

Metallurgical Technician interview questions

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What to expect

Interviews for metallurgical technician roles usually blend technical checks with safety and teamwork questions. Employers want to see that you can follow lab procedures, interpret data and communicate clearly with metallurgists and plant operators.

- **Technical:** Questions on sample preparation, instrument use and common analysis methods like XRF and atomic absorption.
- **Safety and compliance:** How you handle hazardous chemicals, follow WHS requirements and keep a clean lab.
- **Process and scenario:** What you would do if a result looked wrong, or if plant recovery dropped unexpectedly.
- **Behavioural:** Past examples of working in a team, managing competing priorities or solving a problem.
- **Data interpretation:** How you read assay data, spot trends and report findings to technical and operational staff.

Typically a phone screen with a recruiter, then a site or laboratory interview with a panel that includes a metallurgist or lab supervisor. You may be asked to complete a short practical test or a written scenario. Some employers run a second interview with the plant manager. The process usually takes one to three weeks.

1. Walk me through how you prepare an ore sample for XRF analysis, from collection to result.

Why they ask

This checks your practical knowledge of the full sample path and whether you understand contamination risks.

How to structure your answer

A process walk-through: start at collection, cover drying, crushing, splitting, pulverising, pressing or fusion, then analysis and reporting. Mention QA/QC steps like duplicates and standards.

Example answer

"When a sample comes in, I first check the label and log it into LIMS. I dry it in the oven at 105 degrees Celsius overnight, then crush it in a jaw crusher and split it down with a riffle splitter to a representative sub-sample. That goes into a ring mill for pulverising until it is fine enough for XRF. I press a pellet with a binder or prepare a fused bead if the method requires it. Before running the batch I check the instrument with a standard and a blank. I run duplicates on every tenth sample. Once the results are in, I review them against expected ranges and flag anything unusual to the metallurgist before I report it."

2. Tell me about a time you noticed a test result that did not look right. What did you do?

Why they ask

They want to see your attention to detail and how you handle a potential error without jumping to conclusions.

How to structure your answer

STAR: situation, task, action, result. Make the action clear about checking the sample, instrument and method before escalating.

Example answer

"In my last lab, I was running a batch of tailings samples and one showed a copper grade much higher than the previous week. I stopped the batch and checked the sample log. The sample had been collected after a pump change, so I asked the plant operator to confirm the location. I then ran a duplicate and a spiked sample. The duplicate was consistent, but the spike recovery was low, which pointed to a matrix issue. I prepared a fresh digestion and reran it. The result came back in line with the plant's expected range. I documented the issue in LIMS and discussed it with the metallurgist so we could adjust the method for that ore type."

3. A plant reports lower than expected recovery from a flotation circuit. How would you investigate?

Why they ask

This tests your problem solving and whether you can connect lab data to plant performance.

How to structure your answer

Scenario judgement: outline your first steps, what data you would check, who you would speak to, and how you would avoid jumping to a fix.

Example answer

"First I would check the lab data for the feed, concentrate and tailings over the last few shifts. I would look for changes in grade, grind size or reagent consumption. I would also check whether any samples were taken during a plant upset or after a reagent change. Then I would speak to the shift supervisor and the metallurgist to understand what has changed on the circuit. If the lab data looks reliable, I would run a batch test on a composite sample to see if the ore has changed. I would not recommend a process adjustment until I had confirmed the cause, because changing reagent dose without evidence can make things worse. Once we had a likely cause, I would help set up a trial and monitor the results."

4. What safety procedures do you follow when handling concentrated acids or heavy metals in the lab?

Why they ask

Safety is non-negotiable in this role. They want to hear specific practices, not just 'I follow the rules'.

How to structure your answer

Direct protocol: list the controls in order, from risk assessment and PPE to waste handling and emergency response.

Example answer

"Before I handle concentrated acids, I check the risk assessment and safety data sheet. I make sure the fume cupboard is working and that I have the right PPE: face shield, acid-resistant gloves, apron and closed shoes. I never work alone with concentrated acids. I use a spill tray and have a neutralising agent nearby. For heavy metals, I keep samples contained and label waste correctly. After work, I clean the area and wash my hands. If there is a spill, I follow the lab's emergency procedure and report it to the supervisor. I also keep my hazardous chemicals training up to date."

5. How do you use LIMS and Excel to track samples and report results?

Why they ask

This checks your comfort with the tools that keep a lab organised and auditable.

How to structure your answer

Technical tool use: describe how you enter data, check it, and use Excel for simple analysis or reporting. Mention accuracy and version control.

Example answer

"I use LIMS to log samples as soon as they arrive, including the client, date, location and required tests. I enter results directly into LIMS after analysis and attach any relevant instrument files. I use Excel for quick checks like comparing duplicates, calculating averages or making a simple trend chart for the metallurgist. I always save a copy with the date and my initials, and I never overwrite raw data. If I spot a transcription error, I correct it in LIMS with a comment so the audit trail is clear. At the end of the shift, I run a report to make sure no samples are outstanding."

6. Describe a time you worked with a metallurgist or plant operator to improve a process. What was your contribution?

Why they ask

They want to see you collaborate and bring lab insight to the plant, not just run tests in isolation.

How to structure your answer

STAR: situation, task, action, result. Focus on your specific action and how you communicated.

Example answer

"We were getting inconsistent gold grades from a leach circuit, and the metallurgist suspected the sample preparation was introducing variability. I suggested we run a comparison between the existing method and a modified one with a finer grind. I prepared the samples, ran both methods in duplicate, and kept the instrument calibration records. The modified method gave much tighter results across the batch. I presented the data to the metallurgist and the plant supervisor, and we switched to the new method for that ore type. The plant team said they had more confidence in the daily reports, and we reduced the number of repeat assays."