

BTEC Assignment Brief

Qualification	BTEC Level 3 National Foundation Diploma in Applied Science BTEC Level 3 National Diploma in Applied Science BTEC Level 3 National Extended Diploma in Applied Science
Unit number and title	Unit 4: Laboratory Techniques and their Application
Learning aim(s) (For NQF only)	B: Explore the manufacturing techniques and testing methods for an organic liquid
Assignment title	Making a nail varnish remover
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are a lab technician working in the research and development department of a cosmetics company. One of the products made by the company is nail polish remover. The nail polish remover contains ethyl ethanoate. You are investigating how to produce and test the purity of ethyl ethanoate so that the company can make it efficiently. You will produce a sample of ethyl ethanoate and test its purity. You will have to compare your laboratory technique with the industrial process used by the cosmetics company to manufacture ethyl ethanoate on a large scale.
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Task 1	Prepare a sample of ethyl ethanoate and test its purity, demonstrating skilful application of the techniques you use (ie reflux and distillation using Quickfit™ apparatus, addition of chemicals to purify the ethyl ethanoate and testing its purity by measuring its boiling point and infrared spectrum and comparing with reference information). Write a report detailing your production and testing of ethyl ethanoate in the laboratory. The report must: • Explain the scientific principles behind your practical work techniques • Give detailed conclusions from your practical work • Identify factors that affect the yield and purity of ethyl ethanoate in your laboratory preparation and analyse how significant these factors are • Research and describe the industrial manufacture and testing of ethyl ethanoate, including raw materials, equipment and scale of production
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	• Compare the laboratory and industrial manufacture and testing of ethyl ethanoate, explaining principles, similarities and differences in the equipment and techniques used • Analyse how relevant the factors you have identified as affecting yield and purity are in the industrial manufacture of ethyl ethanoate • Analyse whether boiling point measurement and infrared spectroscopy are effective ways to assess purity of a liquid, and draw a conclusion on whether other methods used industrially, such as chromatography, are more reliable.
Checklist of evidence required	A report on the practical work and the detailed conclusions from this, including the analysis of factors affecting yield and purity, and research on industrial manufacture and testing An observation report by the teacher of making and testing the liquid safely. All information sources should be referenced.
Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
B.D2	Analyse the factors affecting the yield and purity of an organic liquid in the laboratory and their relevance to its industrial manufacture.
B.M2	Demonstrate skilful application of techniques in preparing and testing the purity of an organic liquid and draw detailed conclusions.
B.M3	Compare the laboratory and industrial manufacture and testing of an organic liquid.
B.P3	Prepare and test the purity of an organic liquid and draw conclusions.
B.P4	Describe the industrial manufacture and testing of an organic liquid.
Other assessment materials attached to this Assignment Brief	