

THE LABORATORY DIARY

A laboratory diary is a complete record of the practical work a researcher has conducted in the laboratory. It is an essential component of any work in Chemistry. Containing detailed information to enable other researchers to reproduce the same experiments in exactly the same way, it includes all the operations the author has conducted as well as the facts they have observed and the conclusions they have drawn.

Content and format of the laboratory diary

- 1.** The diary will comprise A4 sheets permanently attached and numbered. Loose sheets will not be used since they can easily get lost.
- 2.** The language employed should be plain and simple, indicating what has been done (not what was supposed to have been done), preferably using impersonal forms, and including sufficient detail to make the experiment reproducible.
- 3.** The laboratory diary is a working instrument in constant use. Its use is mandatory during the laboratory session.
- 4.** The work expressed in the diary should be the author's own. When experiments are conducted in pairs, the data will be common to both authors but the wording will be different.

5. Before beginning a laboratory experiment, it is good practice to include in the diary all the information that is needed to perform the experiment correctly. This information includes:

- The title of the experiment
- The date of completion
- The laboratory conditions, i.e. pressure and temperature
- The aims of the experiment, including a brief description of why the work will be useful and what the intended conclusions will be.
- The formulation of the reactions involved (balanced).
- Relevant information about the starting materials, e.g. molecular masses, densities, precautions, dangers, etc.
- The amounts of the starting compounds, e.g. masses, volumes, etc., with their units and expressed in tabulated form.

- A summary or scheme (diagram) of the experimental procedure. This does not mean reproducing the guide but writing a brief description to enable you to easily interpret all the steps that must be taken.

6. After beginning the experiment: suitable notes must to be taken to enable the experiment to be reproduced under the same conditions. Information about the facts or observed data should also be recorded. This normally includes:

- The quantities actually used (examples), e.g. masses, volumes, etc., with their units and expressed in tabulated form.

- The procedure followed, including the laboratory equipment used, e.g. pipettes, burettes, scales, etc. Any modifications to the initially planned procedure must be discussed. Any errors made must also be discussed and how these errors were corrected must be explained.

- The data obtained, which must be tabulated with their units, e.g. times, volumes and absorbances (spectroscopic data), etc.

7. After completing the experiment: The calculations needed to satisfy the initial objectives must be shown. These calculations should:

- clearly explain what has been done (they should provide further explanations, i.e. they should not be limited to the use of formulas), and

- use the proper units to express the results correctly.

Presentation of results:

- Tables: whenever possible, indicate in each table what the data represent.

- Graphs: indicate what each graph represents, including the magnitudes and their units on the axes.

Discussion of results:

Discuss whether the results are in line with what was expected or explain possible causes of error.

Note: If you make an error while performing the experiment, erase it (in a way that is legible) and amend it appropriately.