Mineral Resources Tasmania

Laboratory Report

LJN2020-006

MINERALOGICAL ANALYSES, ROSEBERY

An unpublished Mineral Resources Tasmania Report for:

R Wolfe

By: R S Bottrill & T Coyte

Date: 26 February 2020

Mineral Resources Tasmania
Department of State Growth

Tasmanian Government

SUMMARY

The sample contains mostly Rhodochrosite, Spessartine, Sepiolite, Berthierine, quartz and various sulphides. Spessartine is probably forming from the metamorphic reaction of rhodochrosite with aluminous phyllosilicates.

INTRODUCTION

A mineral sample from the Rosebery mine was collected and submitted by R Wolfe for mineralogical analysis. The sample details are given in Table 1.

Table 1. Sample details

MRT Reg. No.	Location	Sample Description	Process
G409300	Rosebery	Garnet-carbonate rock	XRD

PROCESS

To determine the mineralogy of the rock, some representative parts of the material were crushed and analysed by X-ray Diffraction (XRD) in the Mineral Resources Tasmania (MRT) Laboratories, Rosny Park and Mornington, to determine the mineralogy.

SAMPLE DESCRIPTION

In hand specimen, the sample G409300 consists of medium pink rhodochrosite, white quartz and dark red-brown spessartine, brown sphalerite, and some greenish phyllosilicate material.

Figure 1: Sample G409300, showing pink rhodochrosite, white quartz and red-brown spessartine. Plain light, FOV (field of view) ~160mm.

XRD ANALYSES

A portion of the samples was prepared, examined and analysed in the MRT laboratories, Rosny Park, Tasmania. It was run on a Rigaku Miniflex 600 X-Ray Diffractometer system: a 600W generator 150mm goniometer with a Cu tube; 40kV/15mA, sample spinner and a Scintillation counter (SC) with Be window, 3º to 63º 2Theta-2Theta scanning range, with a scanning speed of 0.01 to 100º/min, a

graphite counter monochromator and a Kß Ni- filter. The analysis software used is the PDXL2 using the ICCD database.

The results are shown in Appendix 1 The results are shown in Appendix 1.

DISCUSSION AND CONCLUSIONS

The sample contains mostly Rhodochrosite, Spessartine, Sepiolite, Berthierine, quartz and various sulphides. Spessartine is probably forming from the metamorphic reaction of rhodochrosite with aluminous phyllosilicates.

R.S. Bottrill — **MINERALOGIST/PETROLOGIST**

T Coyte — **LABORATORY ASSISTANT**

Mineral Resources Tasmania

Appendix 1: XRD Analyses

MRT Laboratory Report

Client: R Wolfe
Sample Source: Rosebery mine
MRT Job Number: LJN2020-006
Analysis: Approximate Mineralogy
Method: X-Ray Diffraction

Analysis Results –G409300

General information

Analysis date	2020/03/06	XRD	Rigaku Miniflex 600
Job Number	LJN2020-006		
Sample ID	G409300	Operator:	T.Coyte
Comment:	RIR Method, plus HCl Leach		

Analysis results

Phase name	Content %	Formula
Rhodochrosite	75(±10)	$Mn(CO_3)$
Spessartine	21(±5)	$Mn_3Al_2(SiO_4)_3$
Sepiolite	2(±1)	$Mg_4(Si_6O_{15}(OH)_2)(H_2O)_6$
Berthierine	2(±1)	$(Fe^{+2},Fe^{+3},Al)_3(Si,Al)_2O_5(OH)_4$
Biotite	<1	$K(Fe^{2+}/Mg)_2(Al/Fe^{3+}/Mg)([Si/Al]Si_2O_{10})(OH/F)_2$
Magnetite	<1	$Fe^{2+}Fe^{3+}{}_2O_4$
Pyrite	<1	FeS_2
Galena	<1	PbS

Peak overlap may interfere with identifications and quantitative calculations.
Amorphous minerals and minerals present in trace amounts may not be detected.

Peak List

No.	d(ang.)	FWHM(deg)	Phase name	Rel. int.
1	12.078(19)	0.29(5)	Sepiolite(1,1,0)	1.31
2	10.013(13)	0.100(17)	Biotite(0,0,1)	0.46
3	7.088(7)	0.11(2)	Berthierine(0,0,1)	0.67
4	4.7539(14)	0.082(19)	Spessartine(2,1,1),Berthierine(1,0,0)	0.09
5	3.6506(8)	0.141(4)	Rhodochrosite(0,1,2),Sepiolite(1,5,1),Biotite(1,1,-2)	3.61
6	3.554(4)	0.48(6)	Sepiolite(2,4,1),Berthierine(0,0,2)	0.40
7	3.3530(6)	0.084(18)	Sepiolite(4,0,0),Biotite(0,0,3)	0.28
8	3.1421(12)	0.05(2)	Sepiolite(0,7,1),Biotite(1,1,2)	0.03
9	3.1118(16)	0.10(3)	Spessartine(3,2,1)	0.07
10	3.0242(16)	0.132(12)	Unknown	0.49
11	2.9123(14)	0.09(2)	Spessartine(4,0,0),Biotite(1,1,-3)	0.52
12	2.83924(18)	0.1611(13)	Rhodochrosite(1,0,4),Sepiolite(2,7,1)	100.00
13	2.708(2)	0.12(10)	Sepiolite(4,3,1),Biotite(0,2,3),Pyrite(2,0,0)	0.05
14	2.6041(4)	0.104(7)	Rhodochrosite(0,0,6),Spessartine(4,2,0),Sepiolite(0,2,2)	1.95
15	2.5342(5)	0.134(19)	Sepiolite(2,10,0),Magnetite(3,1,1)	0.36
16	2.4847(16)	0.08(4)	Spessartine(3,3,2)	0.15
17	2.424(2)	0.33(8)	Sepiolite(1,11,0),Biotite(1,3,-	0.14

18	2.3821(6)	0.199(7)	Rhodochrosite(1,1,0),Spessartine(4,2,2),Sepiolite(4,8,0)	2.65
19	2.2817(4)	0.22(2)	Spessartine(4,3,1),Sepiolite(0,6,2),Biotite(2,2,0)	0.42
20	2.1681(4)	0.194(6)	Rhodochrosite(1,1,3),Sepiolite(3,11,0),Berthierine(1,1,2),Bi	3.34
21	2.1250(5)	0.129(12)	Spessartine(5,2,1),Sepiolite(6,4,0)	0.25
22	2.1009(5)	0.12(2)	Sepiolite(3,5,2),Biotite(0,4,2),Magnetite(4,0,0),Galena(2,2,0	0.19
23	2.0620(5)	0.10(3)	Spessartine(4,4,0)	0.04
24	2.0147(8)	0.13(6)	Sepiolite(5,9,0)	0.08
25	1.9968(3)	0.204(7)	Rhodochrosite(2,0,2),Sepiolite(2,8,2),Biotite(2,0,-4)	2.76
26	1.8905(5)	0.103(15)	Spessartine(6,1,1),Sepiolite(4,6,2)	0.43
27	1.8269(5)	0.270(13)	Rhodochrosite(0,2,4),Sepiolite(2,10,2),Biotite(2,2,-4)	1.31
28	1.7693(3)	0.26(4)	Rhodochrosite(0,1,8),Sepiolite(4,8,2),Berthierine(0,0,4)	4.84
29	1.7600(3)	0.28(4)	Rhodochrosite(1,1,6),Sepiolite(6,8,1),Biotite(2,2,3)	6.27
30	1.6807(7)	0.18(3)	Spessartine(4,4,4),Sepiolite(0,5,3),Biotite(1,5,-2)	0.14
31	1.6147(4)	0.148(15)	Spessartine(6,4,0),Sepiolite(1,16,1),Biotite(2,4,-	0.48
32	1.5851(3)	0.12(4)	Spessartine(6,3,3),Sepiolite(6,11,1),Biotite(1,5,-3)	0.07
33	1.55610(9)	0.213(15)	Rhodochrosite(2,1,1),Spessartine(6,4,2),Sepiolite(1,8,3)	0.98
34	1.5296(2)	0.266(10)	Rhodochrosite(1,2,2),Sepiolite(8,5,1)	1.73
35	1.4857(7)	0.30(13)	Sepiolite(2,9,3),Berthierine(1,1,4),Magnetite(4,4,0),Galena(	0.14

Phase data pattern