

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Stoller, et al.

TITLE: FLOWABLE MIXTURE INCLUDING ELEMENTAL SULFUR AND
HYDRATED CLAY AND METHOD FOR PRODUCING THE SAME

SERIAL NO: 14/997,514

FILED: 01/16/2016

EXAMINER: Choi, Frank

GROUP AU: 1616

Mail Stop Amendments
Commissioner of Patents
PO Box 1450
Alexandria, VA 22313-1450

SECTION 132 DECLARATION

I, Ritesh Sheth, do hereby declare as follows:

I am a named inventor of the above-identified patent application (“the present application”).

1. I am familiar with US patent 4,372,872 (Backlund), US patent 4,394,150 (Garrison), U.S. patent application 2006/0252649, the AMCOL Metalcastin article and Dombrowski.

During the course of developing the current invention, we conducted several experimental trials in order to produce a stable formulation. The EPA Guidelines on Stability that issued on November 16, 2012 to the office of Pesticide Programs (OPP) relating to “Accelerated Storage Stability and Corrosion Characteristics Study Protocol” were followed. Applicant discovered that only when using a specific process of manufacturing was a stable formulation possible. See attached photos where in 2 different manufacturing processes were used to make a formulation with the claimed sulfur particle size. The formulation for both Applicant’s process and Backlund’s process included:

Water:	45.22 wt.%
Antifoam:	0.25 wt.%
Sulfur:	51.975 wt.% (elemental sulfur, all having a particle size less than 50 microns)
Propylene Glycol:	0.55 wt.%
Bentonite Clay:	2.0 wt.%

When the clay is added last as provided in Backlund, the formulation is not stable. However, when the clay is added at the beginning of the process, the formulation is stable. Specifically, we provide hydrated clay, then add an aqueous suspension of elemental sulfur particles to the hydrated clay until a homogenous suspension is formed. The resultant products had no particles greater than 50 um. Most advantageously, Applicant's process does not require the high shear mixer required by Backlund. This smaller particle size allows for greater performance in the field as a fertilizer or fungicide.

By contrast, Backlund discloses that a suspension of sulfur is first formed within a vessel, then clay thickener is added. As disclosed in column 2, lines 56-57, Backlund teaches that "a clay thickener can be added to the suspension for additional stability." By visually observation, as provided in the attached photos, we found that this did not produce a stable formulation.

4. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: November 13, 2018

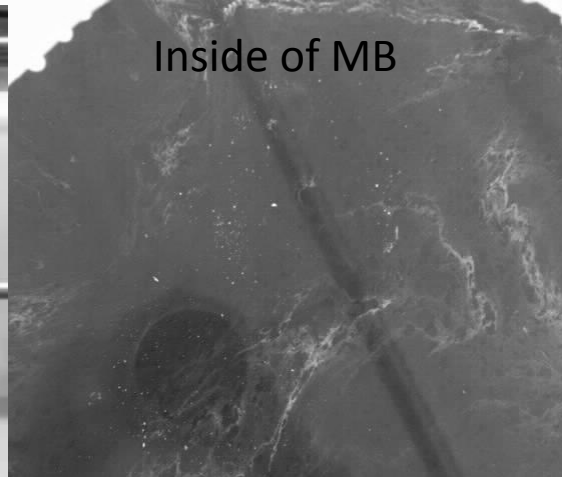
/Ritesh Sheth/

Ritesh Sheth

That Flowable Sulfur

Batch #1 (198 gallons), clay added last (Similar to Backlund Process)

Cedar Rapids Production – 10/8/14



BD – 11.32

pH – 6.8

That Flowable Sulfur

Batch #2 (210 gallons) – Clay added at beginning
Cedar Rapids Production – 10/10/14

