

# Aftermath Silver's Berenguela Second Composite Test Sample Achieves 99.9% Pure Battery Grade Manganese Sulphate Monohydrate

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Vancouver, July 11, 2024 - [Aftermath Silver Ltd.](#) (TSXV: AAG) (OTCQX: AAGFF) (the "Company" or "Aftermath Silver") is pleased to announce that on-going metallurgical test work has successfully produced battery grade manganese sulphate crystals, assaying 32.9% Mn (High-purity manganese sulphate monohydrate or "HPMSM") from the second high-Mn drill core composite sample of silver-copper-manganese mineralization from its Berenguela project in Peru.

The test work on Aftermath Sample # RD4LOWA (KCA Sample # KCA-99062B) was carried out at Kappes Cassiday and Associates' (KCA) Reno facility and involved only hydrometallurgical processes. No electrowinning was required for purification. The tables below contain results for the head assay grade of the composite test sample and the final MnSO<sub>4</sub> analysis.

## High Purity MnSO<sub>4</sub>.H<sub>2</sub>O Analysis Composite RD4LOWA (KCA Sample No. KCA-99062B)

Ag	As	Al	B	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Assay	<1	<1	1	2	7.0	<1.0	<1	27	<1	<1	<1	8	4

  

Li	Mg	Mn	Mo	Na	Ni	Pb	Sb	Se	Sr	Ti	Tl	V	Zn
Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Assay	<1	7	32.87	<1	28	<1	<1	<1	<1	<1	<1	<1	10

## Average Head Assay Grade\* Composite RD4LOWA (KCA Sample No. KCA-99062B)

Ag	As	Al	B	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K
Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%
Assay	118	785	2.61	38	2377	<1	2	9.71	6	35	61	0.88	3.05

  

Li	Mg	Mn	Mo	Na	Ni	Pb	Sb	Se	Sr	Ti	Tl	V	Zn
Units	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%
Assay	3	2.23	10.44	1810	11	677	9	37	0.22	1391	102	45	0.85

\* Assays performed in-house by KCA. Comparisons of key elements to assays carried out at ALS Lima on composites pre-shipment. Element (KCA/ALS): Ag (118ppm/130ppm), Cu (0.88%/0.90%), Mn (10.4%/9.81%), Zn (0.85%/1.02%), Ca+Mg (12.04%/11.57%). Variances considered normal and derived from sub-sampling of composite.

Mn recovery for this sample is 95% in the current round of test work.

Ralph Rushton, President of Aftermath commented: "We've now tested 2 high-manganese composite samples as part of our on-going metallurgical program. KCA have refined their methodology based on successful technical steps from the first composite sample which we reported on February 29, 2024<sup>1</sup>, and have once again achieved a high purity manganese sulphate monohydrate sample. Both samples have recovered high purity battery grade manganese sulphate with less than 150ppm impurities -well within the purity specifications of most MnSO<sub>4</sub> consumers. A photo of the most recent crystallized MnSO<sub>4</sub> is included below. Metallurgical test work is now focusing on silver extraction test work for the 2 composites, and preparation of a 3rd HPMSM sample from a low manganese/high Ca+Mg compsite sample. This work will feed into the on-going PEA work for the Berenguela project."

<sup>1</sup> Feb, 29, 2024 NR linked here:

<https://aftermathsilver.com/news-releases/aftermath-silvers-berenguela-metallurgical-test-work-achieves-99.9-pure-bat>

### What Is Manganese Sulphate Monohydrate?

Battery grade manganese sulphate monohydrate is a pale pink inorganic chemical, with the formula  $\text{MnSO}_4 \cdot \text{H}_2\text{O}$ , in demand as a source of manganese for the battery manufacturing industry. Pure crystals of  $\text{MnSO}_4 \cdot \text{H}_2\text{O}$  contain approximately 32% manganese and one tonne of manganese metal should theoretically yield approximately 3 tonnes of  $\text{MnSO}_4 \cdot \text{H}_2\text{O}$ . Most  $\text{MnSO}_4 \cdot \text{H}_2\text{O}$  is produced by reducing the mineralization to metal, then dissolving the metal in acid. The process developed for Berenguela is simpler and less energy intensive - the mineralization is directly processed with acid to dissolve the manganese and other metals. The solution is purified, then the manganese sulfate is directly crystallized. China currently accounts for roughly 90% of global high purity  $\text{MnSO}_4 \cdot \text{H}_2\text{O}$  production so potential new sources of sulphate outside of China are becoming strategically and commercially important.

Figure 1. Battery grade crystallized  $\text{MnSO}_4$  prepared by KCA from Berenguela composite sample RD4LOWA.

To view an enhanced version of this graphic, please visit:

[https://images.newsfilecorp.com/files/4372/216091\\_1dc2218b34cd9abb\\_001full.jpg](https://images.newsfilecorp.com/files/4372/216091_1dc2218b34cd9abb_001full.jpg)

### KCA's Test Work

The current test program is building on previous metallurgical work carried out by KCA in 2010. Details of the historic test flowsheets and results are summarized in Section 13 of the Aftermath Technical Report "Berenguela Mineral Resource Estimate NI 43-101 Aftermath Silver Ltd. Province of Lampa, Department of Puno, Peru," dated March 30, 2023, prepared by AMC Consultants available here or on Aftermath's website at the link below:

<https://www.aftermathsilver.com/site/assets/files/5843/722031-aftermath-berenguela-mineral-resource-estimate.pdf>

Investors are cautioned that this is historical metallurgical work that Aftermath has not yet fully validated and it should not be relied on. However, KCA is currently duplicating much of the historic work on behalf of AAG and the results to date suggest that the historic work is repeatable and was done to a high standard.

Sixteen composite samples weighing over 6 tonnes in total were selected from Aftermath's metallurgical drilling program and delivered to KCA's laboratory in Reno. The composites represent the key geometallurgical domains which cover all mineralization types encountered and form the basis of the current metallurgical processing campaign. Test work is being performed individually or on blends of the samples. The objective of the current program, which complements and partly repeats the historic metallurgical test work, is to refine the flowsheet routes and to outline approximate plant costs for a planned preliminary economic analysis ("PEA"). The work includes:

- crushing and splitting;
- pressure filtration tests;
- creation of a standard solution for subsequent processing steps;
- removal of iron from primary leach solution;
- leach tests to determine the conditions (oxidation, cyanide level & consumption, leach time) for optimum silver recovery;
- sulphide precipitation and recovery of zinc;
- characterization of purified solution to identify other trace impurities and remove them if necessary;
- $\text{MnSO}_4$  crystallization processes and preparation of  $\text{MnSO}_4$  to send to outside groups for evaluation.

### Berenguela Resource Estimate

In March 2023, Aftermath published an updated resource estimate for Berenguela which included manganese in addition to substantial silver and copper resources across the Measured, Indicated and Inferred categories. Mineral Resources are stated at a cut&dash;off grade of 80 g/t silver equivalent. The relative value in the Mineral Resource by metal is as follows, Ag=26%, Mn=44%, Cu=26%, Zn=4%, however the estimate used pricing for agricultural grade  $\text{MnSO}_4$  which trades at a considerable discount to battery grade manganese sulphate. The model is depleted for historical mining activities. Please refer to Aftermath Technical Report "Berenguela Mineral Resource Estimate NI 43-101 Aftermath Silver Ltd. Province of Lampa, Department of Puno, Peru", dated March 30, 2023, prepared by AMC Consultants available here or on Aftermath's website at the link below:

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#### Berenguela Ag-Cu-Mn deposit Mineral Resource as of 31 January 2023

Resource Classification	Tonnage Mt	Grade				Contained Metal			
		Ag	Mn	Cu	Zn	Ag	Mn	Cu	Zn
		g/t	%	%	%	Moz	Mt	Mlb	Mlb
Measured	6.152	101	8.89	0.85	0.30	20.0	0.55	115.3	41.2
Indicated	34.024	74	5.60	0.63	0.34	81.2	1.90	473.7	258.1
Measured and Indicated	40.176	78	6.10	0.67	0.34	101.2	2.45	589.0	299.3
Inferred	22.287	54	3.57	0.42	0.25	38.8	0.80	204.3	122.8

#### Notes:

- CIM Definition Standards (2014) were used for reporting the Mineral Resources.
- The effective date of the estimate is 31 January 2023.
- The Qualified Person is Dinara Nussipakynova, P.Geo., of AMC Mining Consultants (Canada) Ltd.
- Mineral Resources are constrained by an optimized pit shell using the assumptions in Table 2.
- No dilution or mining recovery applied.
- Cut-off grade is 80g/t AgEq.
- Bulk density used was estimated and variable. but averaged 2.30 tonnes/m<sup>3</sup> for mineralized material and 2.25 tonnes/m<sup>3</sup> for waste.
- Drilling results up to 13 October 2022.
- Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- The numbers may not compute exactly due to rounding.
- Mineral Resources are depleted for historic mined out material.
- The relative value in the Mineral Resource by metal is as follows, Ag=26% Cu=26%, Mn=44%, Zn=4%.

Source: "Berenguela Mineral Resource Estimate NI 43-101 Aftermath Silver Ltd. Province of Lampa, Department of Puno, Peru," dated March 30, 2023, prepared by AMC Consultants.

All sample preparation and assaying were carried out in Reno, Nevada by Kappes, Cassiday & Associates. Head sample assays were performed on ICP-OES by standard 4-acid digestion. All digestions were run in parallel with OREAS certified reference materials. Ag content in the head samples were QC'd by fire assay for verification. A suite of 28 elements were tested in the head samples and on all subsequent assays.

After dissolution of the mineralization, and following each purification step, all solutions were analyzed by ICP-OES. After all trace impurities were removed, solutions were subjected to evaporative crystallization yielding  $\text{MnSO}_4 \cdot \text{H}_2\text{O}$  (HPMSM) crystals. The solution which was evaporated to produce the crystals was analyzed (prior to crystallization) to confirm that there were no elements in solution which were above the allowable levels for HPMSM listed impurities. Crystals were then dried for 48 hours to remove residual water. To verify purity, crystals were dissolved in water and re-analyzed. These analyses confirmed that the crystals were within spec for all listed elements.

#### Qualified person

Michael Parker, a fellow of the AusIMM and a non-independent director of Aftermath, is a non-independent qualified person, as defined by National Instrument 43-101. Mr. Parker has reviewed the technical content of this news release and consents to the information provided in the form and context in which it appears.

Dan Kappes, a Registered Professional Engineer (Mining Engineer #3223, Metallurgical Engineer #3223) in the State of Nevada, USA, and Founder and President of Kappes, Cassidy & Associates, is the qualified person set out in National Instrument 43-101 (NI 43-101) responsible for overseeing the design and execution of the metallurgical test program and has reviewed and approved the contents of this release.

About Aftermath Silver Ltd.

Aftermath Silver is a leading Canadian junior exploration company focused on silver and aims to deliver shareholder value through the discovery, acquisition and development of quality silver projects in stable jurisdictions. Aftermath has developed a pipeline of projects at various stages of advancement. The company's projects have been selected based on growth and development potential.

#### ON BEHALF OF THE BOARD OF DIRECTORS

"Ralph Rushton"

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CEO and Director  
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There is no certainty that any forward-looking statement will come to pass and investors should not place undue reliance upon forward-looking statements. The Company does not undertake to provide updates to any of the forward-looking statements in this release, except as required by law.

#### Cautionary Note to US Investors - Mineral Resources

This News Release has been prepared in accordance with the requirements of Canadian National

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