

Metal and Ash Removal from Waste Oil

Introduction

The application of demulsifiers in used oil recycling reduces the water and solids content of the oil, but does not affect the oil soluble package of additives, which results in ash contents in the range of 0.4-0.8%.

The proper application of acid prior to demulsification has been shown to reduce the ash and improve the marketability of the reclaimed oil.

Application

A simple de-ashing/demulsification process may be implemented as follows:

1. Heat the oil to 175-185°F.
2. Thoroughly mix in enough water to raise total water content to around 20% by volume, e.g. if BS&W is 10%, add 10% water. Maintain temperature.
3. Mix in slowly (carefully) 4 gallon of sulfuric acid per 1000 gallon of the oil-water mixture. Maintain agitation for about 3 hours.
4. Mix in **ECO 70BC** at 3 - 4 gallons per 1000 gallons, ensuring thorough contact, but avoiding extended agitation.
5. Settle the treated mixture overnight.
6. Drain bottom aqueous layer, which will be orange/red in color, slightly hazy and have a pH of ~ 2. This water will clarify readily using **ECA Water Demulsifiers** and pH adjustment, for a **cost of 1-2 cents per gallon.**
7. Identify and, if desired, isolate the intermediate layer of solids/soaps/insolubles, which will constitute less than 5% of the total volume. This layer should be concentrated and disposed of, or treated with the aqueous phase.
8. Recover the oil layer, which will be bright, orange/red. The oil will typically analyze at **0.1-0.2% BS&W**, and have an **ash content of 0.05-0.1%**. Metals, such as lead, will be reduced by 50-80%.

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2300 Tidelands Ave National City CA 91950; Tel (619) 656-8899/98; Fax (619) 477-7147; eci-info@emulsionsonline.com