

# **Environmental and Reclamation Application using Aggrebind<sup>®</sup>**

## Aggrebind® Waste Plastic & Flyash



Based on information supplied by P. Ramesh Babu of AgriGold Power Group, the pulverized plastic bag powder can be included in any **Aggrebind®** stabilised product. It can be used in road foundations / treated base layers for roads which can have an Aggrebind top-seal or bitumen top-coat, decorative tiles, patio & sidewalk pavers and more.

With **Aggrebind®** we don't stop with plastic bag powdered waste, **we do more.**



With **Aggrebind®** you can use shredded plastic, paper, cloth, flyash and more. The only proviso is that all metals must be removed.

## **Aggrebind® stabilised treated waste materials.**

### **Objectives:**

To convert shredded waste materials and/or pulverized plastic bags into viable, and durable, construction related products.

Basic formulation:

60% shredded waste materials or pulverized to powder plastic bags

40% (10% fine non-cohesive sand mixed with 30% flyash)

Stabilising mixture was 1 part Aggrebind mixed with 3 parts water.

### **Initial target markets:**

**To incorporate waste materials into road base layers.**

**To manufacture paving blocks for use on pedestrian pathways.**

**To manufacture a non-load bearing infill block, with good insulation properties, for use in conjunction with structural framed buildings.**

**To manufacture insulation materials from just the shredded waste.**

**Aggrebind®** is a complex, water based, styrene acrylic cross- linking polymer that is environmentally friendly. It coats the surfaces of a wide range of contaminated materials, rendering them harmless and inert, and binds them together.



Typical mixture of waste materials with all metal and usable plastic removed. This is then shredded to produce a maximum particle size of 25mm. **Aggrebind®** coats and seals all the materials during the installation process, rendering them inert, and then binds them together into a structural load bearing layer. Base layers for roads would require a wearing surface. This could be a top-seal of **Aggrebind®** or a layer of asphalt.

## Aggrebind & Ground Concrete

Hand-compacted samples using pulverized concrete waste and Aggrebind  
The ratio used was 3 parts water & 1 part Aggrebind  
(4:1 can also be acceptable)



Ground or pulverized concrete (left), Removed all organic material (right) and larger rocks, fines not to exceed 30% of total depth



Mixture of Aggrebind and water being added to ground concrete



**Day Four (large sample) Air pockets are visible because of hand compacting**

**For further information please contact:**

**Robert D. Friedman  
Aggrebind / Safety Tek, Inc.**

**[rdf@safety-tek.com](mailto:rdf@safety-tek.com)**

**[www.aggrebind.com](http://www.aggrebind.com)**

**[www.safety-tek.com](http://www.safety-tek.com)**

**+1-203-785-1808**

## The Challenge of Pit “B”

The KX-100 HP-1 is poured into the tar-sand; it is mixed with the water or oily water covering the tar-sand. KX-100 HP-1 will separate the crude oil from the water-oil and the crude oil from the tar-sand causing the separated crude oil to float, and then crude oil is skimmed off using skimmers.

Agitation is required and it can be done in the pit-site. Agitation is done with very simple equipment such as impellers (similar to what is fixed on a boat) or dredgers without suction. Agitation is used to mix KX 100- HP-1 with water into the tar-sand at an assumed depth of 75 cm for conditions presented in Pit “B”. This approach, “KX 100- HP-1 with Agitation”, does not require any digging and/or the removal of the tar-sand to an alternate location for treatment outside of the Pit “B” area. With KX 100- HP-1 and agitation we treat the tar-sand where it is. Of course, the removal of the tar-sand to an alternate location is optional depending on conditions in-site; if you want to treat it outside Pit “B” then you can do so in a large contained area.

We did intensive and extensive bench testing on the samples of tar-sand and sludge from Pit “B” and after technical discussions with our experts, inventors and technology holders at the United Energy Group in New Jersey. We have the following observations and comments:

1. We succeeded to remove the crude oil from the tar-sand (15% recovery rate), please see Pics 1, 2, 3, and 4 the Analysis Reports.
2. The residual, Pic 4, the tar-sand residue, is a mixture of sand, pebbles, roots, etc. plus insoluble organics, ferrous oxide and other materials that may have been added to Pit “B” over several years.

The experts at United Energy stated that they never saw a similar case with so much insoluble organics and miscellaneous “stuff” embedded in tar-sand, making this tar-sand a very unique challenge. (Please note that UE has vast experience treating numerous cases of tar-sand for many internationally recognized oil companies.)

For comparison purposes only, Pic 6 illustrates a tar-sand sample taken from a Canadian pit. Kindly note how easily the crude oil separated from the tar-sand using the KX 100- HP-1. After the separation of the crude oil from the tar-sand in that Canadian pit they flushed the residue with water and the result was clear sand.

The residue of Pit “B” is a special and unique case when compared to tar-sand treatments performed in the USA, Canada, Russia, China, South America, and Africa.

3. To treat the problem of the residual, Pic 4, the tar-sand residue, we work extensively with AGGREBIND\*, a UK company that has proprietary polymer technologies. Through decades of field experience and supported by bench testing at UE we have determined that this unique “polymer-blend” can encapsulate the residual tar-sand.
  - a. We took the residual tar-sand added common dirt and/or sand and then added 25% volume of polymer. (Final percentages of composition must be determined on site.)
  - b. We allowed the mixture to set for 24 – 36 hours outside in 25°C temperature and it cured.
  - c. The resulting (new) product was a solid that can be used for building materials, pavement applications, road-work projects and more.
  - d. The residual tar-sand (after extracting the crude oil) is combined with the polymer and to create “recycled” building materials for corporate, commercial and civic uses.
    - i. Create roads in and around the oil pits
    - ii. Create a solid foundation to the pits.
    - iii. Make roads in rural areas as a good-will project
  - e. The polymer solution eliminates.
    - i. Disposal of the residue, possibly hazardous waste.
    - ii. Pollution problems from burning the residue.
    - iii. Environmental issues from burying the residue.
  - f. We have taken a traditional disposal problem and made it into an environmentally sound solution / application.

\*AGGREBIND is a polymer blend that encapsulates the residue when blended with other substrates, soils and/or sand. The resulting composition can be used in the building of roads, bricks and blocks for construction and other such purposes.



Pic 5 Tar-sand residue blended with AGGREBIND

The top half of this sample has a finished spray coat of AGGREBIND while the bottom half does not.

This illustrates some of the various finishes and surface effects when using the “residual of the tar-sand” with AGGREBIND for creating building products and materials.

