

Erosion Control Using Anionic Polyacrylamide (PAM)

Alabama Job Sheet No. AL450



DEFINITION

Anionic polyacrylamide is a manufactured (water-soluble) synthetic polymer. The product is available in dry powder form, liquid emulsion, and gelatinous blocks. The product is typically used to minimize or control irrigation induced soil erosion and to reduce wind and/or precipitation induced erosion on disturbed areas such as construction sites where the timely establishment of vegetation may not be feasible.

GENERAL INFORMATION

All Applications

Only anionic polyacrylamide should be used for erosion control. The acrylamide should meet monomer limits of $\leq 0.05\%$. The PAM should have a charge density of 10 to 55% by weight and have a molecular weight of 6 to 24 Mg/mole.

PAM should be mixed and/or applied in accordance with all Occupational Safety and Health Administration (OSHA) Material Safety Data Sheet requirements and the manufacturer's recommendations for the specified use.

PAM application rates may need to be adjusted based on soil properties, slope, and type of irrigation system being used.

PAM works best when used in combination with other conservation and best management practices.

Irrigation Induced Soil Erosion

When used in surface irrigation systems the concentration of PAM in irrigation water should not exceed 10 ppm of pure form PAM.

In sprinkler irrigation the application rate of PAM active ingredient should not exceed 4 pounds per acre per application event.

Application of PAM typically increases infiltration of irrigation water. To compensate for this increase, adjustments in flow rates, time of set, and tillage practices should be considered.

Clogging of irrigation system components such as screens, valves, tubing, and nozzles is possible when PAM is used. Care should be taken to avoid this problem. Steps such as pumping surfactants (crop oil) through the sprinkler irrigation system before and after PAM use help to reduce clogging.

Wind or Precipitation Induced Soil Erosion

The maximum application rate of PAM to reduce this type erosion shall not exceed 200 pounds per acre per year pure form PAM or 200 pounds of pure form PAM per emulsion batch.

Care shall be taken during application to insure uniform coverage of the target disturbed area and to minimize drift to non-target areas.

Adding seed to the PAM mixture may provide additional erosion protection beyond the life of the PAM material.

Additional benefits from PAM may be improved water quality, infiltration, soil fertility, and air quality.

SAFETY AND HEALTH

Use proper personal protective equipment such as gloves, dust masks, and other health and safety precautions in accordance with the label, industry, and other federal or state rules and guidelines.

PAM solutions can cause surfaces, tools, and other items it contacts to become very slippery when wet. Caution should be used in PAM application areas.

OPERATION AND MAINTENANCE

An operation and maintenance plan should be prepared for and used by the persons responsible for PAM application. The plan should provide specific instructions on PAM application. Components of the plan may consist of:

- Reapply PAM to disturbed or tilled areas, including high traffic use areas.
- Monitoring advance phases of the irrigation to assure applications are discontinued when runoff begins.
- Equipment is operated and maintained to provide uniform application rates.
- Maintenance of screens and filtering facilities.

- Rinse all PAM mixing and application equipment thoroughly with water to avoid formation of PAM residues.
- PAM is a flocculating agent that may cause deposition in downstream watercourses or other locations when it comes in contact with sediment-laden waters. Downstream deposition from the use of PAM may require periodic cleaning to maintain normal functions.

REFERENCES

NRCS AL Conservation Practice Standard
- Anionic Polyacrylamide (PAM) Erosion Control -
Code 450

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Erosion Control Using Anionic Polyacrylamide (PAM) Worksheet

Land User: _____ County: _____ Date: _____

Farm No.: _____ Tract No.: _____ Assisted by: _____

Monomer limits of acrylamide (should not exceed 0.05%): _____%

Charge density of PAM: _____%

Molecular weight of PAM: _____Mg/mole

Irrigation Induced Soil Erosion:

Concentration of PAM in surface irrigation water (not to exceed 10 ppm of pure form PAM): _____ppm

Application rate of PAM active ingredient in sprinkler irrigation water (not to exceed 4 lbs/acre/application event): _____ lbs/acre

Wind or Precipitation Induced Soil Erosion:

Application rate of PAM active ingredient (not to exceed 200 lbs/acre/year or 200 lbs of pure form PAM/emulsion batch): _____ lbs/acre/year or _____ lbs of pure form PAM/emulsion batch