
What makes BioHeap different?

Unlike other bacterial leaching technologies, BioHeap does not utilise bacteria that are indigenous to the ore body but instead introduces a culture that is adapted to the specific ore and optimised for leaching. By utilising a specially designed BioHeap bacterial farm, this culture is continuously generated and applied to the ore, which reduces ramp-up times, and improves the bacterial dispersion through the heap.

BioHeap cultures are tolerant to a wide temperature range and have been demonstrated to leach sulphide ores at heap temperatures as low as 15°C and as high as 95°C, which simplifies the control systems required on active leach pads.

A wide range of starter cultures is available at BioHeap, that have been developed over a number of years. These include cultures that can operate in seawater or hypersaline cultures up to 200 g/L salt, cultures that are tolerant to high arsenic levels and cultures that can leach virtually all of the liberated copper from primary copper ores, including Chalcopyrite.

Over a number of years, BioHeap has refined the test work process to three main phases of test work for the development of a project.

Amenability

Amenability testing is the initial test phase that evaluates the compatibility of the BioHeap bacterial cultures to a particular ore. During this phase, a culture is adapted to the particular ore, and a range of diagnostic tests, including head assay, mineralogy, acid consumption and crush size optimisation (referred to as a NAD test) are performed.

BioHeap has standard procedures and reporting procedures well developed for this phase of test work, and it is performed as a fixed price service. This phase of test work provides a report and simple design criteria that estimates a number of key design elements. A simple cash flow model can be generated from this phase of test work.

Amenability testing is available in-house at BioHeap's laboratory in Canning Vale, Western Australia. This testing phase takes 16 weeks and requires 30kg of ore.

Columns

Column testing can be conducted by BioHeap using either 1m or 5m columns. This phase of test work consists of some verification work, variability testing, agglomeration trials, column leaching trials to investigate leach kinetics and recoveries as well as ancillary work such as crusher and abrasion index determination.

BioHeap has standard test work, and reporting procedures for this work and this work is performed either on a cost-plus basis or via a fixed price arrangement. More in-depth design criteria can be developed from this test work and a detailed report is prepared.

Large-scale, on-site column trials can also be conducted or managed by BioHeap via a consultant arrangement.

BioHeap is equipped to produce starter cultures, in-house, for pilot trials or a commercial operation, using their large-scale bacterial breeding facilities.

Mini Plant/ Pilot Plant

BioHeap's mini plant is used for estimating residence time for continuous bacterial farms and can be used for small scale continuous tank leaching tests. Pilot plants are conducted on site and are generally for a batch of 5000t+ to evaluate leaching at full heap height.

Pilot plants give the best estimate of leaching kinetics, acid consumption and metal leaching recoveries and are used to generate full design criteria for the engineering of a full-scale plant. BioHeap can provide technical assistance with the design, commissioning and operation of pilot trials via a consultancy arrangement.

Commercial arrangements

Western Areas have a range of options available for third parties to utilise the BioHeap technology, including joint venture, licensing and royalty arrangements.

To request a test work proposal, or for further information, please email us at:
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