

**PGI**PVC  
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# TECHNICAL BULLETIN

*This issue of the PGI Technical Bulletin is dedicated to an international PVC Geomembrane project in the Atacama Desert in Chile. It is a case study written by PGI President, Pat Diebel. For questions or comments regarding this issue of the Technical Bulletin please contact the PGI Marketing Director, Kelly Rohe at [kellyrohe@geomembrane.com](mailto:kellyrohe@geomembrane.com).*

## PVC GEOMEMBRANE PROJECT LINING EVAPORATION PONDS IN THE ATACAMA DESERT, CHILE

by PAT DIEBEL, PGI PRESIDENT

The Solar de Atacama is part of the Atacama Desert, which is located at an elevation of 7,000 feet in Chile, near the borders of Chile, Bolivia and Argentina. It is the driest desert in the world and is virtually cloud free year round. The solar is an ancient seabed and underneath the parched surface are large reservoirs of salt solutions (brine).

SQM, headquartered in Santiago, Chile, have mineral rights to a portion of the Solar. To extract the salt huge artificial ponds are created by excavating areas of the Solar to the approximate dimensions of 2000 meters wide, by 600 meters long, and one meter deep. Clay is added and compacted followed by the installation of pre-fabricated panels of flexible PVC. The panels are approximately 15 meters wide by 295 meters long and weigh 6,000 pounds. On site the seams are welded together by using solvent and pressure. The geomembrane is checked for leaks by utilizing electrical leak detection methods.

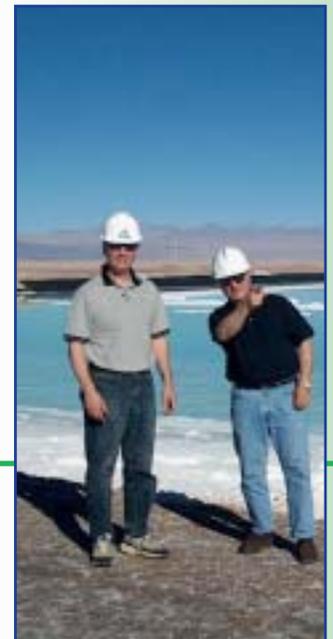
Once the ponds are completed, wells are sunk and the brine is pumped into the ponds. The sun and wind evaporates the water, leaving the solid salt crystals on the bottom. After approximately one year of being exposed to the intense sun



and frequent winds the water has evaporated leaving approximately 1 meter of salt. The ponds are then mucked out using specially designed scrapers and loaders. The salt is processed on-site and separated by grinding and floatation processes into the different types of salt, mainly potassium chloride, potassium sulfate, lithium carbonate and boric acid. SQM is a world leader in production of salts used in fertilizers and provides 35% of the world's lithium, which is used for batteries and pharmaceuticals.

It is imperative that the liners used in these evaporation ponds do not leak. After a worldwide search of available products, flexible PVC supplied by Canadian General Tower was chosen for this project. PVC was chosen for a variety of reasons including:

- *excellent chemical resistance*
- *low co-efficient of expansion, thus not prone to wrinkling*
- *excellent lay-flat characteristics*
- *ability to be pre-fabricated into large panels resulting in the reduction of in field welding.*



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This is just one example of the many different types of applications PVC geomembranes are used in. For case studies and information on other types of applications including landfills, waste water treatment lagoons, golf course ponds, mining applications and many more please visit the PGI website at:

[pvcgeomembrane.com](http://pvcgeomembrane.com)

