Prozyme Australia
ACN 666 973 440
ABN 40 666 973 440

Environmental Assessment:
Gluon900 (*equivalent to SoilGlu*)

December 2014

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Signed: .....

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1. Product Description

Prozyme Australia supply the SoilGlu (Gluon900)™ range of water based emulsion polymers for use as Dust Suppressants, Soil Stabilisation Aids, Hydroseeding & Rehabilitation and Erosion Control.

SoilGlu (Gluon900)™ is a proprietary product blend that has been specially developed and designed for purpose. The product components have been described as given below;

Acrylic copolymer	45 – 53%
Fatty Alcohol Ethoxylate (APEO free)	3 – 6%
Other Ingredients determined to be non-hazardous (incl. Water)	40 – 50%

It is a milky white stable emulsion product with a mild odour. The pH is approximately 8.5, viscosity 700 – 1200 cPs.

2. Usage and Typical Dose Rates

SoilGlu (Gluon900)™ is used by Retail, Commercial, Trade, Mining, Civil and Municipal Government works for broadacre, open areas, stockpiles and roads as a dust stabilisation veneer coating for wind erosion control and soil stabilisation aid for water erosion control.

Dose rates and application frequency depend on surface being treated and desired duration for dust lift-off mitigation, ranging from medium-term of 3 months, to long-term or greater than 12 months.

It is stipulated that SoilGlu (Gluon900)™ be diluted with water before use. Typically to between 5% - 20% concentration.

In this report we have considered the Environmental and Ecotoxicity of the neat SoilGlu (Gluon900)™ polymer material. Readers should bear in mind that actual practical environmental exposure to SoilGlu (Gluon900)™ polymer is significantly less.

3. Environmental Behaviour & Properties

Typically, SoilGlu (Gluon900)™ is diluted before being spray applied directly to the area being treated.

Depending on the relative humidity and temperature, SoilGlu (Gluon900)™ dries rapidly to form an inert polymer film over the surface being treated, or in-situ composite matrix binding with sand particles when used as a soil stabilisation aid.

Poor spraying or spray drift due to high winds may cause accidental release into the surrounding environment. Large droplets will not be carried very far and fine mist or aerosols of the SoilGlu (Gluon900)™ will undergo very rapid drying, therefore the risk of wide spread contamination beyond the immediate treatment area is not very likely.

SoilGlu (Gluon900)™ contains zero volatile organic components (VOC's) - less than 5g/L and is Formaldehyde free.

Once SoilGlu (Gluon900)™ is dried it is no longer water dilutable or water soluble. Therefore, it is not subject to leaching to groundwater or surrounding waterways. The product is designed to have a binding effect of soil surfaces and reduce water erosion of topsoils/layers.

SoilGlu (Gluon900)™ copolymer emulsion is not classified as a dangerous good by the criteria of the Australian Dangerous Goods code or classified as Hazardous according to criteria of National Occupational Health & Safety Commission (NOHSC), Australia.

It is non-flammable and non-combustible, however the dried polymer may burn in a general fire.
Because the exact formulation composition of the product is not known, it is difficult to know the intermediate compounds of pyrolysis, however in the complete thermal decomposition at higher temperatures and duration, such as those experienced in a furnace or bush fire, the final thermal decomposition products are expected to be carbon monoxide/dioxide & water.

4. Ecotoxicity and Environmental Fate

No toxic effects of SoilGlu (Gluon900)™ dispersion against plants, soil bacteria, and fungi are known.

Overall, formulations that use acrylic polymers are not considered to be hazardous or harmful to the environment. They are stable in soils after curing and as a result, they are unlikely to be available to terrestrial organisms or be transported in runoff water.

No ecotoxicological data was provided for the SoilGlu (Gluon900)™ polymer, which is acceptable for polymers of number-average molecular weight (NAMW) greater than 1,000 according to the provisions of the Industrial Chemicals (Notification and Assessment) Act 1989, and Regulations, Australia.

Polymers of > 1,000 NAMW are unlikely to cross biological membranes and cause systemic toxicity.

Some ecotoxicity data was found for emulsion polymers of Poly(butyl acrylate/methyl methacrylate) given in the table below. Whilst the exact composition of SoilGlu (Gluon900)™ polymer is unknown, this can be considered as closely related.

Test Species and exposure	**OECD Test used**	**Toxicity**
Daphina Magna; acute, 48 hours	ISO 6341 #201/202	EC50 > 1000 mg/L

Other components, such as surfactants used to stabilise the emulsion polymer, may cause enhanced aquatic toxicity such as emulsion polymers containing Alkyl Phenol Ethoxylate (APEO) surfactants.

According to European Regulation (EC) No. 1907/2006 & (EC) No. 648/2004 of the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), emulsions containing APEOs are classified as R52/53 (harmful to aquatic organisms; may cause long-term adverse effects in the aquatic environment) – the R53 label is maintained under dilution.
Whilst this classification is only currently for products used within the EU, it is likely that similar such classifications will extend to other countries in time as often typically happens.
SoilGlu (Gluon900)™ does not contain APEO surfactants.

The rate of biodegradation of SoilGlu (Gluon900)™, is dependent on application, soil conditions and microbial activity. The rate of degradation will be accelerated in moist soil conditions, with a high organic content.

Little bioaccumulation of the polymer is expected due to the size of the molecules and the inability of the product to cross membranes (Guiney et al. 1998).

5. Environmental Risk Management and Waste Disposal

Based on current knowledge of the ecotoxicity and biodegradability of the copolymer and the dilution rates in the practical application, the overall environmental risk of using SoilGlu (Gluon900)™ is considered to be low.
However, users should take all necessary precautions to prevent accidental spills, release or run-off of the product into sewers, storm-water drains, waterways or wetlands.
Inert absorbent materials or sand can be used to clean-up and contain spills.
If contamination of waterways or sewers does occur, inform the local water authorities in accordance with local government regulations.

Disposal of SoilGlu (Gluon900)™ or formulated products should be conducted in accordance with local government regulations.

Handle in accordance with instructions on MSDS.

6. References

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