS 33 XRF analysis values (wt%)*

| Analyte | Ave. Value | Analyte | Ave. Value |
|---|---|---|---|
| **Fe2O3** | 2.849 | **BaO** | 0.098 |
| **SiO2** | 72.144 | **Cl** | 0.017 |
| **Al2O3** | 13.604 | **SrO** | 0.020 |
| **TiO2** | 0.250 | **ZrO2** | 0.013 |
| **MnO** | 0.057 | **Sb2O3** | 0.005 |
| **P2O5** | 0.037 | **SnO2** | 0.005 |
| **SO3** | 0.042 | **Cr** | 0.002 |
| **MgO** | 0.751 | **Fe** | 2.004 |
| **CaO** | 2.150 | **P** | 0.016 |
| **K2O** | 4.046 | **S** | 0.017 |
| **Na2O** | 3.614 | **Ba** | 0.088 |
| **V2O5** | 0.006 | **As** | <0.001 |
| **Cr2O3** | 0.003 | **Cu** | 0.001 |
| **CoO** | <0.001 | **Pb** | 0.006 |
| **NiO** | 0.003 | **Zn** | 0.006 |
| **CuO** | 0.002 | **Mn** | 0.045 |
| **ZnO** | 0.007 | **LOI371** | 0.136 |
| **As2O3** | <0.001 | **LOI650** | 0.384 |
| **PbO** | 0.007 | **LOI1000** | 0.562 |

*Table 2: PBS 33Mixed Acid Digest / ICP analysis values (ppm)*

| Analyte | Ave. Value | Analyte | Ave. Value | Analyte | Ave. Value | Analyte | Ave. Value |
|---|---|---|---|---|---|---|---|
| **Ag** | 2 | **Eu** | 0.75 | **Na** | 27,000 | **Sr** | 137 |
| **Al** | 72,570 | **Fe** | 20,623 | **Nb** | 14.8 | **Ta** | 2.0 |
| **As** | <50 | **Ga** | 18.8 | **Nd** | 19.8 | **Tb** | 0.65 |
| **Ba** | 905 | **Gd** | 4.3 | **Ni** | 10 | **Te** | 0.7 |
| **Be** | 3 | **Ge** | <5 | **P** | 143 | **Th** | 16.9 |
| **Bi** | <0.1 | **Hf** | 14.1 | **Pb** | 30 | **Ti** | 1,525 |
| **Ca** | 15,236 | **Ho** | 0.7 | **Pr** | 5.3 | **Tl** | 0.94 |
| **Cd** | <0.5 | **In** | <0.1 | **Rb** | 147.3 | **Tm** | 0.38 |
| **Ce** | 44 | **K** | 31,075 | **Re** | <0.05 | **U** | 10.53 |
| **Co** | <5 | **La** | 24.5 | **S** | 150 | **V** | 40 |
| **Cr** | 10 | **Li** | 30 | **Sb** | 5.5 | **W** | 1.0 |
| **Cs** | 3 | **Lu** | 0.5 | **Sc** | 4.33 | **Y** | 18.4 |
| **Cu** | 23 | **Mg** | 4,561 | **Se** | <5 | **Yb** | 2.61 |
| **Dy** | 4 | **Mn** | 445 | **Sm** | 4.5 | **Zn** | 40 |
| **Er** | 2.68 | **Mo** | <1 | **Sn** | 3.0 | **Zr** | 99 |

*Table 3: PBS 33 Table of 50g Fire Assay / ICP (ppm)*

| Analyte | Ave. Value |
|---|---|
| **Au** | <0.001 |

## Introduction

This document specifies preparation, analysis, and documentation of reference material PBS 33.

## Origin of Material

The source material is from a Western Australian quarry. It is described as “granite”.

## Method of preparation

The material was prepared to maximum homogeneity throughout the entire batch via the following methodology:

- Drying at 105°C to constant mass
- Multistage crushing and screening to -6mm
- Homogenisation
- Packaging into 200l drums of about 300kg, or further sample mass reduction via rotary sample division into sealed 1kg bags.

Samples were taken at intervals during the packaging stage to provide material for the analysis process.

## Measurement techniques used for certification

A single laboratory was each given 3 x 1kg randomly selected samples for the following analysis:

### Lithium borate fusion XRF:

Prepared sample is fused in lithium borate flux with lithium nitrate additive. The resultant glass bead is analysed by XRF. XRF is suitable for the total analysis of a range of geological ores. XRF Suites are tailored to specific ore types, using predefined inter-element and matrix corrections. Loss on Ignition (LOI) is packaged with XRF suites to achieve close to 100% characterisation. Results are reported un-normalised.

### Thermal gravimetric analysis (TGA)

Loss on Ignition (LOI) was requested via Thermal gravimetric analysis (TGA) at 371°C, 650°C and 1,000°C.

### 50g Fire Assay Digest with ICP finish

Prepared sample is fused in a flux to digest. The melt is cooled to collect the precious metals in a lead button. The lead is removed by cupellation and the precious metal bead is digested in aqua regia. The digest solution is analysed by ICP. Fire assay fluxes are designed to optimise gold recovery for each particular sample type. Fire assay is regarded as the preferred method for quantitative gold analysis.

### Mixed Acid Digest with ICP finish

Prepared sample is digested with a mixture of acids and boiled to dryness. Residue is leached and the resultant solution is analysed by ICP. This method is a near total digestion, most mineral species will be decomposed under these conditions. For highly resistant mineral matrices a fusion digest is recommended to ensure complete dissolution.

## Method of Statistical Analysis

Values are simple mean values calculated from the analyte results. No outlier detection or classification has been undertaken. No uncertainty is quoted for uncertified Reference Material.

## Preparer and supplier of reference material

The iron ore reference material PBS 33 has been prepared and certified, and is certified by:

Pilbara Standards Pty Ltd
Unit 6, 190 Star St,
Carlisle, WA 6101
Australia

www.pilbarastandards.com.au

The material is supplied in 1kg sealed plastic bags, and 200l drums of about 300kg.

## Intended use

PBS 33 is intended for the monitoring of laboratory sample preparation performance in the chemical analysis of geological samples. In particular it is intended to test for cross contamination between samples.

## Stability and storage instructions

PBS 33 is a fresh reference material and is stable in the sealed plastic bags under normal conditions of storage.

## Instructions for the correct use of the reference material

The recommended values for PBS 33 refer to the concentration levels after removal of hygroscopic moisture by drying in air to constant mass at 105°C. If the reference material is not dried prior to analysis, the recommended value should be corrected to the moisture bearing basis.

## Legal notice

Pilbara Standards Pty Ltd has prepared and statistically evaluated the property values of this reference material to the best of ability. The purchaser by receipt hereof releases and indemnifies Pilbara Standards Pty Ltd from and against all liability and costs from the use of this material and information.

## Certifying officer

Bruce Armstrong, Managing Director, Pilbara Standards Pty Ltd

## Certification date

18th July 2019

## References

ISO Guide 35 (2006), Reference materials – General and statistical principles for certification.