COLETANCHE® NEWS 5
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We wish you a Merry Christmas and a Happy New Year

COLETANCHE® is a bituminous geomembrane manufactured by impregnating a non-woven long fiber geotextile manufactured by US owned Johns-Manville with bitumen. The top face of Coletanche is sprayed with sand to increase frictional resistant and provide skid resistance for when left exposed.

A better and cheaper way to line ponds

A system approach to the design of flexible geomembrane-based lining system for storage ponds (tailings, liquids, waste) proves that using Coletanche as the flexible geomembrane leads to solutions that are more economical, faster and easier to construct, better protecting of the environment, and more sustainable than those based on other flexible geomembrane (LLDPE,HDPE, PVC, etc.). A system approach considers all the elements of a project and focuses on optimizing resources and minimizing costs. This system approach was followed to select Coletanche as the geomembrane to line a tailing pond in Araxa, Brazil.

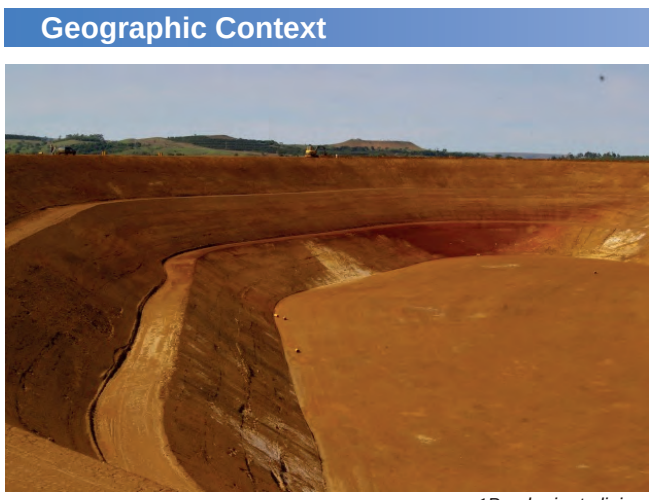
Events

From 15 to 18 November, 2011 > **6th** International Conference on Irrigation and Drainage held in San Diego. We have joined the US Society for Irrigation and Drainage.

From 28 November to 2 December 2011 > **117th** Northwest Mining Association Annual meeting held in Reno. We have joined the NWM Association.

From 2 to 5 May 2012 > We will be attending Geo-America, presenting 5 technical paper and hosting an exhibitor booth.

Geographic Context



◄*Pond prior to lining*

The mine is approximately 400 miles (640 km) North of Sao Paulo and 500 miles from Rio de Janeiro (800 km) at an elevation of about 3,000 ft. (1,000m). **Daytime temperatures** exceed 115°F (45°C) and **winds** often exceed 50 mph (80 km/h). **The new tailing pond** is associated with a rare earth element (niobium) mine. **The pond covers** 120 acres (50 ha) and includes three 30 ft. (three 10 m) high benches with interbench slopes inclined at 1.5 Horizontal to 1 Vertical.

Installation

◄*Deployment of Coletanche on slope*

COLETANCHE® (ES2 grade) was installed by a local general contractor in 115°F (45°C) temperature and high wind condition in November 2011.

COLETANCHE® was installed directly on native soil with no cushion geotextile underneath. No protective layer will be placed on top prior to filling the pond with tailings.

COLETANCHE® was not anchored at the intermediate benches and will be left exposed without ballast (i.e. sand bags)

Note that the geomembrane is perfectly flat on the subbase with no wrinkles providing maximum protection against seepage and no risk of fold during filling of pond by tailings.

Benefits

◄*Front loader driving on Coletanche*

Due to its high puncture resistance, there was no need for Low Ground Pressure Equipment. The pressure applied by any tire of this 38,000lbs (17,000 kgs) front loader is 28 psi (193 kPa) as compared to the maximum of 8 psi (55 kPa) allowed on other flexible geomembranes protected by at least one foot (30 cm) of soil

A total of 540,000 ft^2 (50,000 m^2) of Coletanche including 33,000 ft. (10,000 m) of welded seams and all the Construction Quality Assurance activities (US testing) were performed in 25 days. The facility is ready for use by the mine.

The benefits from using a Coletanche based solution rather than using another flexible geomembrane are:

Financial

- Not placing 540,000 ft^2 (50,000 m^2) of cushion geotextile under the geomembrane,
- Saving 22,250 CY (17,000 m^3) of protective soil layer or 1,000 truck trips,
- Not losing the 22,250 CY (17,000 m^3) of storage space that would be occupied by the protective soil layer, and
- Not to have to prepare and place thousands of sand bags to ballast a lightweight geomembrane.

Convenience

- By placing one geosynthetic rather than two and not having to deal with a protective layer and sand bags saved at least 4 weeks on the project duration.
- By not bringing a synthetic sub-contractor with his special equipment the owner had full control of the schedule and could use his regular equipment, and
- Allowing the operator to use his large mining equipment to fill the pond without concerns about the geomembrane

Protection of Environment and Sustainability

- The intimate contact between the Coletanche and the subsoil exhibiting a hydraulic conductivity of 10^{-5}cm/s provide for a watertight system
- Reduction in greenhouse gas (CHG) emissions through reduction of the number to truck trips required to bring in the construction materials for the pond lining system (extra geosynthetics, protective soil).

AXTER

For more technical information or to organize a brown bag please contact Axter Coletanche Inc.

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