ZAPPA stewart | CHASE Corporation

www.chasecorp.com/products/superabsorbent-polymers

ZapZorb: Certified Non-Biodegradable for Compliant Waste Solidification

A White Paper on Meeting U.S. RCRA Landfill Requirements with ZapZorb Superabsorbent Polymer

Executive Summary

The safe disposal of liquid hazardous waste is a critical challenge governed by strict federal regulations. Under the U.S. Resource Conservation and Recovery Act (RCRA), any sorbent used to solidify liquid waste for landfill disposal must be non-biodegradable. This white paper details how ZapZorb, a high-performance superabsorbent polymer (SAP), meets this essential requirement through rigorous, independent testing.

ZapZorb was evaluated using the Organization for Economic Co-operation and Development (OECD) 301B biodegradability test. The results conclusively demonstrate that ZapZorb is not readily biodegradable, officially certifying it for use in hazardous and non-hazardous waste landfill applications. By failing to meet the "readily biodegradable" threshold, ZapZorb proves its stability and suitability, ensuring that solidified waste remains stable and compliant over the long term. This certification solidifies ZapZorb's position as a premier, reliable solution for waste generators, treatment facilities, and environmental service providers who require a legally compliant and effective solidification agent.

Introduction

Managing liquid-bearing waste streams requires careful adherence to environmental regulations designed to protect groundwater and ensure landfill stability. A key regulation under the U.S. RCRA (40 CFR § 264.314) mandates that free liquids in hazardous waste must be eliminated before landfill disposal. Furthermore, the sorbents used for this solidification process must be non-biodegradable.

This requirement prevents the solidified waste from breaking down and re-releasing hazardous liquids into the environment. Selecting a compliant sorbent is therefore not just a matter of operational efficiency but of legal necessity.

This white paper provides a comprehensive overview of the regulatory landscape for waste solidification and presents the official testing results that certify ZapZorb as a non-biodegradable sorbent. We will explore the U.S. RCRA requirements, explain the OECD 301B test methodology, and demonstrate how ZapZorb's performance aligns perfectly with these stringent standards, making it the ideal choice for a variety of waste disposal scenarios.

Regulatory Framework: The Need for Non-Biodegradable Sorbents

The U.S. Environmental Protection Agency (EPA) establishes clear rules for managing hazardous waste in landfills. These rules are designed to prevent environmental contamination and ensure the long-term integrity of disposal sites.

1. U.S. RCRA Requirements for Landfills (40 CFR § 264.314)

The regulations governing hazardous waste landfills are unambiguous when it comes to liquids:

- Elimination of Free Liquids: Bulk liquid hazardous wastes are prohibited from landfill disposal. For containerized wastes, all free-standing liquids must be removed. This is typically achieved by mixing the waste with a sorbent until it passes the Paint Filter Liquids Test (EPA Method 9095B).
- Mandate for Non-Biodegradable Sorbents: Any sorbent or solidifying agent used to treat these free liquids must be non-biodegradable. This is a critical stipulation. If a biodegradable sorbent were used, it could decompose over time, compromising the structural integrity of the waste matrix and potentially re-releasing the hazardous liquids it was meant to contain.

2. What Qualifies as "Non-Biodegradable"?

The regulations identify several materials as being non-biodegradable, including:

- Inorganic materials like clay, sand, bentonite, and fly ash.
- High molecular weight synthetic polymers, such as polyethylene, polypropylene, and polyacrylates. ZapZorb falls into this category.

To provide definitive proof, the regulations allow for specific scientific testing to confirm a material's non-biodegradable nature. One of the primary, accepted methods is the OECD 301B test.

Scan here for more