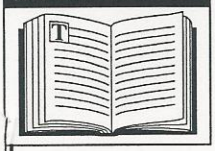
Translate



ESL/ELD Stage 1+2: Gr. 7 Science

Strand 2: Pure Substances and Mixtures (Vol.1)

New Words for: Pure Substances and Mixtures

ESL	Note Making, Stg1 + Stg 2	ELD	Note Making, Stg1 + Stg 2
1	makes notes with much assistance	1	makes notes with little clarity
2	makes notes with some assistance	2	makes notes with some clarity
3	makes notes with little assistance	3	makes notes with clarity
4	makes notes with no assistance	4	makes clear and precise notes

1. Translate ~ What is this word in your language?
2. Learn ~ Learn (memorize) the English word or words.
3. Use ~ Use the word or words in this unit.
4. Test ~ Be ready to spell the words on a test.

Instructions: Use a bilingual dictionary to translate each word or ask someone for help (e.g., a parent) Add words if needed.

Word appears in:	In English:	In your language:	English definition:
Activity 1	Matter		either a mixture or a pure substance ~ matter is made up of tiny particles too small to see
	Mixture		two or more substances are stirred together
	Mechanical mixture		when two or more substances are mixed and are not physically changed
	Physically changed		two or more substances mix to form a new substance that looks different
	Sand		powdered rock
	Iron filings		tiny pieces of iron
	Separate		to break into parts
	Solution		two or more substances are mixed and are physically changed
	Pure substance		all particles in the substance are the same (e.g., salt)
Activity 2	Dissolving		a solute mixes with a solvent to form a solution ~ the solute cannot be seen
	Solute		a substance that dissolves in a solvent to form a solution
	Solvent		a liquid that dissolves substances
	Concentration		the amount of solute that is dissolved in a solvent
	Unsaturated solution		a solution that can dissolve more solute at a specific temperature
	Dilute		unsaturated solution
	Saturated solution		a solution that cannot dissolve more solute at the specific temperature
	Super saturated solution		a solution that was heated and stirred to dissolve more solute than would normally dissolve at a specific temperature
	Temperature		how hot or cold the solvent is
	Turpentine		a strong smelling paint thinner
	Stirring		to mix two or more substances
Activity 3	Liquid		water (in this example)
	Gas		water vapour (in this example)
	Solid		ice (in this example)
	Sodium fluoride		found in toothpaste (in this example)
	Acetone		found in nail polish (in this example)
	Liquid acetic acid		found in vinegar (in this example)

ESL/ELD Stage 1+Stage 2: Grade 7 Science
Strand 2: Pure Substances and Mixtures (Vol.1)

Mechanical Mixtures, Solutions and Pure Substances (page 2)

Teacher led discussion

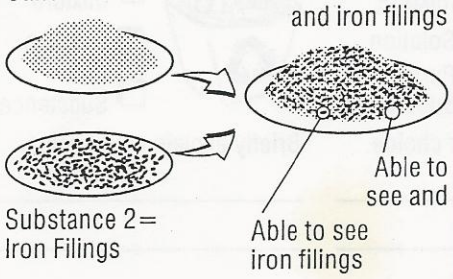
Matter

Matter is either a **mixture** or a **pure substance**. Matter is made up of tiny particles too small to see.

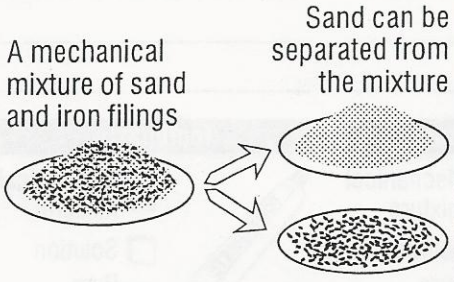
Mixture

Mechanical Mixture

- when two or more substances are mixed and are ***not physically changed*** a mechanical mixture is made;

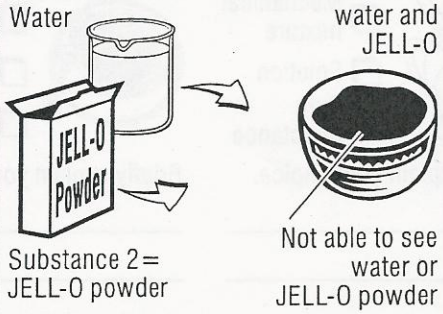


- if we are ***able to see each substance*** in the mixture, a mechanical mixture is made;
- if the substances in the mixture ***can be easily separated***, a mechanical mixture is made.

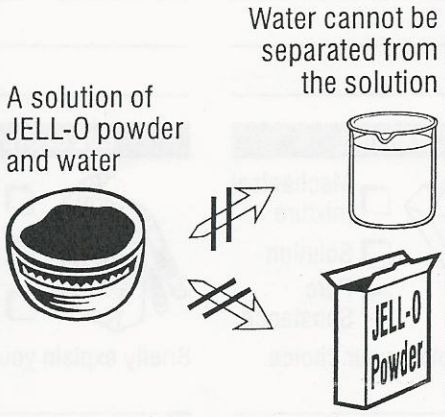


Solution

- when two or more substances are mixed and are ***physically changed*** a solution is made;

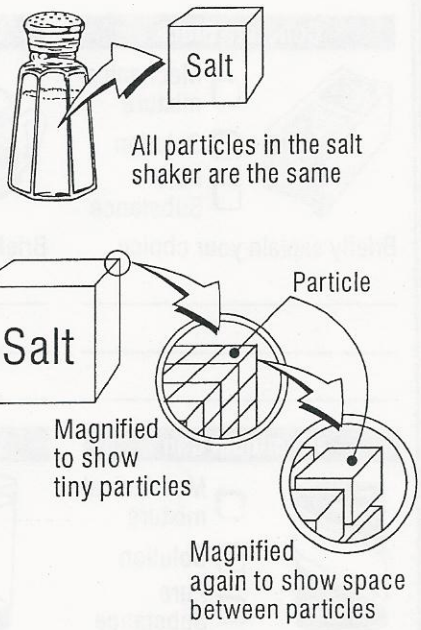


- if we are ***not able to see each substance*** in the mixture, a solution is made;
- if the substances in the mixture ***cannot be easily separated***, a solution is made.



Pure Substance

- a pure substance exists when all particles are the same;



- pure substances, like salt, have only one kind of particle.

Activity 1 Complete the Chart

ESL/ELD Stage 1+2: Gr. 7 Science

Strand 2: Pure Substances and Mixtures (Vol.1)

Mechanical Mixtures, Solutions and Pure Substances (page 3)

ESL	Organize Data, Stg1+Stg 2
1	writes appropriate responses to few written questions
2	writes appropriate responses to some written questions
3	writes appropriate responses to most written questions
4	writes appropriate responses to all or almost all written questions

ELD	Organize Data, Stg1+Stg 2
1	unable to organize information using a graphic organizer
2	able to organize some information using a graphic organizer
3	able to organize most information using a graphic organizer
4	able to organize all information using a graphic organizer

Instructions: Label each diagram as either a mechanical mixture, solution or pure substance. Explain your choice using these phrases:

All particles are the same, Able to see each substance in the mixture, Unable to see each substance in the solution

Common Table Salt

- ☐ Mechanical mixture
- ☐ Solution
- ☑ Pure Substance

Briefly explain your choice.

All particles are the same

Raisin Bran ® Cereal

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Pencil

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

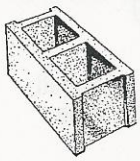
Briefly explain your choice.

Pizza

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Concrete Block



- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Common Table Sugar

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Black Coffee + Sugar

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Metal Tins to be Recycled

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Aluminum Can

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Water (no additives)

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Oxygen Gas

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Hair Shampoo

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Perfume or Cologne

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Diamond

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Box of Crayons

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

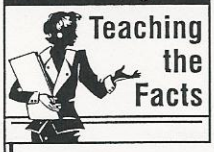
Briefly explain your choice.

Toothpaste

- ☐ Mechanical mixture
- ☐ Solution
- ☐ Pure Substance

Briefly explain your choice.

Activity 1



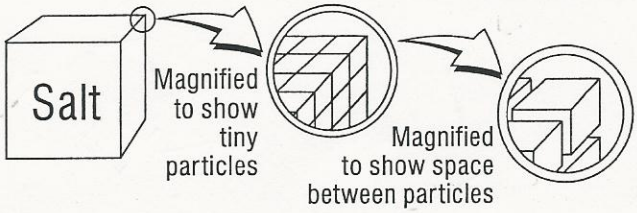
Grade 7 Science and Technology
Strand 2: Pure Substances and Mixtures

The Particle Theory (page 2)

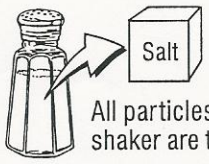
The Particle Theory:

The Particle Theory describes how particles are organized and how they behave in matter. This theory is summarized below into four parts.

1. Matter is made up tiny particles too small to be seen. All particles have spaces between them.



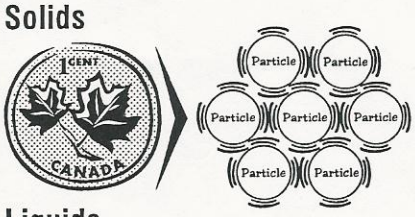
2. Pure substances, like salt, contain only one kind of particle.



All particles in the salt shaker are the same

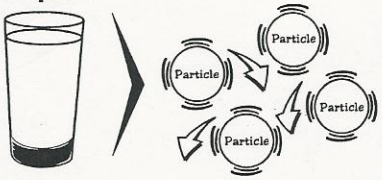
3. Particles are always moving.

Solids



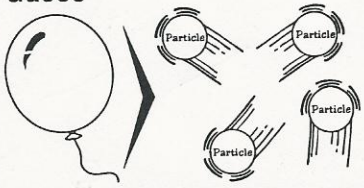
Particles in a solid are very close together.

Liquids



Particles in a liquid are far apart.

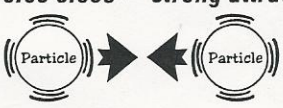
Gases

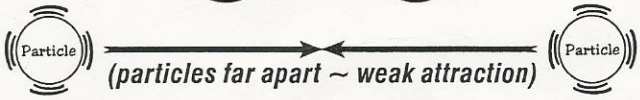


Particles in a gas are very far apart.

4. Particles are attracted or bonded to each other. The force of the attraction is strongest when the particles are closer together.

(particles close ~ strong attraction)



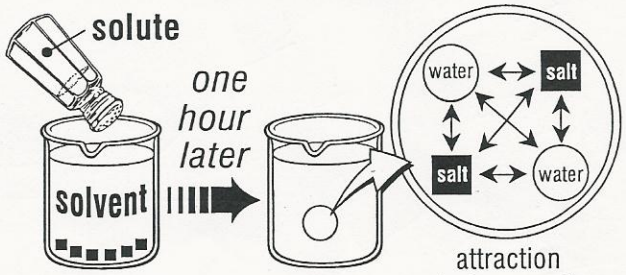


(particles far apart ~ weak attraction)

Particle Attraction in Solutions

The attraction between the particles of solute (the substance that dissolves in a solvent to form a solution) and solvent (the liquid that dissolves substances) keeps them in a solution.

Solution (saltwater)



salt visible on bottom (water is stirred)

salt not visible, salt is dissolved

attraction between salt particles and water particles is strong

How Particles Behave in Matter

Category	SOLIDS	LIQUIDS	GASES
How are the particles organized?	Particles are very close in regular rows, evenly spaced	Particles are far apart, randomly spaced	Particles are very far apart, very randomly spaced
How do the particles move?	Particles vibrate only, not free to move	Particles vibrate +slide, partially free to move	Particles vibrate +slide+free to move
How strong is the particle attraction?	Particle attraction is very strong	Particle attraction is strong	Particle attraction is weak
How much energy is in the particles?	Particles have little energy	Particles have more energy	Particles have most energy

Activity 1

CLASS EXPERIMENT

Grade 7 Science and Technology

Strand 2: Pure Substances and Mixtures

Experiment: Solution or Suspension (page 3)

Inquiry and design skills (including skills in the safe use of tools, equipment, and materials)		
50 - 59%	1	applies few of the required skills and strategies; shows little awareness of safety procedures; uses tools, equipment, and materials correctly only with assistance
60 - 69%	2	applies some of the required skills and strategies; shows some awareness of safety procedures; uses tools, equipment, and materials correctly with some assistance
70 - 79%	3	applies most of the required skills and strategies; usually shows awareness of safety procedures; uses tools, equipment, and materials correctly with occasional assistance
80 - 100%	4	applies all (or almost all) of the required skills and strategies; consistently shows awareness of safety procedures; uses tools, equipment, and materials correctly with little or no assistance

Instructions: Mix together common household substances to create four safe liquid concoctions. Allow each concoction to stand for two hours. If after two hours you are unable to see the particles in the concoction it is called a **solution**. If after two hours you are able to see the particles in the concoction it is called a **suspension**.

Concoction #1

(draw and label the solute and solvent)

1) Is the concoction a solution or a suspension?

2) If the concoction is a solution, why did these ingredients create a solution?

3) If the concoction is a suspension, why did these ingredients create a suspension?

Concoction #2

(draw and label the solute and solvent)

1) Is the concoction a solution or a suspension?

2) If the concoction is a solution, why did these ingredients create a solution?

3) If the concoction is a suspension, why did these ingredients create a suspension?

Concoction #3

(draw and label the solute and solvent)

1) Is the concoction a solution or a suspension?

2) If the concoction is a solution, why did these ingredients create a solution?

3) If the concoction is a suspension, why did these ingredients create a suspension?

Concoction #4

(draw and label the solute and solvent)

1) Is the concoction a solution or a suspension?

2) If the concoction is a solution, why did these ingredients create a solution?

3) If the concoction is a suspension, why did these ingredients create a suspension?