



PAM

Polyacrylalide

Description

Chemical stabilization for erosion control on construction sites may involve a water-soluble anionic polyacrylamide product referred to as PAM. It is used to minimize soil erosion caused by water and wind. PAM is typically applied with temporary seeding and/or mulching on areas where the timely establishment of temporary erosion control is so critical that seeding and mulching need additional reinforcement. It may be used also on sites where disturbance will occur until site work is completed and channel erosion is not a significant potential problem.

Selection Criteria

PAM is used for stabilization with vegetative or perimeter practices to enhance erosion prevention and sediment control.

Anionic PAM is available in emulsion, powders, and gel bars or logs. Anionic PAM should be used in combination with other Best Management Practices. The use of seed and mulch should be considered for providing erosion protection beyond the life of the anionic PAM. If the area where PAM is applied is disturbed after the application, the application will need to be repeated. Following are additional considerations to enhance the use of or avoid problems with the use of anionic PAM:

- Use set backs when applying anionic PAM near natural water bodies.
- Decreased performance by PAM can be expected if the PAM is exposed to ultraviolet light or if there is a delay between mixing the PAM with water and applying it to the exposed soil.
- When used in flow concentration channels, PAM's effectiveness for stabilization is decreased.
- If seed is applied with the anionic PAM, mulch should be used to protect the seed.
- Only use anionic PAM.

A qualified professional should design the application of PAM and plans and specifications should be available to field personnel. Typical applications include the following components: Site Preparation, Equipment Preparation, and Chemical (PAM) Application.

Design Considerations

Application rates shall conform to manufacturer's guidelines for application. The following specific criteria shall be followed:

- Only the anionic form of PAM shall be used. Cationic PAM is toxic and shall not be used.
- PAM and PAM mixtures shall be environmentally benign, harmless to fish, wildlife and plants. PAM and PAM mixtures shall be non-combustible.
- Closely follow the manufacturers' application procedures to prevent the

products from pooling and creating impervious areas where stormwater cannot infiltrate.

- Anionic PAM, in pure form shall have less than or equal to 0.05% acrylamide monomer by weight, as established by the Food and Drug Administration and the Environmental Protection Agency.
- To maintain less than or equal to 0.05% of the acrylamide monomer, the maximum application rate of PAM, in pure form, shall not exceed 200 pounds/acre/year. Do not over apply PAM. Excessive application of PAM can lower infiltration rate or suspend solids in water, rather than promoting settling.
- Users of anionic PAM shall obtain and follow all materials safety data sheet requirements and manufacturer's recommendations.
- Additives such as fertilizers, solubility promoters or inhibitors, etc. to PAM shall be non-toxic.

Maintenance

An operation and maintenance plan must be prepared for use by the operator responsible for PAM application:

- Reapply PAM to disturbed or tilled areas that require continued erosion control.
- Maintain equipment to provide uniform application rates.
- Rinse all PAM mixing and application equipment thoroughly with water to avoid formation of PAM residues and discharge rinse water to soil areas where PAM stabilization may be helpful. Downstream deposition from the use of PAM may require periodic sediment removal to maintain normal functions.
- Inspect areas regularly for signs of erosion, and if necessary, reapply the stabilizer.

Effectiveness

In general, the effectiveness of polymer stabilization methods ranges from 70 percent to 90 percent. The effectiveness of PAM depends on soil type, application method, and the specific polymer's individual chemical characteristics (Aicardo, 1996).

References

Aicardo, R. 1996. Screening of Polymers to Determine Their Potential Use in Erosion Control on Construction Sites. In Proceedings from Conference held at College of Southern Idaho: Managing Irrigation-Induces Erosion and Infiltration with Polyacrylamide. May 6-8, 1996. Twin Falls, ID. University of Idaho Miscellaneous Publication No. 101-96.

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