

LSC in Practice

Cocktail Selection for Use with 3.0 M Ammonium Formate

Introduction

One laboratory was performing flow counting with samples of 3.0 M ammonium formate, buffered to pH 4.9 with formic acid. The laboratory requested help to select the proper safer cocktail from PerkinElmer's Ultima-Flo™ family of flow scintillation cocktails. The researchers suggested that Ultima-Flo AF (PerkinElmer part number 6013589) might be suitable, since "AF" indicated that this cocktail had been developed for use with flow gradient systems involving ammonium formate.

However, they were concerned that the high molarity of the sample might cause mixing problems and result in a non-homogeneous counting situation which might cause problems in their flow counting system.

Discussion

We prepared 3.0 M ammonium formate and buffered it to pH 4.9 with formic acid and then evaluated Ultima-Flo AF at 20 °C. The results are shown in the following table:

Sample Volume	Appearance at 20 °C
1.0 mL	Clear
2.0 mL	Clear
4.0 mL	Clear
5.0 mL	Clear
5.5 mL	Clear
6.0 mL	Clear
6.66 mL	Clear
7.0 mL	Clear
8.0 mL	Clear
8.5 mL	Clear
9.0 mL	Hazy/Unstable
10.0 mL	Hazy/Unstable

Recommendation

Ultima-Flo AF will accept a maximum of 8.5 mL 3.0 M ammonium formate in 10.0 mL cocktail at 20 °C. Consequently a flow counting ratio of 2:1 (10.0 mL cocktail with 5.0 mL sample) is possible with easy, rapid and reliable mixing.

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