**Expression of Interest Sought for Supply PVC-P Geomembrane for Major Heap Leach Pad Project in Chile**

A prominent mining company in Chile is seeking PVC-P geomembrane for waterproofing of the base of a leaching heap. This company seeks a geomembrane material capable of withstanding sharp-edged rocks while adhering to strict technical specifications and cost constraints of $2/m2. Currently, a 0.4mm PVC geomembrane, coated with a protective layer, serves this purpose, but there is a pressing need for a more resilient solution.

Heap leach systems have gained prominence in recent years due to their ability to maximize metal recovery while minimizing waste generation and contamination risks. However, they come with their set of challenges. Constructed in steep terrain and exposed to harsh climates, heap leach pads endure significant pressure from ore loads exceeding 4 MPa.

The main challenge at hand is to find a more resistant geomembrane material to cover or waterproof the floor of the pile, with the aim of changing the layer of powder material for stones between 15-20 cm in diameter, avoiding leaks and resisting cuts caused by rocks. To do this, it is important that costs do not exceed $2 per m², given that 250,000 m² of liner are used weekly, and the liner must be easy to install.

The technical specifications of the material currently used are the following:

• Thickness: 0.40 to 0.44mm

• Specific Weight (Minimum): 1.20 to 1.35g/cc

• Breaking stress (Minimum): 130kg/cm²

• Break resistance (Minimum): 350%

• Module at 100% elongation (Minimum): 65kg/cm²

• Tear resistance (Minimum): 20N

• Dimensional Stability: 5%

• Low temperature impact: -15ºC

• Dimensions: 10,9 x 260m

• Territory to cover: 250.000m² (weekly)

One of the critical challenges faced is differential settlement, which can result from various factors including soil compressibility, extreme heap slopes, or leaks in the liner. This settlement causes strains in the geomembrane, necessitating a material that can withstand such multiaxial stress conditions. Additionally, concurrent stacking techniques, where the leach pad is stacked behind the leading edge of the geomembrane, require materials that can be installed easily and reliably by non-professional personnel.

PVC is the preferred lining option for leach pads over HDPE due to its ability to tolerate high multiaxial strains. PVC, in particular, offers several other advantages over other polymers such as HDPE, including stress-cracking resistance, slope stability, and higher productivity in the field.

PVC liners have a longstanding history of use since the 1950s and offer numerous technical advantages over alternative polymers like HDPE:

1. Stress Cracking Resistance: PVC, being an amorphous material, lacks the crystalline structure found in HDPE. Consequently, when subjected to multi-axial environmental stress-cracking, PVC outperforms HDPE liners.

2. Slope Stability: Smooth PVC exhibits higher surface friction compared to HDPE, enabling its use on slopes up to 3H:1V without the need for texturing, which is often required for HDPE.

3. Yield: PVC possesses no yield point when elongated, unlike HDPE, which reaches a yield point at 12% elongation, rendering it unable to function effectively as a geomembrane beyond this threshold.

4. Higher Productivity in the Field: Flexible PVC is easier to handle and install, contributing to enhanced productivity. Moreover, its larger panel size of 10.8m x 100m reduces labour costs. Experience demonstrates that PVC can be installed approximately twice as quickly as HDPE.

5. Lower Overall Cost: According to industry expert Fred P. Rohe and in accordance with USA EPA regulations, a 0.75mm PVC liner provides equivalent functionality to a 1.5mm textured HDPE liner, thereby offering cost savings without compromising performance.

The chemical compatibility of the geomembrane with copper Pregnant Leach Solution (PLS) is crucial. PVC has proven resistance to PLS, ensuring the integrity of the liner over time. Furthermore, PVC liners have been in use successfully in leap pad applications for decades and boast important technical advantages that make them a preferred choice in various applications.

Expressions of interest should be emailed to: john@excelplas.com.au