

Lab Report Sample 2

Chemistry — Reaction Rate at Different Concentrations

Sample status: Original illustrative sample created for portfolio demonstration. It is not a customer submission.

Abstract

This investigation explored the relationship between reactant concentration and reaction rate. A reaction was observed under several concentration conditions while temperature, total volume, and observation period were controlled. The illustrative results show a shorter reaction time at higher concentration.

Introduction

Reaction rate describes how quickly reactants are converted into products. Concentration can affect reaction rate because increasing the number of reacting particles in a given volume can increase the frequency of effective collisions.

Objective

To determine whether changing reactant concentration produces a measurable change in reaction time under controlled conditions.

Variables

Independent: Reactant concentration.

Dependent: Time to the defined visual endpoint.

Controlled: Temperature, total volume, container type, mixing procedure, and endpoint definition.

Method

Low, medium, and high concentration solutions were prepared. Equal total volumes were used. The reaction was initiated using the same mixing sequence, and timing began immediately. Timing stopped at the predefined visual endpoint. Three trials were completed for each condition.

Results

Relative concentration	Trial 1 (s)	Trial 2 (s)	Trial 3 (s)	Mean (s)
Low	74	77	75	75.3
Medium	51	49	52	50.7
High	34	36	35	35.0

Illustrative data only — included to demonstrate result presentation.

Analysis

Mean reaction time decreased as concentration increased. Because a shorter time corresponds to a faster reaction under the selected endpoint, the pattern suggests that concentration influenced reaction rate in this sample. Similar results across repeated trials indicate reasonable consistency within the illustrative procedure.

Potential sources of error include differences in endpoint judgment, timing delays, and small variations in mixing. An instrument-based endpoint could reduce observer variation.

Conclusion

The illustrative results support the hypothesis that increasing reactant concentration can increase observed reaction rate when other conditions are controlled.

Sample Note

This is an original illustrative sample prepared for the WriteEssayToday sample library. It is not a customer's laboratory submission.