Baddley Chemicals, Inc.

OCTAPOL & OCTAPOL PLUS

Advantages

No Lead or other toxic metals.

No hazardous chemicals.

Environmentally-safe

Effective Clarification

No shipping restrictions---can be easily shipped worldwide (even by the postal service).

To purchase a bottle of OCTAPOL or OCTAPOL PLUS, SEND YOUR ORDER TO: Dr. W. H. Baddley. Major credit cards are accepted.

FAX: 225-293-5635

EMAIL: bilbad@yahoo.com

FREQUENTLY ASKED QUESTIONS ABOUT OCTAPOL and OCTAPOL PLUS

(LATEST REVISION:#8 dated January 13, 2010)))

What are OCTAPOLTM and OCTAPOL PLUS?

OCTAPOLTM is a new lead-free chemical reagent developed at Baddley Chemicals Inc. for the clarification of sucrose-containing materials prior to polarimetric analysis. Field-testing was carried out in cane sugar factories in several countries (USA, Guatemala, Brazil, and) during 1998. OCTAPOL PLUS is an improved version of OCTAPOL with greater clarifying power. It was developed in 2000-2001, and became commercially available June 1, 2001.

2. Where are the OCTAPOLS being used?

As of July 4, 2006, the OCTAPOLS are now being used in Sugarcane and Sugarbeet Factories in approximately 30 COUNTRIES. Countries in which the product is now being used include Argentina, Australia, Barbados, Belize, Brazil, Bolivia, Canada, Dominican Republic, Ecuador, El Salvador, Costa Rica ,Ecuador ,Guatemala, Guyana, Honduras, Jamaica, Mexico, New Zealand, Malaysia, Panama, Puerto Rico, South Africa, Trinidad & Tobago, USA, and Venezuela

3. Why do we need a new clarifier? Lead Subacetate has worked fine in our sugar mill for over a hundred years.

Technically speaking, Lead Subacetate is an excellent clarifier for the Sugar Industry.

However, because of dangers it poses to (a) the health of the sugar technologists [who breathe the lead dust day after day and year after year] and (b) the environment, many sugar mills have made the decision to switch to a lead-free clarifier.

Lead is one of the most hazardous toxic metals because the poison is CUMULATIVE, and its toxic effects are many and severe.

Ingesting a small amount of a lead chemical the size of a person's fingernail can kill.(Since the poison is cumulative, breathing the dust of over a longer period of time can likewise cause death). Nausea and vomiting are followed by convulsions, coma, and finally death.

Even in small amounts, lead can cause big trouble. The body takes four to six weeks to rid soft tissues of the metal after it is ingested. It can take up to 30 years for lead to leave the bones.

Lead can damage the brain, liver, and kidneys. The symptoms of lead poisoning are many and varied. Lead interferes with the production of red blood cells, leading to anemia. Lead strips the myelin coating from nerves, causing weakness in the hands and feet. Even very tiny amounts can cause high blood pressure.

4. What is OCTAPOLTM used for in a Sugar Cane Factory?

It is used for all product streams, including Core Lab Juices, Mill Juice, Clarified Juice and Filtrate, Bagasse, Filter Cake, Syrup, Massecuite, Molasses, and Raw Sugar

5. What is OCTAPOLTM used for in a Sugar Refinery?

It is used for all liquors, syrups, and molasses samples.

6. Can **OCTAPOLTM be used in Sugar Beet Factories?**

Yes, it can be used for analysis of various product streams, including High Green, High Raw Pan, High Raw Massecuite, Low Green, Low Raw Pan, and Molasses.

7. Is OCTAPOLTM a single chemical or a mixture?

It is a mixture of eight chemicals that have been blended together to produce a cream-colored powder.

8. What is the exact composition of OCTAPOLTM?

The exact composition is a trade secret

9. Are any of the chemicals in OCTAPOLTM classified as toxic?

No. None of the chemicals are classified as toxic. Also, none of the components are classified as hazardous for shipping purposes

10. What about the pol readings with OCTAPOLTM?

Pol measurements are the same as with "ABC Sugar Clarifier", which are slightly different from Lead pol values.

11. Is special equipment required to use OCTAPOLTM.?

No. The simple pieces of lab equipment used with Lead Subacetate and "ABC Sugar Clarifier" can be used with OCTAPOLTM.

12. What about the method of testing using OCTAPOLTM?

The method is very similar to the procedure used with Lead Subacetate.

13. How does the cost of OCTAPOLTM compare with the cost of Lead Subacetate?

On a weight to weight comparison, the price of OCTAPOL is slightly higher than that of Lead Subacetate.

How is OCTAPOLTM packaged?

It is packaged in a convenient laboratory size of 1.5 kilograms, which is enough clarifier for between 200 and 300 tests. (The quantity required for one test depends on the type test being carried out, juice quality, etc. However, one can assume that approximately 5 to 10 grams of OCTAPOL will be required per test.)

15. Tell me about the ordering information

PART NUMBER

SIZE

APPROXIMATE TESTS

ZU-7272

1.5 kilograms

17. What is the shelf-life of OCTAPOLTM?

OCTAPOLTM is shipped in an unactivated state. In this unactivated state, it is stable indefinitely. To be used, however, it must be activated. After activation, the shelf-life is approximately three months.

18. What is the advantage of OCTAPOLTM over the procedure using Aluminum Chloride/Calcium Hydroxide/Filter Aid?

OCTAPOLTM is more convenient and less expensive. It is faster and requires the handling of only one substance instead of three. In addition, when Aluminum Chloride/Calcium Hydroxide/Filter Aid are pre-mixed, the shelf-life is only about one day whereas OCTAPOLTM can be used for several months.

19. Zinc Chloride is the basis of a clarification procedure. What is the advantage of OCTAPOLTM over Zinc Chloride?

It has been reported that color removal is more effective with OCTAPOLTM.

LABORATORY PROCEDURES FOR USING OCTAPOL TM IN CANE SUGAR FACTORY PROCESS STREAMS

I. Introduction

OctapolTMis shipped in an unactivated state. It is stable indefinitely in this state.

A few minutes before OCTAPOL is to be used for the first time, it must be activated. This is done simply by removing the plastic bag containing the "ACTIVATOR" and emptying the contents of the bag into the bottle. Then, the capped bottle should be shaken VIGOROUSLY for 60 seconds. It is now ready for use. However, because the powder is very finely divided and dusty, it should be allowed to sit for a few minutes before the bottle is opened.

After activation, OCTAPOL can be used for approximately three months. The clarification power decreases gradually over the three months. Thus, for optimum results it should be used as soon as feasible after activation.

The quantity of reagent used should be that which gives the best balance of clarity and filtration rate for the particular kind of sample being analyzed.

Generally, weights between 5 and 10 grams should work well for most samples in the 100 to 200 ml range.

Aids to filtering (Filter-Aid, Diatomaceous Earth, Kieselguhr, etc) are not required with OCTAPOL.

II. Some General Guidelines

As with dry Lead Subacetate and the ABC Sugar Clarifier® ,the amount of OCTAPOL required may vary depending on the nature of the sample. Depending on the appearance of the filtrate after treatment with the clarifier, the following general statements may be made:

IF THE FILTRATE IS CLEAR AND SLIGHTLY YELLOW

This is perfect!

IF THE FILTRATE IS CLEAR AND DARK

Increase the amount of clarifier

IF THE FILTRATE IS CLOUDY AND DARK Increase amount of clarifier and let sample stand longer after shaking before it is filtered.

IF THE FILTRATE IS CLOUDY AND SLIGHTLY YELLOW

Let sample stand longer after shaking before it is filtered.

IF THE FILTRATE IS CLEAR AND COLORLESS

Readable, but amount of clarifier may be decreased slightly.

IF THE FILTRATE IS CLOUDY AND COLORLESS Decrease amount of clarifier used.

III. Specific Procedures

Although the reagent is non-toxic and environmentally benign, it is a very fine powder and the usual precautions involved in handling such dusty materials should be taken. Consult the Material Safety Data Sheet for further information on proper handling proceures.

There is only a very small, negligible in practice, effect of the quantity of the reagent used upon the polarimeter readings obtained, and this very much lower than the effect of the quantity of lead subacetate.

All polarization readings should be done using the 200 mm tube since the reagent should produce clarified filtrate of enough color and turbidity for this.

The purity data, etc., calculated from the polarimeter readings obtained with use of this reagent should be done in the same way as those obtained using lead clarification.

Although weights of reagent are given in the procedures described below, they are only meant as a guide and the analyst should experiment and judge the quantity to be used by eye after weighing a few samples and gaining experience with the procedure. The quantity of reagent used should be that which gives the best filtration rate and clarity.

1. Core Lab Juices, Mill Juices, Clarified Juice and Filtrate

Pour about 100 ml of juice (cooled if necessary) into a 200 ml bottle fitted

with a stopper. Add about 5-6 grams of the reagent mixture to the juice, stopper tightly and shake vigorously for about twenty seconds. Pour the liquid into the filter paper. Discard or pour back the first 10 ml of filtrate if necessary.

2. Bagasse and Filter Cake Analysis

Prepare the bagasse extract in the conventional manner using the blender. Cool the solution, pour about 100 ml into a 200 ml bottle with a stopper. Add a few grams of clarifier, shake well and filter. (Large quantities of filter cake and water and mixing in a blender are preffered if possibl).

3. Syrup Analysis

Weigh 26 g of syrup into a 200 ml flask, add water to the mark and mix well. Pour about 100 ml into a 200 ml bottle with a stopper. Add about 5 g of reagent, shake well and filter.

4. Masscuite and Molasss Analysis

Prepare a 1:1 dilution of the material in the usual way. Weigh 26 g of the diluted material into a 200 ml flask, add water to the mark and mix well. Pour about 100 ml into a 200 ml bottle with a stopper. Add reagent, shake well and filter.

The quantity of reagent required depends upon the purity of the material being tested. Recommended quantities are:

A-Massecuite 5-6 g

A-Molasss and B-Massecuite 6-8 g

B-Molasses and C-Massecuite 8-10 g

Final Molasses 10-15 g

These quantities are only guidelines and the analysts involved should determine the optimum reagent quantity.

5. Raw Sugar Analysis

OCTAPOL can be used to determine the polarization of raw sugar. Only a small amount of reagent is necessary and it is important to avoid excess reagent in order to achieve clear filtration rates. The recommended procedure is as follows:

Weigh 26.00 g of raw sugar and dissolve to a final volume of 100 ml in the usual way, making sure that all the sugar has disolved and that the solution is well mixed. Pour the solution into a small, clean and dry beaker, add about 1.5 g of clarifier and stir with a glass rod or spatula. Cover with a watch glass and allow to stand for a few minutes. Filter through paper and determine polarization in the usual way.

It is not necessary to weigh the clarifier each time but the analyst should weigh it a few times to become familiar with the quantity required. Cloudy filtrate and poor filtration usually mean that too much reagent has been used.

IV. Additional Comments

1. Experimental data on a large number of sugar samples indicate that the pol value by this procedure may average slightly lower than with Lead reagents, but the same as for the ABC Sugar Clarifier ®

2. This procedure is not the procedure included in raw sugar contracts.

3. In contrast to Lead reagents, OCTAPOLTM does not precipitate much, if any, dextran and some high dextran raw sugars may show slightly higher polarization with OCTAPOL TMthan with Lead reagents since dissolved dextran adds to the pol.

4. Pol values for lower purity materials such as Final Molasses show larger differences for the pol values, when OCTAPOL and Lead Subacetate data are compared. Recent results from the Sugar Milling Research Institute in Durban, South Africa show that both pol procedures give good estimates of the optically active substances in solution after clarification. The large discrepancy between the OCTAPOL % and Lead Subacetate % is attributed to the fact that Lead Subacetate precipitates some of the Fructose present in the sample whereas OCTAPOL does not. Since the rotation of a sample is additive for all the optically active components present, OCTAPOL filtrates with their higher fructose concentrations (which, being levorotatory, subtracts) will have lower overall optical rotations and hence lower pol readings.

5. Pol results for both dextran and fructose-containing samples substantiate the idea that OCTAPOL, unlike Lead Subacetate, does not change the chemical composition of the sugar stream sample. Thus, the OCTAPOL pols are less artifical than the Lead Subacetate pols.