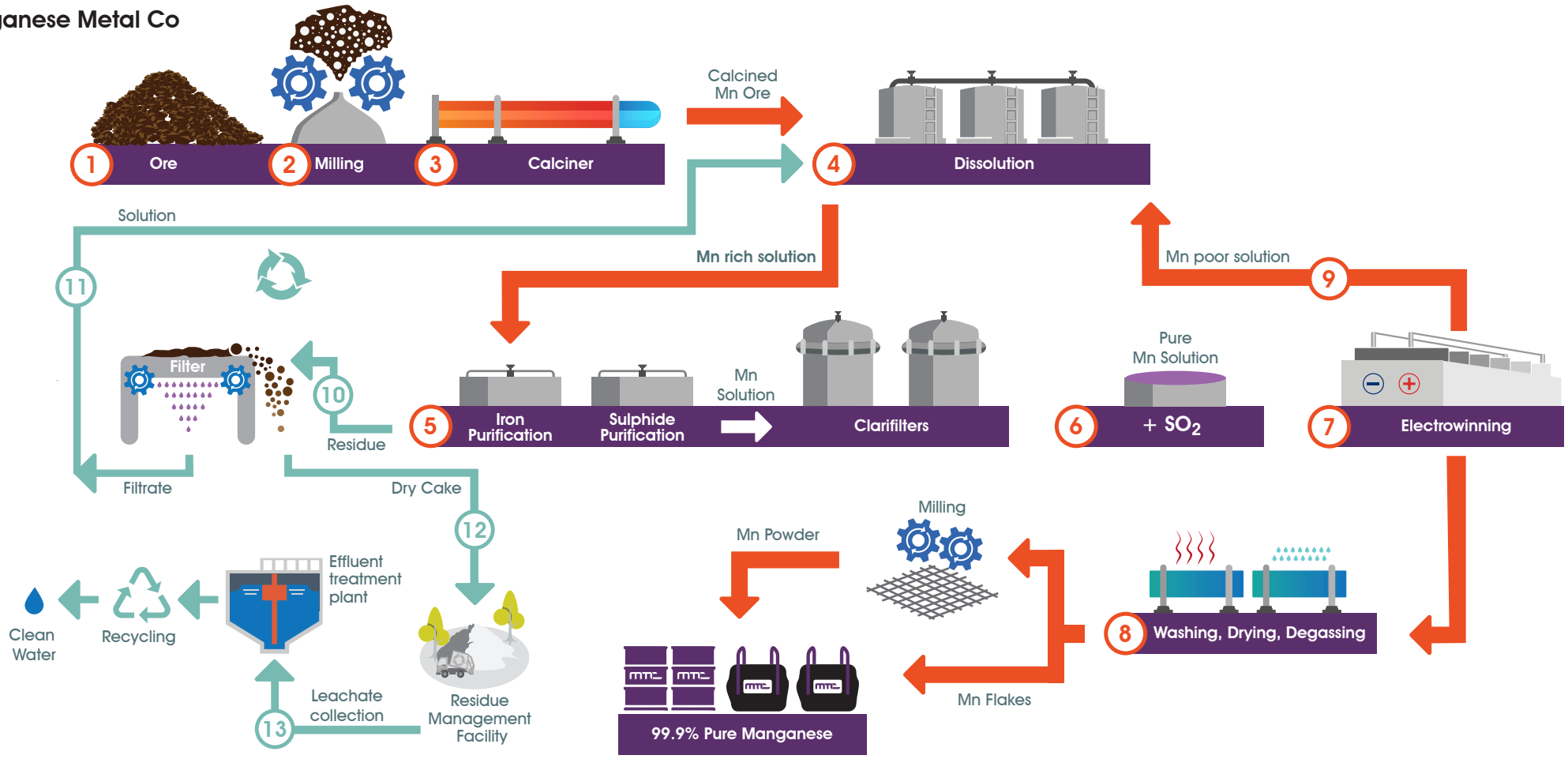
Manganese Metal Co

The Selenium Free Process for Manganese Production



01 The extraction process begins with high-grade ore, mined in the Kalahari.

02 The ore is milled to a powder.

03 Then it undergoes calcining in rotary kilns, to be reduced to a soluble form.

04 The reduced ore is dissolved in acid solution.

05 Solution purification - precipitation of impurities in 2 thickener stages, followed by filtration in clarifilters.

06 Sulphur dioxide, and not selenium dioxide, is added to the purified solution before electrolysis can take place.

07 The solution is then fed into the electrolytic cells, where electric current causes the pure manganese to plate on the cathodes.

08 The plated manganese is stripped from the cathodes, washed, dried and degassed. This metal is manganese in its purest, cleanest form. Depending on the individual customer requirements, the metal is then processed further (e.g. milled to powder) and packaged for shipment.

09 Sulphuric acid, formed at the anodes, is re-cycled back to the dissolution process.

10 The solid residue remaining after dissolving the manganese is filtered to recover manganese- and ammonium sulphates to obtain a dry cake for disposal.

11 The recovered solution is returned to the dissolution process.

12 The dry cake is transported to Kingston Vale. MMC holds permits to operate a hazardous landfill facility here. The Kingston Vale landfill design includes liners with leakage detection and trenches to collect all run-off and leachate.

13 After collection, the liquid is returned to MMC's plant and passed through the effluent treatment plant. All other liquid effluents from anywhere on the MMC site, including contaminated runoff from rainwater, are also cleaned in the effluent treatment plant. Here dissolved metals are precipitated and filtered out, followed by pH correction and ammonia stripping, to ensure that no contaminated water leaves the MMC site.

Creating strength.