

CHEMISTRY INVESTIGATORY PROJECT SETTING OF CEMENT Name:- Ayashkant Mishra Class:- XII Section:- A Roll No:-		
		2017-18

Dayawati Modi Academy
Department Of Chemistry
CERTIFICATE

This is to certify that , a student of class **XII-A** has successfully completed the research on the below mentioned project under the guidance of Mr. (Subject Teacher) during the year 2014-15 in partial fulfillment of chemistry practical examination conducted by AISSE, New Delhi.

ACKNOWLEDGEMENT

Primarily I would thank God for being able to complete this project with success. Then I would like to thank my physics teacher Mr., whose valuable guidance has been the ones that helped me patch this project and make it full proof success his suggestions and his instructions has served as the major contributor towards the completion of the project.

Then I would like to thank my parents and friends who have helped me with their valuable suggestions and guidance has been helpful in various phases of the completion of the project.

Last but not the least I would like to thank my classmates who have helped me a lot.

Ayashkant Mishra

Page 1 front page Mention year ,name of school and other detail

Page 2 Get this page signed by your subject teacher

Page 3 Customize the page as per the people whom you want to acknowledge

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Page 4 Prepare an index as per the specific projects

Point 8 can be changed while other points may remain same

AIM OF THE PROJECT

To study the setting of mixture of cement with sand, lime and fly ash with respect to time and strength.

Page 5 write the aim of your specific project

Example is mentioned

INTRODUCTION

In the most general sense of the word, CEMENT is a binder, a substance that sets and hardens independently, and can bind other materials together. The word " cement " traces to the Romans, who used the term opus caementicium to describe masonry resembling modern concrete that was made from crushed rock with burnt lime as binder.

The volcanic ash and a pulverized brick additive that were added to the burnt lime to obtain a hydraulic binder were later referred to as cementum, cimentum, ceament and cement.

The most important use of cement is the production of mortar and concrete.

The bonding of natural or artificial aggregates to form a strong building material that is durable in the face of normal environment effects.

Page 6

Write the intro as per your own project and number of pages may be increased put pics and digrams to elaborate. Introduction may be of 4 to 5 pages

PORTLAND CEMENT

Cement is made by heating limestone (calcium carbonate), with small quantities of other materials (such as clay) to 1450°C in a kiln, in a process known as calcinations, whereby a molecule of carbon dioxide is liberated from the calcium carbonate to form calcium oxide or quicklime, which is then blended with the other materials that have been included in the mix.

The resulting hard substance, called 'clinker', is then ground with a small amount of gypsum into a powder to make 'Ordinary Portland Cement', the most commonly used type of cement (often referred to as OPC). Portland cement is a basic ingredient of concrete, mortar and non specialty grout. The most common use for Portland cement is in the production of concrete. Concrete is a composite material consisting of aggregate (gravel and sand), cement and water. As a construction material, concrete can be cast in almost any shape desired and once hardened, can become a structural (load bearing) element. Portland cement may be gray or white.

Page 7 detail-further detail of introduction can be written

ILLUSTRATION (I)



Page 9—pics can be put in project that will add the value to it and make it more presentable

Construction of Buildings Using Cement

Cement used in construction is characterised as hydraulic or non-hydraulic. Hydraulic cements (eg. Portland cement) harden because of hydration chemical reactions that occurs independently Of the mixture's water content; they can harden even underwater or when constantly exposed to wet weather. The chemical reaction that results when the anhydrous cement powder is mixed with water produces hydrates that are not water-soluble. Non-hydraulic cements (eg. Lime and gypsum plaster) must be kept dry in order to retain their strength.

Page 8—other detail like application can be be written

THEORY

EFFECT OF QUALITY OF SAND ON SETTING OF CEMENT MORTAR

Sand obtained from different sources has different qualities. For example, Sea sand obtained from sea contains unwanted salts and retards setting of cement and is not suitable for making mortar.

On the other hand, Pit sand is obtained from pits in the soil and the River sand obtained from riverbed is considered excellent for preparing mortar and concrete.

Page 10-Theory concerning the project should be given in detail

EFFECT OF TIME ON SETTING OF CEMENT MORTAR

Time has an important role on strength of developed cement mortar. When a cement paste in the ratio 1:3 in water is allowed to dry, the strength of solid mass keeps on increasing with increase in time given for setting. It acquires a nearly full strength in 28 days.

Page 11-

APPARATUS REQUIRED



BEAKER



GLASS ROD



WEIGHT



MATCH BOX



BEAKERS

Page -13- detail of appartus used can be given on a seprate page as per the project allotted

ILLUSTRATION (II)



Page 12 –further illustration can be given using pics and diagram



LIMESTONE



RIVER SAND



CEMENT



FLY ASH

Page -14- detail of appartus used can be given on a seprate page as per the project allotted

PROCEDURE

1. Prepare mixtures of various compositions as given in Observation table.
2. Take each of the given mixtures in different beakers and prepare their pastes by adding minimum amount of water
3. Take nine cases of empty match boxes and mark them from 1 to 9.
4. Fill the three cases with the paste of each composition.
5. Spray water from time to time over the paste ,so that they remain moist all the time.
6. After three days, take out one slab of each composition and test their strengths.
7. Similarly, take out a set of three slabs after 7 days after 30 days respectively and test their strengths.

Page -15-procedure to be written as per the specific project allotted

CONCLUSION

The strength of the slab increases with the increase in setting time allowed.

Page -18- A logical conclusion should be drawn as per the allotted project

OBSERVATIONS

Sl No.	COMPOSITION OF MIXTURE AND RATIO	MINIMUM WEIGHT TO BREAK THE SLAB AFTER		
		3 DAYS	7 DAYS	10 DAYS
1.	CEMENT:RIVER SAND (1:3)	18 GRAM	20 GRAM	30 GRAM
2.	CEMENT:RIVER SAND:FLY ASH (2:9:1)	16 GRAM	18 GRAM	26 GRAM
3.	CEMENT:RIVER SAND:LIME (1:3:1)	10 GRAM	15 GRAM	20 GRAM

By seeing the observation we can estimate the hardness of the slab.

Page 16-Data of specific project to be obtain and should be present in the form of table or pie chart or graph etc

PRECAUTIONS

- Handle the glass wares safely.
- Allow the time required to set.
- Spray only required amount of water.

Page 19-Precaution to be taken as per the allotted project

BIBLIOGRAPHY

1. WWW.GOOGLE.COM
2. WWW.SCRIPTS.COM
3. NCERT LAB MANUAL FOR CLASS 12
4. WWW.SLIDESHARE.COM

Points to remember

1-Specific project will be allotted to students by their subject teacher

2-Students should make their own projects and type it on their own as allotted by the subject teacher .

3-A model as per the instruction of subject teacher has to be made in addition to project

4-Remember it is an investigatory project hence short cut methods like copying and pasting should be avoided

5-It is a sample project just for the idea hence students should not copy it and prepare their project from the given list

Page 20- Source of information should be mentioned in this page

Projects list

- 1- Study the variation in the amount of oxalate ions in guava fruit at different stages of ripening
- 2- A study to compare the quantity of caesin present in different samples of milk
- 3- Preparation of soyabean milk and its comparison with natural milk.
- 4- Study the effect of potassium metabisulphite as a food preservative under various conditions
- 5- A Study of enzymatic hydrolysis of starch
- 6-A comparative study of the rate of fermentation of the following substances: (a) Wheat flour, (b) Gram flour, (c) Potato juice, (d) Carrot juice, (e) Orange juice, (f) Apple juice, and (g) Sugar-cane juice
- 7- Extraction of essential oils present in saunf (aniseeds), Ajwain (carum) and illaichi (cardamom)
- 8- To identify the food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder and pepper
- 9-Any other project suggested by the subject teacher