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**SSERC Risk Assessment** (revised version November 2009)

(based on HSE ‘5 steps to risk assessment’)

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|  Activity assessed | Determination of an Equilibrium Constant by experiment |
| *Date of assessment* | 06/10/2013 |
| *Date of review (****Step 5****)* |  |
| *School* |  |
| *Department* |  |

| Step 1 | Step 2 | Step 3 | Step 4 |
| --- | --- | --- | --- |
| *List Significant hazards here:* | *Who might be harmed and how?* | *What are you already doing?* | *What further action is needed?* | *Action by whom?* | *Action by when?* | *Done* |
| **Esterification** Methanol is toxic and highly flammableEthanoic acid is corrosive and flammable1M sodium hydroxide is corrosiveReaction mixture (containine methanol, ethanoic acid and methyl ethanoate) is flammable and toxic | Pupil / teacher / technician while preparing reaction tubesPupil / teacher / technician while preparing reaction tubesPupil while carrying out titration.Pupil while carrying out titration. | Avoid all sources of ignitionWork in well-ventilated area or fume cupboard.Use rubber or plastic gloves and eye protection goggles (BS EN 166 3).Wear nitrile or pvc gloves and eye protection, goggles (BS EN 166 3). Handle in a fume cupboard.Wear goggles (BS EN 166 3)Avoid all sources of ignitionWork in well-ventilated area or fume cupboard.Wear rubber or plastic gloves and goggles (BS EN 166 3) |  |  |  |  |

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| **Hydrolysis**Methyl ethanoate is flammable and harmful to skin and by inhalation1M sodium hydroxide is corrosiveReaction mixture (containine methanol, ethanoic acid and methyl ethanoate) is flammable and toxic | Pupil / teacher / technician while preparing reaction tubesPupil while carrying out titration.Pupil while carrying out titration. | Avoid all sources of ignitionWork in well-ventilated area or fume cupboard.Wear nitrile or pvc gloves and eye protection, goggles (BS EN 166 3).Wear goggles (BS EN 166 3)Avoid all sources of ignitionWork in well-ventilated area or fume cupboard.Wear rubber or plastic gloves and goggles (BS EN 166 3) |  |  |  |  |

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| **Description of activity:**1. Methanol and ethanoic acid (glacial) are mixed and 1M HCl is added. The flasks are stoppered and left for a week with daily shaking.

The reaction mixture is titrated against 1M NaOH using thymol blue indicator1. Methyl ethanoate is mixed with 1M HCl. The flasks are stoppered and left for a week with daily shaking.

The reaction mixture is titrated against 1M NaOH using thymol blue indicator |

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| **Additional comments:** |