



Sequence 3: oxidation and reduction reactions



Fiches de synthèse mobilisées (collection en français) :

- Fiche 3.a : nombres d'oxydation
- Fiche 3.b : oxydants et réducteurs
- Fiche 3.c : réactions d'oxydo-réduction



Sommaire des activités ETLV :

- ACTIVITY 1: discovering magic drinks
- ACTIVITY 2: understanding magic drinks

ACTIVITY 1: Discovering Magic drinks

Objective: understanding a video on oxidation and reduction reactions

DOCUMENT 1: Magic drinks

has been changed to the colourless manganese(II) ions.

<https://www.youtube.com/watch?v=hY05kY8uH74>

Source: Royal Society of Chemistry



■ **Acquiring vocabulary:**

Watch the video (start at 38'') a couple of times and write down the keywords that you hear:
You must come up with at least ten words

- 1. _____ 2. _____
- 3. _____ 4. _____
- 5. _____ 6. _____
- 7. _____ 8. _____
- 9. _____ 10. _____

Write your keywords on the board.

■ **Vocabulary help:**

You may have come up with the following keywords. These are essential for the rest of your activity:

List 1	List 2
an acidified solution	raspberry
potassium permanganate	fizzy
sodium thiosulfate	a precipitate
baryum chloride	colourless
a jug, a carafe	to settle out
to make up solutions	reaction

Teacher's note: have the students (who know this vocabulary) explain it to the class without giving a translation.

■ **Rephrasing:**

Watch the video again. Use the keywords on the board and in your worksheet to help you understand the video. Write a short summary of the video, and then explain it to the class.



ACTIVITY 2: Understanding magic drinks

Objective: identifying oxidation-reduction reactions

■ Filling in the reagent and color boxes:

STEP 1:

Watch the video again. Focus on the **reagents** for each glass. You may want to watch it a couple of times to get the names right.

STEP 2:

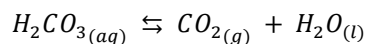
Watch the video once more, and this time focus on the **final color**.

■ Working out chemical reactions:

Use **APPENDIX 1**

Help: you are given two **conjugate acid base** pairs: $\text{HCO}_3^-/\text{CO}_3^{2-}$ (2), $\text{H}_2\text{CO}_3/\text{HCO}_3^-$ (1)

You are also told that carbonic acid $\text{H}_2\text{CO}_{3(\text{aq})}$ readily decomposes as follows:



Now that you know which reagents are present and that you have an idea of the final products, work out the possible reactions.

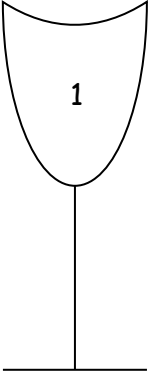
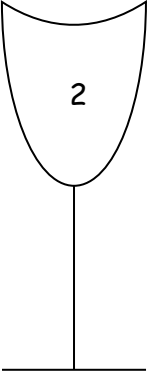
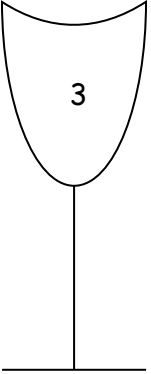
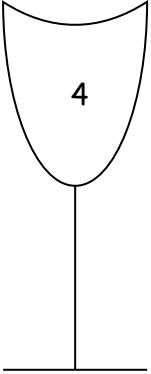
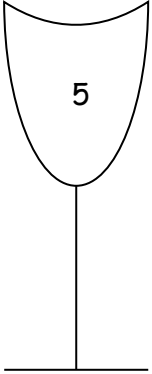
These could be either :

- Oxidation, reduction reactions
- acid/base reactions
- precipitation reactions

Teacher's note: have the students write their reactions on the board and explain them to the class. Then give out the answer sheet.



APPENDIX 1: Magic drinks!

Reagents:	Reagents:	Reagents:	Reagents:	Reagents:
				
Final color:	Chemical reaction Final color:	Chemical reactions 1) 2) Final color :	Chemical reaction Final color:	Chemical reactions 1) 2) 3) 4) Final color:



Activity summary

What you must remember:

- **oxidation**
- **reduction**
- **sodium thiosulfate**
- **potassium permanganate**

Skills linked to the curriculum:

Compétences	Capacités à maîtriser	Où dans cette séquence ?
APP	Utiliser du vocabulaire spécifique	Activités 1 et 2
	Lire et comprendre des documents scientifiques	Activités 1 et 2
ANA	Mettre en lien des documents pour émettre des hypothèses en réponse à une question scientifique	Activités 1 et 2
COM	S'exprimer à l'écrit en utilisant le vocabulaire adapté	Activités 1 et 2
REA	<ul style="list-style-type: none">• Identifier l'oxydant et le réducteur dans une réaction donnée à l'aide du nombre d'oxydation.• Écrire l'équation d'une réaction d'oxydo-réduction en milieu acide.	Activité 2