

Weathering the Toughest of South Pacific Mine Sites, Profile Products Delivers Long Acting Soil and Seed Protection



Challenging and remote

It may have been a remote location at high altitudes with extreme weather, but that didn't prevent Profile Products from delivering the best erosion control and re-vegetation solutions for the environment at hand.

The site was a massive nickel mine, annually producing 60,000 tonnes, or five percent of the world's consumption of the metal. Six thousand employees operate the mine, extracting ore at a rate that creates more than 20 hectares of exhausted mined land be reclaimed each year. Government regulations require that all mined land be returned to its natural vegetative state, meaning species endemic to the area had to be planted. Reclamation efforts are complicated by climatic conditions typical to the South Pacific—warm and humid, with unpredictable downpours that can be catastrophic to bare slopes. Thus, successful reclamation is predicated on rapid protection of prepared slopes. The mine had historically used labor intensive rolled products like jute and coir nettings prior to the introduction of Hydraulically-applied Erosion Control Products (HECPs). Profile product demonstrations

showed that HECPs can be installed more rapidly while maintaining intimate contact with rough graded soil surfaces.

Soil stabilization was key

Charged with preventing soil loss while establishing native vegetation at the reclamation site, Profile Products ran into a host of challenges that needed innovative thinking and superior products in order to succeed. For starters, the site is located in the South Pacific, which makes even getting product and equipment to the site difficult. This nickel mine was no exception.

The topography of the island didn't help matters, either. Its mountainous terrain meant applications would be conducted at elevations up to 3,000 feet (900 meters) in some areas. At higher elevations and in rockier terrain, soils may lack nutritional value, making vegetative establishment much more problematic.

"Based on initial soil analysis results produced from the site, it was determined the soil basically had a lot of what you don't want and little or none of what you do want when trying to establish sustainable vegetation,"

said Derek Oosterhouse, international sales manager for Profile Products.

Initial soil testing revealed the reclamation site had an abundance of metals and an acidic pH level of 5.5. Moreover, there was very little organic matter and nutrients present to encourage plant growth. The surfaces needing reclamation work had been stripped from the mining process, so they lacked healthy topsoil. The slopes were steeper than 60 degrees in places and contained valleys left by the mine excavation process. The slopes were sometimes compacted with slick surfaces, so getting mulch to stick would be tough. They were also rough graded with rocks that would compromise the ability of an erosion control blanket to maintain intimate soil contact.

Add to the growing list of considerations, native vegetation chosen to reclaim the site typically demonstrates slow growth and establishment. Functional longevity, or the ability to protect soil for longer periods of time, would be critical to the success of this project. Erosion control products had to maintain that protection for 12 to 18 months from application.

A crucial consideration: lasting performance

As functional longevity was a critical piece in selecting the correct hydraulically applied mulch. And, because the germination time frame of the native seed was so long, the mulch needed to stay in place to protect the seed until the vegetation could be established and hold the slopes in the long term. The objective of the site was to establish sustainable vegetation for long-term erosion control. Plant selection was critical in meeting the objective of

sustainable vegetation, considering the issues of climate, poor soils and high elevation. Knowing the vegetation and site considerations, the next step was finding the right hydraulically-applied erosion control product to ensure seed and soil would be kept in place on the soil throughout the establishment process. The combination of difficult site and climatic conditions make this reclamation project among the most challenging on the planet.

Depending on the estimated growth establishment period for the species of vegetation being seeded in an area, Flexterra® High Performance-Flexible Growth Medium™ (HP-FGM™) or CocoFlex™ Extended Term-Flexible Growth Medium (ET-FGM™) were selected as the ideal solutions. The functional longevity of each product ultimately determined which product was applied to which slopes on the site.

Success in spite of an unforeseen challenge

Despite a torrential rain event soon after the application, the 20 hectares treated with Flexterra HP-FGM and CocoFlex ET-FGM held the bare soil in place. The mine operators were thrilled with how the products had held up despite steep, slippery, hard slopes and pounding rain.

“The manager of the nickel mine revegetation team was extremely happy with the solutions provided by our products,” Oosterhouse said. “The Flexterra and CocoFlex withstood monsoon-like rains shortly following application. Overall, they are thrilled that after 13 months, the slopes and seeds are still protected as establishment progresses.



KEY PRODUCT PROPERTIES

Both of these Profile® products proved their worth in minimizing soil loss over an extended period of time—despite the heavy rains that are common in the South Pacific.

Flexterra® High Performance-Flexible Growth Medium™ (HP-FGM™)

- A functional longevity of up to 18 months.
- Immediately bonds directly to soil upon application, and is 99% effective in minimizing soil loss.
- Ideal for long-term protection in arid climates, dormant seeding, or areas where growth establishment may be slow or delayed.
- Fastest growth establishment and a 1500% water-holding capacity to deliver moisture to the seedbed and accelerate growth.
- Revolutionary Micro-Pore particles optimize water and nutrient retention.

CocoFlex™ Extended Term-Flexible Growth Medium (ET-FGM™)

- Features a functional longevity of up to two years and it is 99% effective in controlling erosion.
- Comprised of 100% recycled Thermally Refined® wood fibers that produce the highest yield and coverage per unit weight; also contains interlocking man-made fibers that are 100% biodegradable.
- Designed with blended coconut and wood fibers, crimped interlocking, biodegradable man-made fibers and additives that are engineered to perform under the harshest conditions.
- Fastest growth establishment and a 1500% water-holding capacity to deliver moisture to the seedbed and accelerate growth.



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MINECS-01 06/14