Team 13, Exp. 1

The amount of water expelled in one minute was recorded below for both pumps #1 and #2, #1 with water and #2 with kerosene:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pump speed [%] | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| Pump 1 water collected [mL] | 535 | 783 | 1068 | 1250 | 1590 | 1890 | 2130 | 2270 | 2560 |
| Pump 2 water collected [mL] | 512 | 807 | 1050 | 1310 | 1600 | 1880 | 2040 | 2360 | 2620 |

Different concentrations of acetic acid in water, with a constant 0.01 M nitric acid, (prepared as detailed in procedure) was contacted with kerosene, 35 mL of each phase. A 5 mL sample of aqueous phase was titrated with 0.1 M NaOH. Amount required for titration provided below:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Conc. AA [M] | 0 | 0.2 | 0.4 | 0.6 | 0.8 | 1 |
| Volume 0.1 M NaOH added [mL] | 0.4 | 9.3 | 18.1 | 26.0 | 34.6 | 45.4 |

Effect of flow rate on contactor was explored contacted 30% TBP in kerosene with 0.2 M acetic acid and 0.01 M nitric acid in water. Stirring rate was held at 4,000 RPM. A five milliliter sample of the raffinate was obtained and titrated with 0.1 M NaOH.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pump Speeds [%] | 30 | 40 | 50 | 60 | 70 | 80 |
| Volume of 0.1 M NaOH added [mL] | 0.3 | 1.4 | 2.0 | 2.3 | 3.8 | 3.9 |

Effect of rotor speed was determined with both pumps at a fixed 40% speed. Feed solutions were identical to previous trials. Amount of 0.1 M NaOH required to neutralize a five milliliter sample of raffinate is provided below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RPM | 6000 | 5500 | 5000 | 4500 | 4000 | 3500 | 3000 |
| Volume of 0.1 M NaOH added [mL] | 1.7 | 1.9 | 2.0 | 1.5 | 1.4 | 1.3 | 1.4 |