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SA-IP-SPS型保水剂及其对土壤物理性能的影响

Synthesis and effects on physical properties of soil of SA-IP-SPS water retaining agents

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中文摘要:

以未经预处理的工业级丙烯酸、聚乙烯醇为原料,首先通过氯磺酸磺化法在聚乙烯醇分子中引入强亲水性离子基团,然后采用静态水溶液聚合法合成了吸盐水率较高、凝胶机械强度较高的的聚丙烯酸钠-聚乙烯醇硫酸钠互穿网络(SA-IP-SPS)型保水剂。研究了SA-IP-SPS型保水剂含量、颗粒大小对南方赤红壤的水分抑蒸发性能和团粒结构的影响,比较研究结果表明,SA-IP-SPS型保水剂对赤红壤的水分抑蒸发性能和团粒结构改良性能与丙烯酸-丙烯酰胺交联共聚型保水剂效果相当,但明显优于传统的交联聚丙烯酸钠保水剂。

英文摘要:

The water retaining agent with interpenetrating networks of sodium acrylate(SA)-based superabsorbent and sodium PVA sulfate(SPS) were prepared by the static-state aqueous solution polymerization method. The un-pretreated industrial acryl ic acid and PVA(molecular weight=124000) were used as reaction raw materials. The strong hydrophilic ionic function group s were introduced into PVA molecules through the Chlorosulfonic acid sulfonation method to prepare SPS. The formation of SA-IP-SPS interpenetrating networks resulted in the improved salt tolerance and mechanical properties of this water retaining agent. In addition the performance of SA-IP-SPS water retaining agents in improving water holding capacity and amend ing water-stable aggregates of Lateritic Red Soil (from South China) were investigated in detail. The results of the comp arison experiment showed that the SA-IP-SPS water retaining agent was approximate to the AA-AM water retaining agent in a pplying performances, but they were remarkably superior to SA water retaining agents.

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