



ALS Laboratory Group, SL
Poligono Parque Plata
Calle Camino Mozarabe naves 13 y 15
Camas (Sevilla) 41900
www.alsglobal.com/geochemistry

An INAB accredited testing laboratory Reg. No. 173T. Accredited methods are listed in the Scope of Accreditation available on request.

QC CERTIFICATE SV19286106

Project: Numao

P.O. No.: PO-19-008

This report is for 30 Rock samples submitted to our lab in Seville, Spain on 12-NOV-2019.

The following have access to data associated with this certificate:

JOSE BEMPOSTA

JOAO GONCALVES

JOHN MORRIS

To: MINAPORT - MINAS DE PORTUGAL LDA
ROTUNDA ENGº. EDGAR CARDOSO 23 3ºD
VILA NOVA DE GAIA 4400 676
PORTUGAL

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Plus Appendix Pages
Finalized Date: 30-NOV-2019
Account: MINORT

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
SND-01	Send samples to external laboratory
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-22Y	Split Sample - Boyd Rotary Splitter
PUL-31	Pulverize up to 250g 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
C-IR07	Total Carbon (IR Spectroscopy)	LECO
C-IR06	Organic Carbon (IR Spectroscopy)	LECO
C-CAL04	Inorganic Carbon	LECO
OA-VOL08EU	AP & NP of Sulphidic Waste	
OA-VOL11	Static Net Acid Generation	
S-IR08	Total Sulphur (IR Spectroscopy)	LECO
S-ICP19	Sulphate Sulphur / By ICP-AES	ICP-AES
S-CAL19	Sulphide Sulphur (Calculated)	LECO

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Comments: OA-VOL11 method is a single addition NAG test, thus it may not account for the total acid potential of a high acid generating sample.

Signature:

Andrey Tairov, Technical Manager, Ireland



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Sample Description	Method Analyte Units LOD	S-IR08 S %	S-ICP19 S %	C-IR07 C %	C-IR06 C organi %	C-CAL04 C inorga %	OA-VOL08EU NP tCaCO3/1Kt	OA-VOL08EU AP tCaCO3/1Kt	OA-VOL08EU NPR Unity	OA-VOL08EU NNP tCaCO3/1Kt	OA-VOL11 NAGpH4.5 kg H2SO4/t	OA-VOL11 NAGpH7.0 kg H2SO4/t	OA-VOL11 pH Unity
		0.01	0.01	0.01	0.01	0.01	1	0.3	0.01	1	0.01	0.01	0.1
STANDARDS													
AmmSO4			24.2										
AmmSO4			24.5										
Target Range - Lower Bound			23.0										
Upper Bound			25.5										
GS910-4				2.64									
Target Range - Lower Bound				2.55									
Upper Bound				2.75									
GS910-4		8.28		2.66									
Target Range - Lower Bound		7.97		2.55									
Upper Bound		8.57		2.75									
GS915-3				0.13									
Target Range - Lower Bound				0.09									
Upper Bound				0.13									
GS915-3		0.18		0.09									
Target Range - Lower Bound		0.17		0.09									
Upper Bound		0.21		0.13									
KZK-1							60	24.7	2.42	35			
Target Range - Lower Bound							54	22.8	2.21	31			
Upper Bound							64	27.0	2.57	38			
NBM-1							49	8.1	6.00	41			
Target Range - Lower Bound							45	7.8	5.50	38			
Upper Bound							54	9.6	6.36	45			
SY-4				0.12									
SY-4				0.11									
SY-4				0.11									
Target Range - Lower Bound				0.11									
Upper Bound				0.15									
UTS-2											57.5	61.8	2.3
UTS-2											56.5	61.5	2.3
UTS-2											55.1	60.7	2.3
UTS-2											55.5	61.1	2.3
Target Range - Lower Bound											52.9	57.9	2.1
Upper Bound											60.9	66.8	2.6

Comments: OA-VOL11 method is a single addition NAG test, thus it may not account for the total acid potential of a high acid generating sample.

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		0.01	0.01	0.01	0.01	0.01	1	0.3	0.01	1	0.01	0.01	0.1
BLANKS													
BLANK					<0.01								
BLANK					0.03								
Target Range - Lower Bound					<0.01								
Upper Bound					0.02								
BLANK				<0.01									
BLANK				<0.01									
Target Range - Lower Bound				<0.01									
Upper Bound				0.02									
BLANK								<0.3					
Target Range - Lower Bound							1.000000000	<0.3	0.010000000	1.000000000			
Upper Bound							2.000000000	0.6	0.020000000	2.000000000			
BLANK		0.01											
Target Range - Lower Bound		<0.01											
Upper Bound		0.02											
BLANK		<0.01		<0.01									
BLANK		<0.01		<0.01									
Target Range - Lower Bound		<0.01		<0.01									
Upper Bound		0.02		0.02									
DUPLICATES													
A07351		<0.01		0.09	0.08	0.01	10	<0.3	304.00	9			
DUP		<0.01		0.07	0.07	<0.01	9	<0.3	296.00	9			
Target Range - Lower Bound		<0.01		0.07	0.06	<0.01	8	<0.3	284.99	8			
Upper Bound		0.02		0.09	0.09	0.02	11	0.6	315.01	10			
A07360			0.02										
DUP			0.02										
Target Range - Lower Bound			<0.01										
Upper Bound			0.03										
A07361							3	<0.3	80.00	2			
DUP							3	<0.3	80.00	2			
Target Range - Lower Bound							2	<0.3	75.99	<1			
Upper Bound							4	0.6	84.01	3			

Comments: OA-VOL11 method is a single addition NAG test, thus it may not account for the total acid potential of a high acid generating sample.

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		0.01	0.01	0.01	0.01	0.01	1	0.3	0.01	1	0.01	0.01	0.1
DUPLICATES													
A07452		1.63		0.01									
DUP		1.61		0.01									
Target Range - Lower Bound		1.57		<0.01									
Upper Bound		1.67		0.02									
A07453							5	48.4	0.10	-43			
DUP							5	48.4	0.10	-44			
Target Range - Lower Bound							4	45.7	0.09	-47			
Upper Bound							6	51.1	0.12	-40			
A07457			0.07										
DUP			0.08										
Target Range - Lower Bound			0.06										
Upper Bound			0.09										
A07462		1.62		0.05	0.04	0.01	3	46.3	0.06	-43	36.6	43.2	2.4
DUP		1.59		0.06	0.05	<0.01	3	46.3	0.06	-43	36.6	43.2	2.4
Target Range - Lower Bound		1.55		0.03	0.03	<0.01	2	43.7	0.05	-46	34.8	41.0	2.2
Upper Bound		1.66		0.05	0.06	0.02	4	48.9	0.07	-40	38.4	45.4	2.6
ORIGINAL											<0.01	<0.01	9.0
DUP											<0.01	<0.01	9.0
Target Range - Lower Bound											<0.01	<0.01	8.5
Upper Bound											0.02	0.02	9.6

Comments: OA-VOL11 method is a single addition NAG test, thus it may not account for the total acid potential of a high acid generating sample.

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CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: OA-VOL08EU Units: tCaCO₃/1Kt = tCaCO₃/1000t ore
OA-VOL08EU

ACCREDITATION COMMENTS

Applies to Method: The methods immediately below this line are ISO 17025:2005 Accredited. INAB Registration No: 173T
C-IR07 S-IR08



LABORATORY ADDRESSES

Applies to Method: Processed at ALS Seville located at Poligono Parque Plata, Calle Camino Mozarabe naves 13 y 15, Camas (Sevilla), Spain.
CRU-31 CRU-QC LOG-22 PUL-31
PUL-QC SND-01 SPL-22Y WEI-21

Applies to Method: Processed at ALS Loughrea located at Dublin Road, Loughrea, Co. Galway, Ireland.
C-CAL04 C-IR06 C-IR07 OA-VOL08EU
S-CAL19 S-ICP19 S-IR08

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.
OA-VOL11