



**ASX Announcement**

**26<sup>th</sup> August 2015**

**Siam Copper Project Thailand**

**Outstanding High Grade Copper Assay Result at Siam 1**

**HIGHLIGHTS**

- *An outstanding assay result of 54.7% copper and 146 g/t silver was returned from a rock sample at the Siam 1 West prospect.*
- *The sample comes from a 10cm wide vein discovered within a broader 1m altered zone within a very shallow (50cm) trench.*
- *Petrographic analysis confirms the copper mineralisation comprises very high grade chalcocite, digenite and covellite.*
- *The vein may be structurally controlled "leakage" from a large concealed copper deposit or alternatively, be part of a more extensive vein system.*
- *Auger soil sampling underway to identify the extent of near surface copper mineralisation.*
- *Induced Polarisation (IP) survey is proposed to identify subsurface sulphides and define targets for drilling.*
- *Matsa is very well funded and has capacity for significant exploration at the Siam Copper Project whilst continuing its existing exploration programs in Western Australia.*

**CORPORATE SUMMARY**

**Executive Chairman**

Paul Poli

**Director**

Frank Sibbel

**Director & Company Secretary**

Andrew Chapman

**Shares on Issue**

144.15 million

**Unlisted Options**

15.47 million @ \$0.25 - \$0.43

**Top 20 shareholders**

Hold 50.36%

**Share Price on 26 August 2015**

13 cents

**Market Capitalisation**

\$18.74 million

## INTRODUCTION

Matsa Resources Limited (“Matsa” or “the Company” ASX:MAT) is pleased to report on results of recent exploration activities within the Company’s Siam Copper Project which comprises 308.75km<sup>2</sup> of granted Special Prospecting Licences (SPL’s ) and 326km<sup>2</sup> of SPL Applications in central Thailand. In particular this relates to detailed prospecting and sampling at the Siam 1 prospect. (Refer MAT announcements to ASX 8<sup>th</sup> April 2015, 28<sup>th</sup> April 2015 and 30<sup>th</sup> April 2015, 27<sup>th</sup> July 2015 and 30<sup>th</sup> July 2015.)

## EXPLORATION UPDATE

Matsa’s objective at the Siam Copper Project is to establish the presence of economic copper mineralisation within highly anomalous stream sediment catchments, particularly where past work has already confirmed the presence of visible copper mineralised boulders at Siam 1 and Siam 2.

This report covers recent exciting and very significant developments at the Siam Copper Project:

- The discovery of significant high grade copper mineralised float on the western edge of Siam 1W;
- Very high copper and silver assay results of 54.7% Cu and 148 g/t Ag were returned from rocks taken from near proximity to a copper vein (Figure 1, Collage 1);
- Petrography confirms the mineralisation to be mostly very high copper bearing sulphide minerals chalcocite, digenite and covellite, together with hydrated copper carbonates malachite and azurite; and
- Excavation of a shallow (50cm deep) hand dug trench confirms that mineralised float is being shed from a narrow 10cm wide vein of high grade copper mineralisation (Figure 2, Collage 1).

An assay of 54.7% Cu and 148 g/t Ag was returned from a recently discovered rock sample (Figure 1) on the western edge of the Siam 1W prospect (Figure 4). The mineralised float is located in cropped farmland in an area of moderate relief and minimal outcrop of underlying andesitic volcanics. A shallow 50cm deep hand dug trench (Figure 2) at the site of the mineralised rock float exposed a vein which is approximately 10cm wide within a broader altered zone up to 1 metre wide. It can be seen to be oriented in a NW direction and to dip steeply towards the NE. Assays from vein and alteration zone are awaited.

This vein discovery is in addition to the mineralised outcrop discovered at the southern end of Siam 1W close to sample Y138 containing 3.9% Cu and 10.6g/t Ag located 1.46km to the SSE. (Refer MAT announcement to ASX 27<sup>th</sup> July 2015).



**Figure 1:** Rock sample RK142 with assay of 54.7% Cu and 148g/t Ag showing blue and green secondary copper minerals along fractures in steel chalcocite, digenite and covellite.





*Figure 2: Two views of vein adjacent to rock sample RK142 (54.7% Cu and 148g/t Ag) in shallow hand dug trench clearly showing secondary copper minerals azurite (blue) and malachite (green).*

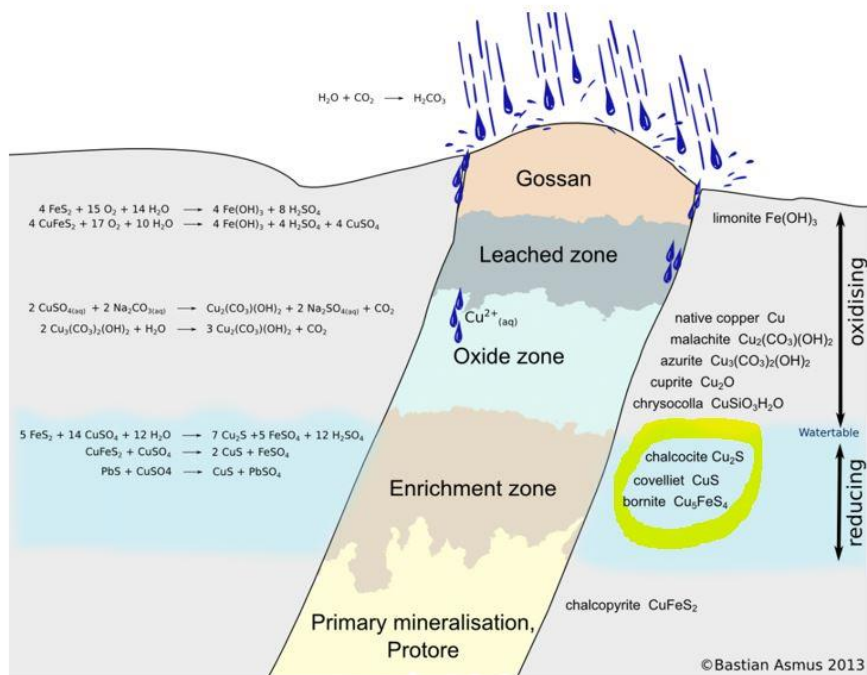
### Significance of this vein discovery

Chalcocite, digenite and covellite are very valuable copper rich sulphide minerals which are characteristic of the copper rich “supergene enrichment zone” in the upper part of a copper deposit typically underlain by primary iron copper sulphides (eg. chalcopyrite) and iron sulphides (eg. pyrite) at depth. The presence of a very high grade enriched copper zone can have a significant positive impact on the economics of a deposit, particularly where it is also strongly enriched in silver. The effects of weathering on a typical copper sulphide rich vein is illustrated by Figure 3 and described in Appendix 3. Based on the profile in Figure 3, it can be seen that the upper oxidised part of the profile which is typically leached of copper appears to have been removed by erosion at Siam 1W, leaving the enriched chalcocite zone very close to surface.

Implications for the recently discovered vein include the possibility that:

- The vein may be fault/fracture controlled leakage of copper and silver from a major copper sulphide deposit perhaps underlying the spread of native copper rich scree and anomalous soil geochemistry at Siam 1W. (Figure 5)
- It may be only one of a more extensive suite of copper rich veins.

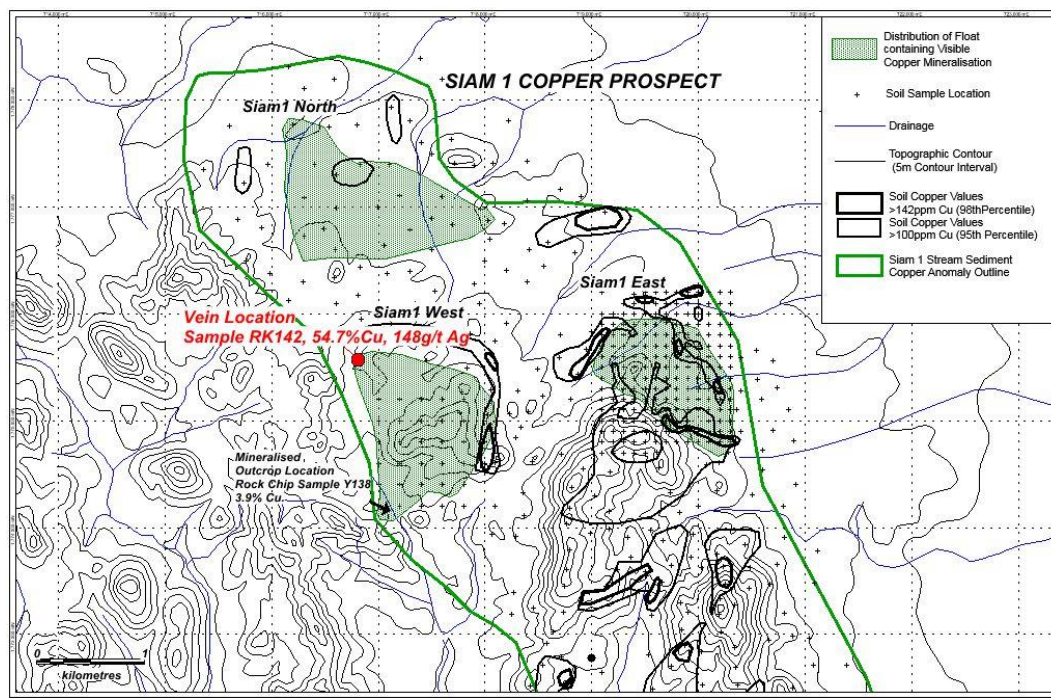




**Figure 3:** Schematic view of the effects of weathering of a primary copper sulphide vein including iron oxide (gossan) formation and leaching of copper above the water table and copper enrichment at and below the water table.

## Assay Results

Sample RK142 was submitted to the MAS laboratory in Bangkok for multi-element analysis. The sample was digested using Aqua Regia and analysed using ICP-OES for 23 elements. Copper and silver values were both in excess of the upper detection limit (1% Cu and 100 g/t Ag respectively) of this method. The sample was consequently re-assayed to higher detection limits (Appendix 1) and reported 54.7% Cu and 148 g/t Ag.



**Figure 4:** Part of Siam 1 Prospect showing Siam 1W, recently discovered Cu rich vein and areas of native copper mineralised float.



## Petrography

Petrographic analysis of polished thin sections was carried out by Townend Mineralogy confirmed that sample RK142 is dominantly composed of copper minerals plus a significant quantity of hematite. The sulphides identified were coarsely textured cleaved chalcocite and subordinate quantities of digenite and accessory covellite. Malachite and azurite are also prominent as late veins cutting the sulphides. Hematite is also prominent as local concentrations of fibrolamellar crystals sometimes with inclusions of copper sulphides.

Background information about the methods and data used in compiling this report, are attached as Appendix 1 in accordance with the JORC 2012 Code.

## Planned Exploration

It is planned to extend auger soil sampling, geological mapping and IP surveys over Siam 1W, Siam 1E and Siam 1N to explore for the presence of copper sulphide mineralisation underlying or adjacent to these targets which are defined by visible copper mineralisation in float and by anomalous soil copper values.

### ***Collage 1: Additional views of vein location and close up views of rock sample RK142.***









For further Information please contact:

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## **Exploration results**

*The information in this report that relates to Exploration results is based on information compiled by David Fielding, who is a Fellow of the Australasian Institute of Mining and Metallurgy. David Fielding is a full time employee of Matsa Resources Limited. David Fielding has sufficient experience which is relevant to the style of mineralisation and the type of ore deposit under consideration and the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. David Fielding consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

## Appendix 1 - Matsa Resources Limited

### Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<i>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</i>	<u>Thailand</u>  Sampling carried out according to well established procedure. Soil samples are taken as close as possible to the top of the weathered rock profile rather than in overlying vegetation rich A horizon material. Stream sediments samples represent active bedload in defined drainage channels
	<i>Measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i>	Soils and streams: Sufficient sample bagged in the field to enable selection of duplicates to be run for QA QC purposes. Rocks, typically 1-2kg collected, and submitted for crushing and grinding at lab.
	<i>Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</i>	<u>Stream Sediment Samples and soil samples</u>  -2mm samples of active stream silt and B horizon soils were submitted for assay where samples were dried and further reduced by screening with assays carried out on the -80# fraction.  <u>Rock Samples</u>  Rock samples comprise 1-3 kg of visually interesting material were submitted for drying, crushing to 2mm size and then pulverized down to 106 microns or -150# to MAS laboratory in Bangkok.  Limited hand held XRF analysis carried out on rock samples as a semi quantitative way to confirm their copper bearing character.
Drilling techniques	<i>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</i>	
Drill sample recovery	<i>Method of recording and assessing core and chip sample recoveries and results assessed.</i>	
	<i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i>	



Criteria	JORC Code explanation	Commentary
	<i>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</i>	
Logging	<i>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</i>	
	<i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i>	
	<i>The total length and percentage of the relevant intersections logged.</i>	
Sub-sampling techniques and sample preparation	<i>If core, whether cut or sawn and whether quarter, half or all core taken.</i>	Not applicable
	<i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i>	
	<i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i>	Standard lab sample preparation process includes drying, crushing and pulverizing.  Standard lab sample preparation process includes drying, screening to -80# for soil and stream sediment samples. Rock samples undergoes drying, crushing to nominal -2mm size and pulverized to 106 microns/-150#. Rock samples with Cu grades of >1% were screened to 75microns/-200#.
	<i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i>	
	<i>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</i>	
	<i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i>	Sample size is appropriate for the targeted mineralization style.
Quality of assay data and laboratory tests	<i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i>	<u>Thailand</u> Assaying of soil samples, stream sediments and rock samples were carried out at Mineral Assay and Services (MAS) laboratories in Bangkok, Thailand, Soil samples: Sample preparation dry and screen to -80#, A 0.5gram sample of the -80# fraction digested by Aqua regia acid digest (Digest GEO23) and 23 elements including Cu were read by ICP OES to a reported detection limit of 1ppm Cu and upper detection limit of 1% Cu. Rock samples with assays over 1% Cu were subjected a sodium peroxide fusion and measured with AAS for Cu only. Rock

Criteria	JORC Code explanation	Commentary
		<p>samples with Ag values over the 100 ppm upper detection limit were re assayed using a 4 acid digest and read by AAS (Method code Ag4AD/AAS)</p> <p>A table of elements with lower and upper detection limits is attached as Appendix 2. Some elements are only partially leached by the GEO23 digest leading to incorrect assays for some elements e.g., Al, Cr, Fe, etc.</p>
	<i>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</i>	Olympus Innovx Delta Premium (DP4000C model) handheld XRF analyser. Reading times employed was 45 sec/beam for a total of 145 sec using Soil Mode.
	<i>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</i>	Not carried out because laboratory QA QC procedures are regarded as sufficient at this stage. Handheld XRF QAQC includes use of duplicates, standards and blanks.
Verification of sampling and assaying	<i>The verification of significant intersections by either independent or alternative company personnel.</i>	Matsa Group Exploration Manager verified all significant intersection results.
	<i>The use of twinned holes.</i>	
	<i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i>	Data entry carried out by field personnel thus minimizing transcription or other errors. Trial plots in field and rigorous database procedures ensure that field and assay data are merged accurately.
	<i>Discuss any adjustment to assay data.</i>	No adjustments were made to the assay data.
Location of data points	<i>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</i>	
	<i>Specification of the grid system used.</i>	UTM Grid system used namely Indian Thailand 1975 datum Zone 47.
	<i>Quality and adequacy of topographic control.</i>	Topographic control 2-5m accuracy using published maps or Shuttle Radar data is sufficient to evaluate topographic effects on assay distribution.
Data spacing and distribution	<i>Data spacing for reporting of Exploration Results.</i>	For Thailand, typically between 4 and 12 samples per km <sup>2</sup> .
	<i>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</i>	Not applicable at this stage.
	<i>Whether sample compositing has been applied.</i>	



Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	
	If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	
Sample security	The measures taken to ensure sample security.	Not regarded as an issue for soil samples and first pass aircore samples beyond clear mark up and secure packaging to ensure safe arrival and accurate handling by personnel at assay facility. Assay Pulps retained until final results have been evaluated.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	Not carried out at this stage.

## Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.	<u>Thailand</u> Exploration tenements comprise more or less regular aggregates of square blocks to a maximum of 16km <sup>2</sup> . Tenements are held by Siam Copper Ltd and PVK Mining Limited which are both wholly owned subsidiaries of Matsa Resources Limited. Tenements have been granted for a period of 5 years subject to completion of agreed exploration programme.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a license to operate in the area.	All Matsa tenements are in good standing and no known obstacle exists.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<u>Thailand</u> Past work in the Siam project area has included -80# stream sediment sampling carried out by the Department of Mineral Resources of Thailand (DMR) and made available to explorers. Other work includes a helicopter borne combined electromagnetic and magnetic survey carried out mostly on EW lines nominally 400m apart.

Criteria	JORC Code explanation	Commentary
Geology	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<p><b>Thailand</b> The target is volcanic hosted copper mineralisation associated with widespread altered boulders, in some cases containing visible Cu mineralisation. The project area is part of an arcuate paleo – island arc terrane which is more than 600km long and oriented approximately north – south. This terrane extends from Ko Chang Island on the Cambodian border in the south to the Laos border beyond Loei in the north.</p> <p>The geological character of this belt results from subduction of oceanic crust towards the east beneath the Indo – Sinian plate during the Permian and early Triassic periods through to the Tertiary. Volcanic rocks, comprising mostly andesites in the project area, were deposited in early Triassic times over extensive Permian aged shelf limestones.</p>
Drill hole Information	<p><i>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:</i></p> <ul style="list-style-type: none"> <li><i>easting and northing of the drill hole collar</i></li> <li><i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li><i>dip and azimuth of the hole</i></li> <li><i>down hole length and interception depth</i></li> <li><i>hole length.</i></li> </ul> <p><i>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</i></p>	
Data aggregation methods	<i>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</i>	
	<i>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</i>	
	<i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i>	
Relationship between mineralisation	<p><i>These relationships are particularly important in the reporting of Exploration Results.</i></p> <p><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></p> <p><i>If it is not known and only the down hole lengths are reported, there should be</i></p>	



Criteria	JORC Code explanation	Commentary
<i>widths and intercept lengths</i>	<i>a clear statement to this effect (eg 'down hole length, true width not known').</i>	
<i>Diagrams</i>	<i>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</i>	Suitable summary plans have been included in the body of the report.
<i>Balanced reporting</i>	<i>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</i>	Not required at this stage.
<i>Other substantive exploration data</i>	<i>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</i>	All related exploration information are included in the main body of the report
<i>Further work</i>	<i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i>	Included in the main body of the report.

**Appendix 2**  
**Assay Protocol Geo 23 MAS Laboratory Bangkok Thailand**

Digest wt		0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g
Analyte		<b>Ag</b>	<b>Al</b>	<b>As</b>	<b>Ba</b>	<b>Bi</b>	<b>Ca</b>	<b>Cd</b>	<b>Co</b>	<b>Cr</b>	<b>Cu</b>	<b>Fe</b>	<b>Hg</b>
Unit		ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
Upper Detection Limit		100	10	10000	100	2000	40	2000	2000	10000	10000	40	100
Lower Detection Limit		0.3	0.01	2	1	1	0.01	0.5	1	1	1	0.01	2
Digest wt			0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g
Analyte			<b>K</b>	<b>Mg</b>	<b>Mn</b>	<b>Mo</b>	<b>Na</b>	<b>Ni</b>	<b>Pb</b>	<b>Sb</b>	<b>Ti</b>	<b>V</b>	<b>Zn</b>
Unit			%	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm
Upper Detection Limit			10	30	10000	2000	10	10000	10000	2000	10	10000	10000
Lower Detection Limit			0.01	0.01	2	0.5	0.01	1	3	1	0.01	1	1



**Appendix 3**  
**Paper on Gossan or The Iron Cap**

- [Archaeometallurgy](#)
- [Foundry](#)
- [Scientific service](#)
- [Tools](#)

## archaeometallurgy

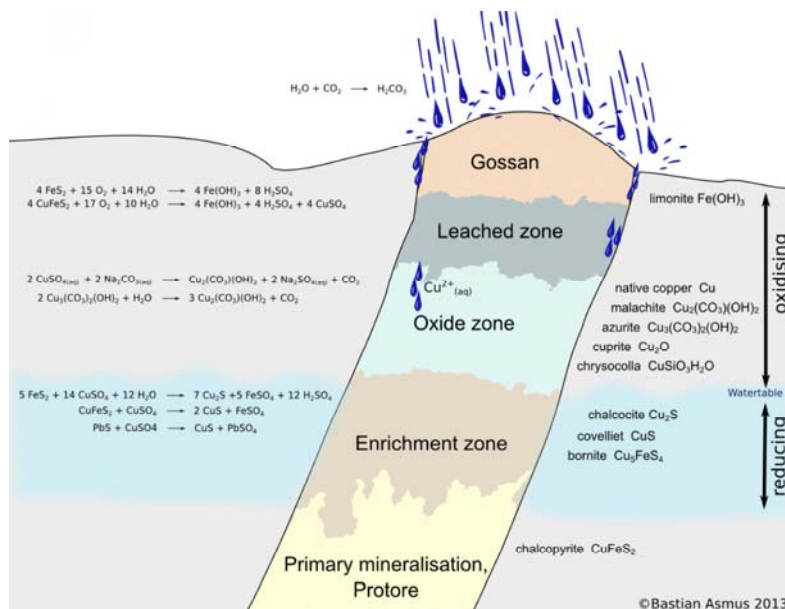
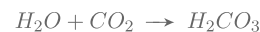
metal, slag, ceramics

### Gossan or the iron cap

Bastian Asmus

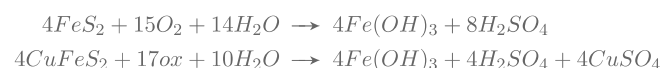


Gossan is a term from mineral economics. The gossan may also be called iron cap. This is so because it denotes a concretion of iron hydroxides that has formed on top of sulphide mineral vein, where it reaches the surface. It forms during the supergene sulphide ore enrichment, when weakly acid surface water percolates through the mineral deposit. Many sulphide ores are oxidised in this process and brought into solution:

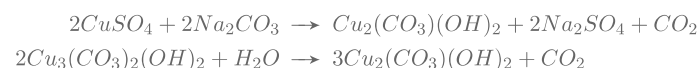


Schematic view of a sulphide vein. You can see the oxidation zone, consisting of the gossan, the leached zone and the oxidised zone. The reducing zone consists of the enrichment zone and the area of primary mineralization. Significantly modified after Evans (1992) and Ottaway (1994).

The resulting solutions may dissolve further minerals (Evans 1992). In sulphide ore bodies for example pyrite ( $Fe_2S_3$ ) breaks down to sulphuric acid and limonite ( $Fe(OH)_3$ ). Limonite is insoluble in water and remains in the upper zones of the oxidised ore body. Since the formation of limonite is accompanied by an increase in volume, the gossan forms in a particular way, was easily recognized by prospectors and indicated the presence of an ore body to them.

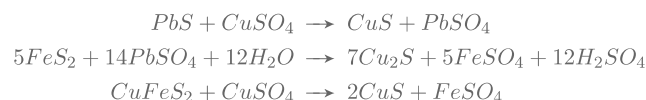


In the underlying leached oxide zone other ore minerals are dissolved by the sulphuric acid. The ore body is “leached” and the metal ions are transported down to where they may be partly precipitated as oxides again. A zone with oxidized ore remains. Carbonated, oxidizing water may form carbonates such as malachite or azurite (Menschel & Usdowski 1975), eg:



The copper ions of the dissolved copper sulphate  $\text{CuSO}_4$  react with carbonates which are also easily dissolved in carbonated water. Malachite  $\text{Cu}_2(\text{CO}_3)(\text{OH})_2$  or azurite  $\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$  are thereby precipitated. In contact with water azurite reacts to malachite. However, other ores we cuprite, chrysocolla, or even native copper can occur in this zone.

The greater part of the dissolved metal freight is reprecipitated in the reducing enrichment zone below the water table. Thus the ores of the enrichment zone may significantly surpass the metal content of the primary mineralisation. Typical reactions are:



## Early archaeological evidence for the use of malachite and native copper

The oxidation zone of a vein mineralisation is also of crucial importance for the emergence of metallurgy, because there you may find native copper and oxidic ores such as malachite side by side. There is evidence as early as 9500 years BC for the intentional collection of copper minerals. In Hallan Cemi and Çayönü Tepesi in Anatolia, we have proof for the first malachite fragments in a settlement context. Only a few hundred years later at 8200 BCE the first objects (mostly beads) made from malachite and copper, appear in Çayönü Tepesi (Yalçın 2000). This was native copper from the oxidation zone of a vein mineralisation that hammered into shape.



Archaeological settlements with very early metalworking evidence prior to 5000 BC. Data from Yalçın (2000).

## References

- Evans, A.M., 1992. Erzlagerstättenkunde. Übers. von Udo Neumann und Gerburg Larsen. Enke, Stuttgart.
- Ottaway, B.S., 1994. Prähistorische Archäometallurgie. Verlag Marie L. Leidorf, Espelkamp.
- Menschel, G. und Usdowski, E. 1975. Experimentelle Untersuchungen über die Stabilität von Cu-Karbonat zur Klärung der Genese von Azurit im Cornberger Sandstein. Contributions to Mineralogy and Petrology 49, 141–147.
- Yalçın, Ü., 2000. Anfänge der Metallverwendung in Anatolien, in: Anatolian Metal, Veröffentlichungen aus dem Deutschen Bergbau-Museum Bochum. Bochum.

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