

Company Profile of SJT MetMin Services (Pty) Ltd.

For All Your Ore Characterization and Flowsheet Development Needs

Company Details

SJT MetMin Services (Pty) Ltd operate from Modderfontein on the East Rand in Gauteng, South Africa. Our company details are as follows:

<i>Registration No:</i>	2016/124159/07
<i>Tax No:</i>	9197209225
<i>VAT No:</i>	4950273104
<i>Cell:</i>	+27 (0)72 299 1167
<i>E-mail:</i>	gabrielle.ficq@sjtmetmin.co.za
<i>Website:</i>	www.sjtmetmin.co.za
<i>Address:</i>	1 Ardeer Road, Modderfontein. 1609

About Us

SJT MetMin is an independent specialist technical service provider to the mining and minerals processing industry. We work with a variety of clients from exploration companies and junior miners to large multinational mining companies to obtain a better understanding of their ore, in order to:

- ▶ UNLOCK VALUE
- ▶ REDUCE RISK
- ▶ OPTIMISE PLANT DESIGN AND PERFORMANCE
- ▶ REDUCE COST AND MAXIMIZE RETURN

Our technical strengths in geology, geochemistry, mineralogy and metallurgy allow the SJT MetMin Team to deliver solutions across a wide range of commodities and project types. Combined with a strong commercial awareness, SJT MetMin is a cost effective, complete solution provider. We are not affiliated to any geochemical laboratory and can therefore select the most appropriate laboratory for the analysis required. We continuously monitor and evaluate the available assay service providers to make sure our clients receive top quality data at the best turnaround times.

Our People

The SJT MetMin Team comprises two geoscientists and an experienced technician that boast a combined industry experience of more than 50 years. Solly Theron (Pr.Sci.Nat) (M.Sc.) and Gabrielle van Heerden (Pr.Sci.Nat) (M.Sc.) obtained their academic qualifications from the Department of Geology at the University of Johannesburg. Archie Corfield is a mineralogical and materials technician with specialist sample preparation skills as well as a wealth of knowledge and capability in a broad range of mineralogical techniques, including preparation of high quality geological thin sections, electron microscopy and electron microprobe analysis. We have held a variety of technical and/or managerial positions at multinational companies and government institutions, such as Anglo American, Mintek, SGS South Africa, Exxaro, Anglovaal Mining and the University of Johannesburg before joining SJT MetMin Services, which was established by Solly Theron in 2016. The geoscientists are individually registered with various scientific associations such as the Mineralogical Association of South Africa (MINSAs) and the South African Council for Natural Scientific Professions (SACNASP).

Our Expertise

We are experts in the field of process mineralogy, geometallurgy and geochemistry. We have extensive knowledge in the scoping and execution of testwork programs, optimization programs and feasibility studies. Over the past two decades, members of the team have individually been involved in the successful completion of testing programs across a wide range of commodities and geographic locations:

- ▶ Heavy Mineral Sand Deposits (Southern Africa & Australia)
- ▶ Fe-ore Deposits (West Africa & South Africa)
- ▶ Ni-sulphide deposits (Botswana, Zimbabwe)
- ▶ Zn-oxide deposits (Namibia)
- ▶ Sb sulphide deposits (South Africa)
- ▶ Zn-Pb±Cu sulphide deposits (South Africa, Botswana, Tanzania, Togo)
- ▶ PGE deposits (South Africa, Zimbabwe)
- ▶ Cu-Co deposits (Central Africa – Zambia & DRC)
- ▶ Gold Deposits (All over Africa, Australia & North America)

Our Approach

UNIFYING MINERALOGY AND METALLURGY FOR A TAILORED SOLUTION

The mineralogical composition of an ore body ultimately determines the extractive performance of a processing plant. It is therefore one of the most important pillars in Geometallurgy, which is defined as the practise of developing a predictive model that incorporates various aspects from mining, mineral processing, geostatistics and financial modelling.

Geometallurgy is often complicated by misconceptions relating to its application. This can lead to serious technical and financial risks, particularly as ore bodies become increasingly complex to mine

and beneficiate. A comprehensive dataset should be generated to populate a geometallurgical model to create a reliable predictive production management tool. However, the cost to achieve this is usually prohibitive. To overcome this, easily determined proxies for metallurgical behaviour need to be established. Our approach is to quickly identify links between the inherent characteristics of the ore and metallurgical responses, and then provide customisable and tailored solutions.

Our Services

Ore Characterisation and Department Studies

- ▶ Qualitative and quantitative mineral characterization (MLA and QEMSCAN)
- ▶ X-ray Diffraction (XRD) analysis and optical microscopy
- ▶ Basic scoping metallurgical tests to recommend possible processing options

Process Flow-sheet Development Studies

- ▶ Utilising mineralogical information and basic metallurgical response data to conceptualize possible process flow-sheet options
- ▶ Metallurgical test work
 - ▶ Sample preparation (drying, mixing, splitting, scrubbing, attritioning)
 - ▶ Comminution (crushing, rod and ball milling, BWi, etc.)
 - ▶ Froth Flotation
 - ▶ Gravity Separation (DMS, Falcon/Knelson, shaking table, spirals)
 - ▶ Magnetic Separation
 - ▶ Electrostatic Separation
 - ▶ Hydrometallurgy (cyanide, acid and base leaching)

Scoping, Pre-feasibility & Feasibility Studies

- ▶ Developing and managing fully integrated geometallurgical test work programs

Plant monitoring programs

- ▶ Developing and managing sampling and analysis programs to monitor plant performance
- ▶ Efficient mineralogical monitoring of key process streams
- ▶ On-site technical evaluations and audits
- ▶ Identification of improvement opportunities

Tailings Management

- ▶ Characterizing clay components to aid settling/filtration design
- ▶ Characterizing tailings material to determine the environmental significance

Consulting and Training

- ▶ Developing and implementing best practices for on-site laboratories, including Standard Operating Procedures (SOPs), calibrations and QA/QC systems
- ▶ Specific training related to sampling, sample preparation and analytical techniques
- ▶ Customized training courses such as 'Analytical Chemistry for Geologists and Metallurgists', 'Geology for Metallurgists' and 'Metallurgy for Geologists'

Mineral Economics

- ▶ Literature surveys, metals market research and analysis
- ▶ Trade-off studies

SIGNED



S. J. Theron
Non-Executive Director
SJT MetMin Services (Pty) Ltd.



G van Heerden
Managing Director



A. Corfield
Director