STUDY ON SEPARATION PROCESS OF BITUMEN FROM ASPHALT BY USING HOT WATER AS A MEDIA WITH ADDITION OF SURFACTANT

Advisors       :  Dr. Ir., Susianto, DEA.
                 Fadlilatul Taufany, S.T., Ph.D
Authors          :  Zindy Sukma Aulia P.      NRP : 2311105022
                 Yeny Widya R.    NRP : 2311105028

ABSTRACT

Asphalt is natural asphalt deposit that contained in rock with bitumen percentage of deposit as 10-40%. The separation process can be done by using solvent and hot water (hot water process). This study focused on the separation of the hot water process. Some things that affect the separation process is penetrating agent, wetting agent and operating conditions such as the separation time and rotational speed stirrer. This research aims to study the effect of solar as a penetrating agent, a surfactant as a wetting agent, asphalt particle size, separation time and stirrer rotational speed of the percent (%) recovery of bitumen.

This study is conducted in two phases: the separation of bitumen from asphalt and bitumen separation stage of the analysis results. On separation phase, 200 grams of asphalt and diesel fuel with a certain ratio weighed. Then mix asphalt and diesel fuel and stirred until evenly and let it for 15 minutes. After that, pour mix asphalt - the diesel fuel into the extractor tank and add a surfactant solution to the extractor tank that has been heated to 90°C ± with certain concentration and amount. The next stage is to measure the water that has been heated in a water bath until the temperature reaches 95°C and stirred functioning at the lowest speed. Then the temperature in the extractor tank set up to ± 90°C and the rotational speed of the stirrer and also set the appropriate time separation of variables. After the separation process completed, pour the mixture into a beaker glass and add
hot water. The last stage is to separate the bitumen which floats on top and measure the density.

The conclusion is the addition of diesel and surfactant solutions have a significant effect. The highest percent (\( \% \)) bitumen recovery in the experiment is equal to 80.50\%. Percent (\( \% \)) recovery gained greater when the amount of solar and surfactant solutions used large, high surfactant concentrations, a long time of the extraction process, high-speed rotary mixer, and with small particle size.

**Keywords**: asphalt, separation, hot water, surfactant, penetrating agent