

SPARKS MET (PTY) LTD

Technical Report: Areachap DMS Copper Test

Mass Yield, Grade & Recovery at Cut Densities 3.0 / 3.1 / 3.2

Date: 26 August 2026 | Prepared by: Johannes Lubbe | Client: [REDACTED] DMS Evaluation

1. Sample Description & Head Grade

Feed material designated [REDACTED] **DMS FEED**. Assay by IMEC Laboratory Services (Lab ID IM 135170, received 26-08-2026, XRF, dry basis): **2.88% Cu** (qualitative), **12.93% Fe**, 29.54% SiO₂. Three dense-medium separation tests were run on equal 9.2 kg feed splits at cut densities SG 3.0, 3.1 and 3.2. Copper values are reported by the laboratory as qualitative.

2. Test Mass Balance (Whiteboard)

Each test used 9.2 kg of -8 +2 mm feed. Concentrate and tails masses below are taken directly from the plant whiteboard. Mass loss is due to fines loss on the DMS feed prep screen.

Stream	SG 3.0	SG 3.1	SG 3.2
Feed (kg)	9.20	9.20	9.20
Concentrate (kg)	1.15	1.10	0.85
Tails (kg)	7.50	7.95	8.25
Accounted mass (kg)	8.65	9.05	9.10
Mass yield to conc.	12.50%	11.96%	9.24%

3. Assayed Grades (IMEC, 26-08-2026)

Stream	% Cu*	% Fe	% SiO ₂	Lab ID
Feed	2.88	12.93	29.54	IM 135170
Conc SG 3.0	12.55	31.57	13.20	IM 135174
Tails SG 3.0	1.38	13.70	33.86	IM 135171
Conc SG 3.1	14.20	30.78	11.24	IM 135175
Tails SG 3.1	1.72	14.52	33.89	IM 135172
Conc SG 3.2	15.87	33.32	10.03	IM 135176
Tails SG 3.2	2.03	14.09	32.89	IM 135173

* Copper reported as qualitative by IMEC.

4. Mass Yield, Upgrade Ratio & Recovery

Mass yield = concentrate mass / 9.20 kg feed. Recovery = (conc mass × conc grade) / (feed mass × feed grade). Upgrade ratio = concentrate grade / feed grade.

Parameter	SG 3.0	SG 3.1	SG 3.2
Mass yield to concentrate	12.50%	11.96%	9.24%
Concentrate Cu grade	12.55%	14.20%	15.87%
Cu upgrade ratio	4.36 ×	4.93 ×	5.51 ×
Cu recovery to concentrate	54.47%	58.95%	50.91%
Tails Cu grade	1.38%	1.72%	2.03%
Concentrate Fe grade	31.57%	30.78%	33.32%
Fe recovery to concentrate	30.52%	28.46%	23.81%
Concentrate SiO ₂	13.20%	11.24%	10.03%

5. Key Observations & Recommendations

- **Best Cu recovery is at SG 3.1** (58.95%) with 11.96% mass yield and 14.20% Cu in concentrate.
- Highest concentrate grade is at SG 3.2 (15.87% Cu, 5.51× upgrade) but recovery drops to 50.91% and mass yield to 9.24%.
- SG 3.0 gives the highest mass yield (12.50%) and the lowest tails Cu (1.38%), with 54.47% Cu recovery at 12.55% Cu.
- Silica is strongly rejected in all three concentrates (SiO₂ falls from 29.54% in feed to 10–13% in concentrate).
- Iron reports preferentially to the concentrate (23–31% Fe recovery) but at a lower upgrade than copper, consistent with sulphide association.
- Copper assays are qualitative; a quantitative Cu check on the preferred cut (SG 3.1) is recommended before locking a plant density setpoint.
- Suggested operating window for further work: **SG 3.05–3.15** to balance grade vs recovery.

This report is based on the laboratory assays and whiteboard mass figures supplied. All grades are on a dry basis as reported by IMEC Laboratory Services. Copper values are qualitative. Mass yields use the 9.20 kg feed split recorded for each test. Recoveries use measured product masses × assayed grades.

Regards,

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