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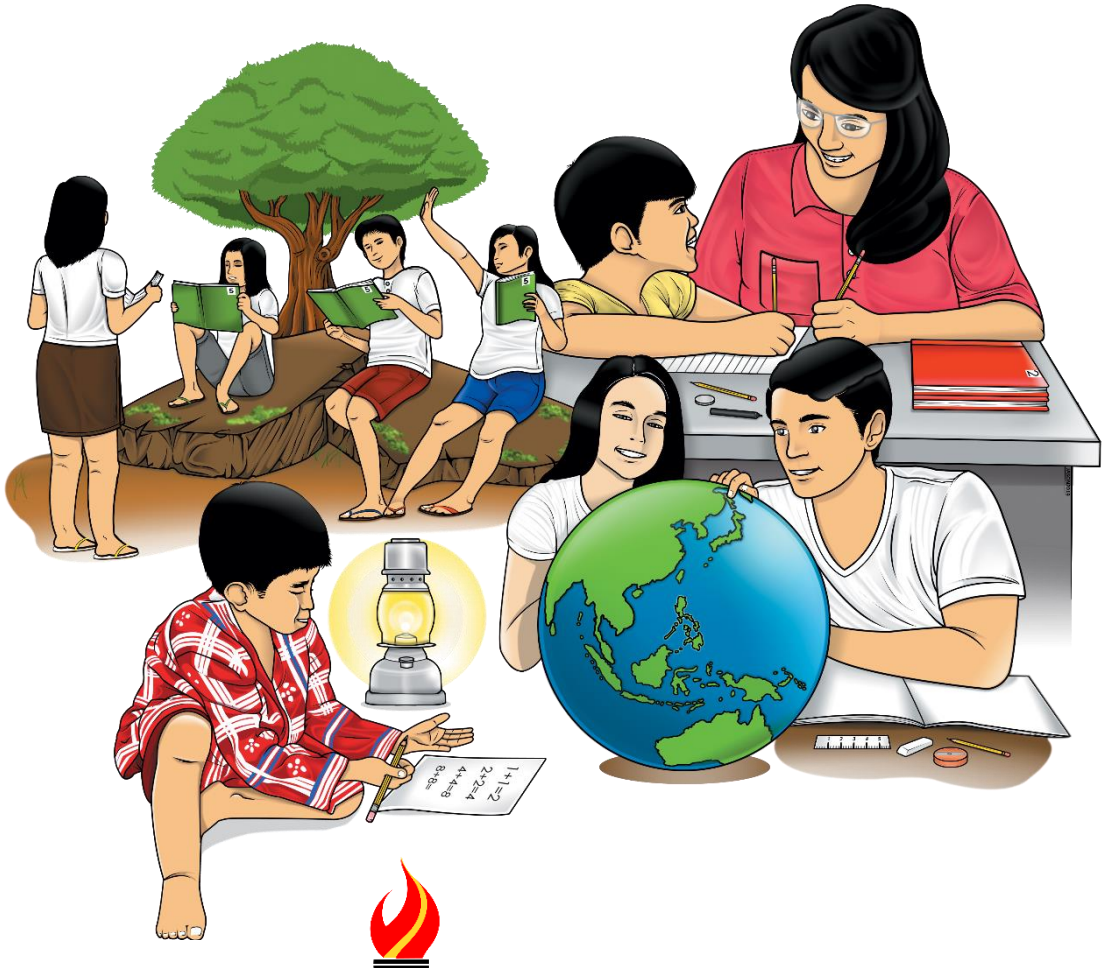
Science

Quarter 1 – Module 1
Lesson 5: Colloids and Their Characteristics



ALTERNATIVE DELIVERY MODE
ADM

Science – Grade 6
Alternative Delivery Mode
Quarter 1 – Module 1 Lesson 5: Colloids and Their Characteristics
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Quarter 1 – Module 1
Lesson 5: Colloids and Their Characteristics

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Introductory Message

For the facilitator:

Welcome to the Science Grade 6 Alternative Delivery Mode (ADM) Module on Colloids and Their Characteristics.

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:

Notes to the Teacher

This contains helpful tips or strategies that will help you in guiding the learners.

As a facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the learner:

Welcome to the Science Grade 6 Alternative Delivery Mode (ADM) Module on Colloids and Their Characteristics.

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:

 ***What I Need to Know***	This part will be your guide to learn in the specific lessons specifically your skills and competencies.
 ***What I Know***	. This contains a 10-item pre-test that will check what you already know.
 ***What's In***	. In this section, you will be given review questions or exercises that connect your previous lesson to the new one.
 ***What's New***	It is in this part that the new lesson will be introduced to you in different ways: a story, a poem, a problem opener, an activity, or a situation.
 ***What is It***	. This portion will give you the topic, information and concepts as a brief discussion for you to learn. You will be also be given specific instructions on how to go about the lesson.
 ***What's More***	. This provides you questions and exercises to help you deepen your understanding and find practical applications of the concept.
 ***What I Have Learned***	This includes a short fill-in the blanks summary of the topic. It is in this part that helps you generalize your understanding of the concepts.

 ***What I Can Do***	This section includes an activity or exercises that will help you apply your knowledge into real-life situations.
 ***Assessment***	This is composed of a 10-item exercises for you develop your mastery of the topic to and to assess if you have attained the learning competency.
 ***Additional Activities***	This part will be the last activity for you to enhance your skill of the lesson learned. It will give you step by step instructions to follow.
 ***Answer Key***	This contains answers to all activities in the module.

At the end of this module you will also find:

References	This is a list of all sources used in developing this module

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!

What I Need to Know

This module was designed and written with you in mind. It is here to help you master the matter. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the module you are now using.

The module is about:

- Identifying the types of colloids

After going through this module, you are expected to be able to:

- identify the types of colloids

What I Know

A. For numbers 1-4, fill in the blanks to complete the answer. Choose your answer from the word box. Write your answers using your journal or notebook.

1. _____is a colloidal suspension with solid particles in a liquid.
2. _____is formed between two liquids.
3. _____ is formed when many gas particles are trapped in a liquid or solid.
4. _____ contains small particles of liquid or solid dispersed in a gas.

Emulsion	sol	foam	aerosol

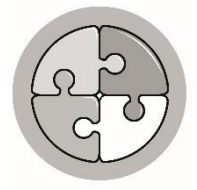
B. For numbers 5-10, answer it with TRUE if the statement is correct and FALSE if it is not.

5. An easy way of determining whether a mixture is colloidal or not is through the use of the Tyndall Effect.
6. The Tyndall Effect is the effect of light scattering in colloidal dispersion, while showing no light in a true solution.
7. Whipped cream is a colloid
8. The particles in the dispersed phase cannot take place in different phases depending on how much water is available.
9. Sol is formed when many gas particles are trapped in a liquid or solid.
10. A colloid is one of the primary types of mixture.

Lesson 5 Colloids and Their Characteristics

Nowadays, we have created a lot of mixtures. From food, medicine and even industrial materials, a variety of products are made up of different mixtures. There are different types of mixtures. One of these is based on the phase of the dispersed substance and on what phase it is dispersed in.

As you walk through this module, you will be able to identify the different types of colloids.

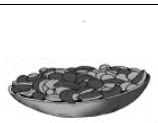


What's In

A. Identify if the following is a colloid or not. Write C if it is a colloid and NC if it is not. Write your answers using your journal or notebook.

1. Gelatin
2. mayonnaise
3. Soft drinks
4. vinegar
5. Smog

B. Identify the different phases of matter (solid, liquid, gas) combined in the following mixture. Write your answers using your journal or notebook.

Examples of Colloids	***Phases of Matter***
1. 	
2. 	
3. 	
4. 	
5. 	

What's New

Determine if the following mixture is a colloid or not. Write C if colloid and N if it is not. Write your answers using your journal or notebook.

1. Margarine
2. Mayonnaise
3. Toothpaste
4. Smoke
5. Cough syrup
6. Smog
7. Vinegar
8. cake
9. Soy sauce and vinegar
10. Soft drinks

What is It

Colloids are one of the primary types of mixture. It is a type of mixture in which solid or liquid particles are dispersed uniformly throughout a gas, liquid or solid. Colloid particles maybe seen in a beam of light such as dust in air and a shaft of sunlight. Blood, whipped cream and fog are examples of colloids.

To be classified as colloid, the substance in dispersed phase must be larger than the size of a molecule but smaller than what can be seen with the naked eye.

The component typically present in a relatively small amount is called **dispersed phase** and the substance or solution throughout which particulate is dispersed is called the **dispersion medium**.

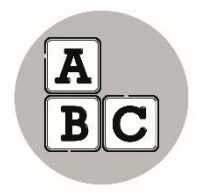
Colloid creates a **Tyndall effect**, it is the effect of light scattering in colloidal dispersion, if no light is shown, then it is a true solution. This effect is used to determine whether a mixture is a true solution or a colloid.

A common method of classifying colloids is based on the phase of the dispersed substance and at what phase it is dispersed. The types of colloids are:

1. Sol-is a colloidal suspension with solid particles in a liquid.
2. Emulsion-formed between two liquids
3. Foam- is formed when many gas particles are trapped in a liquid
4. Aerosol-contains small particles of liquid or solid dispersed in a gas.

Notes to the Teacher

A colloid may be a mixture of one substance that may spread out evenly inside another substance. They may be in two different phases or states of matter. One substance can be the dispersion medium, such as water or gas. The other is kind of dispersed medium, sometimes called the 'internal phase'. This is never tiny solid particles. Otherwise, if the dispersion medium is a gas, then the internal phase may be either tiny particles or tiny droplets of a liquid.



What's More

Activity 1: Sort the mixtures below into the correct category which they belong. Write your answers in the table format using your journal or notebook.

Paint	ice cream	pearl	blood	mayonnaise	glue

Sols	Emulsions
1.	
2.	
3.	
4.	
5.	

Activity 2: Identify the statements whether it is TRUE or FALSE. Write your answers on your Science journal or notebook.

1. Fog is an example of aerosols.
2. An aerosol is a colloid of fine solid particles or liquid droplets in air or another gas.
3. Bubbles are an example of foams.
4. Aerosol is a colloidal dispersion of gas bubbles in liquids and solids.
2. Icing is an example of foam.

What I Have Learned

Complete the statement below. Write it using your Science journal or notebook.

I learned that….

The _____ is a type of mixture in which solid or liquid particles are dispersed uniformly throughout a gas, liquid or solid. It is classified into four types, _____, _____, _____ and _____.

What I Can Do

Direction: Carefully read the information below and answer the questions correctly. Write your answers on your Science journal or notebook.

1. What is aerosol made of?
2. What is the dispersing medium of a smoke?
3. What phenomenon is created when the dispersed colloid particles scatter light?
4. What are the two components present in the colloid?
2. How can we categorize colloids?
3. In what category of colloids does marshmallow belongs?
4. What does sol mean?
5. Is dust a colloid? If so, to what category does it belongs?
6. What is the dispersing medium of a mayonnaise?
7. What is a colloid?

Assessment

Choose the letter of the best answer. Write the chosen letter on your Science journal or notebook.

1. Which of the following is an example of a colloid?
   a. mayonnaise b. cooking oil
   c. soft drinks d. bubbles in water

2. What phenomenon occur when dispersed colloid particles scatter light?
   a. Tyndall effect b. shaft effect
   c. miscible d. immiscible

3. What example of colloid has dispersed solid particles in gas?
   a. milk b. smoke c. gelatin d. blood

4. What is the most abundant particle in a colloid?
   a. dispersing mediums b. dispersing phases
   c. miscible d. immiscible

5. Why is milk categorized as emulsion?
   a. because settling cannot separate the components of homogenized milk.
   b. because settling can separate the components of homogenized milk
   c. The colloid's particles of milk are larger.
   d. The colloid's particles are smaller.

6. Soda pop, whipped cream, and beaten egg whites are examples of what type of colloids?
   a. foam b. Emulsion c. Sol d. Aerosol

7. How would you differentiate a colloid mixture from a solution?
   a. The colloid's particles are larger.
   b. The colloid's particles are smaller.
   c. A colloid has a positive charge.
   d. A colloid has a negative charge.

8. A colloid is a stable combination of particles of one substance that are dissolved or suspended in a second substance.
   a. True c. Maybe
   b. False d. None of these

9. An _____ is a sol with the continuous phase a gas. Fog is an _____ of water droplets.
   a. aerosol
   b. emulsion
   c. sol
   d. foam

10. An _____ is a sol in which the suspended particles are liquid droplets and the continuous phase is also a liquid. The 2 phases are immiscible, otherwise a solution would form.
   a. aerosol
   b. emulsion
   c. sol
   d. foam

Additional Activities

Direction: Identify the types of colloids below. Write your answers in the table format using your journal or notebook.

Gelatin	blood	whipped cream	smog
toothpaste	shampoo	paint	milk
Mud	vinegar	water	Smoke

Colloids	**Category/type**
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Answer Key

What I Know

A. 1. Sol
2. Emulsion
3. Foam
4. Aerosol
5. True

B. 1. True
2. True
3. True
4. False
5. True

What's In

A.
1. Not
2. Homogeneous
3. Homogeneous
4. Not
5. Homogeneous

B. 1. Solid and liquid
2. Solid and liquid
3. Gas and liquid
4. Liquid and Solid
5. Gas and Liquid

What's New

1. C
2. C
3. C
4. C
5. N
6. C
7. N
8. C
9. N
10. N

What's More

Activity 1
1. Sol
2. Paint
3. Ice cream
4. Pearl
5. Glue

Activity 2
1. True
2. False
3. True
4. True
5. True

What I can do

1. It is made of gas and solid or liquid
2. Gas
3. Tyndall effect
4. Dispersed phased and dispersed medium
5. based on the phase of the dispersed substance and what phase it is dispersed
6. Foam
7. Solid
8. Yes, Aerosol
9. Liquid

Colloids is a mixture of one substance that may spread out evenly inside another substance

Assessment

1. a
2. a
3. b
4. a
5. a
6. a
7. a
8. a
9. a
10. b

References

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Padpad Evelyn, C. (2017). The New Science Links Worktext in Science and Technology 6. 856 Nicanor Reyes, Sr. St, Manila Philippines. Rex Book Store, INC.

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