

Planning a reaction rate investigation – assessment grid

Education in Chemistry

2018, Emily Seeber

rsc.li/2pX2oet

You should have a plan for an investigation into how the size of marble chips affects the rate of their reaction with hydrochloric acid. Use this assessment grid to mark the plan.

	Poor	Adequate	Good	Excellent
Organisation of ideas	Ideas are disorganised. It is difficult to follow the practical method suggested.	There is a clear title. It is possible to understand the method intended. (1 mark)	There is a clear main title. The aim, diagram and method are separated. The method is clear and easy to follow. (2 marks)	The title gives the reader the key information about the plan. The aim, diagram and method are separated and labelled with sub-headings. The method is precise and concise. (3 marks)
Diagram	No diagram is provided.	The diagram is messy. Labelling is incomplete. (1 mark)	The diagram is neatly drawn with a pencil and ruler. Labels are all correct. (3 marks)	The diagram clearly shows key information about how to carry out the practical. It complements the method given. (4 marks)
Fair test	Fair testing is mentioned vaguely, but no suggestions of how to improve the experiment are given.	One suggestion for making the experiment fair is given. (1 mark)	Two or three suggestions for conducting a fair test are given. (3 marks)	Four or more distinct suggestions for carrying out a fair investigation are given. (4 marks)

Method for comparing the rate of reaction	The method is incomplete. There is no description of how to compare the rate of reaction in each case.	The method described would work. A qualitative method for comparing the rate of reaction is suggested. (4 marks)	The method described would work well. A quantitative method of comparing the rate of reaction, such as by measuring the decrease in mass or volume of carbon dioxide produced, is given. (7 marks)	The method described would work well and give reliable results. The volume of carbon dioxide released in a given time is measured using a suitable method. (8 marks)
Safety	The method is unsafe.	The method is safe. (1 mark)	Suitable safety information is given. (3 marks)	Chemical safety information sheets have been used to research the potential hazards of the chemicals selected. (5 marks)
Prediction	No prediction is given.	A prediction is stated and explained. (1 mark)	A prediction is stated and the reasons for the prediction are explained in terms of collisions between particles. (4 marks)	A prediction is stated and explained. Evidence of research into how surface area affects the rate of reaction and a clear explanation in terms of collision theory is given. (6 marks)