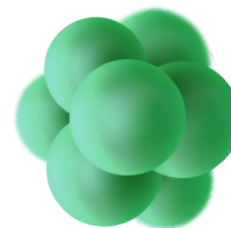


Equilibrium

the Board Game



How to use this PDF

On this and the following page you will see the player cards which will need to be cut out, mixed up and then placed face down on the middle of the board.

The third page contains the game board along with the playing instructions.

The game board should be ideally printed on an A3 sheet but if your printer only has A4 paper this will still be good enough to play.

CHALLENGE	$\text{C}_2\text{H}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \rightleftharpoons \text{C}_2\text{H}_5\text{OH}(\text{g})$ Forward reaction is exothermic Temperature increases Move 1 space	CHALLENGE	CHALLENGE	$\text{C}_2\text{H}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \rightleftharpoons \text{C}_2\text{H}_5\text{OH}(\text{g})$ Concentration of steam increases Move 2 spaces	CHALLENGE
CHALLENGE	$\text{C}_2\text{H}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \rightleftharpoons \text{C}_2\text{H}_5\text{OH}(\text{g})$ Pressure decreases Move 2 spaces	CHALLENGE	CHALLENGE	$\text{C}_2\text{H}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \rightleftharpoons \text{C}_2\text{H}_5\text{OH}(\text{g})$ Pressure increases Move 1 space	CHALLENGE
CHALLENGE	$\text{C}_2\text{H}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \rightleftharpoons \text{C}_2\text{H}_5\text{OH}(\text{g})$ Catalyst added Who Moves?	CHALLENGE	CHALLENGE	$\text{C}_2\text{H}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \rightleftharpoons \text{C}_2\text{H}_5\text{OH}(\text{g})$ Forward reaction is exothermic Temperature decreases Move 2 spaces	CHALLENGE

EQUILIBRIUM

You take off the lid from the pop bottle allowing gas to escape.
Move 2 spaces towards the product.

EQUILIBRIUM

EQUILIBRIUM

Pressure in the pop bottle increases.
Move 2 spaces towards the reactant.

EQUILIBRIUM

EQUILIBRIUM

Additional Nitrogen added in Haber Process.
Move 3 spaces towards product.

EQUILIBRIUM

EQUILIBRIUM

Catalyst added.
Miss a go.

EQUILIBRIUM

EQUILIBRIUM

Iron Thiocyanate (product) is added to the reaction between Iron and Thiocyanate ions.
Move 1 space towards reactant.

EQUILIBRIUM

EQUILIBRIUM

Ammonia is removed from the Haber Process reactant vessel.
Move 1 space towards product.

EQUILIBRIUM

EQUILIBRIUM

Catalyst speeds up forward and reverse reactions at the same rate.
Miss a go.

EQUILIBRIUM

EQUILIBRIUM

$\text{CH}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \rightleftharpoons \text{CO}(\text{g}) + 3\text{H}_2(\text{g})$
Pressure increases move 2 spaces towards the reactant.

EQUILIBRIUM

EQUILIBRIUM

$2\text{NO}_2(\text{g}) \rightleftharpoons \text{N}_2\text{O}_4(\text{g})$
Temperature increases move 2 spaces towards the reactant as reverse reaction is endothermic.

EQUILIBRIUM

EQUILIBRIUM

$\text{CH}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \rightleftharpoons \text{CO}(\text{g}) + 3\text{H}_2(\text{g})$
Pressure decreases move 2 spaces towards the product.

EQUILIBRIUM

EQUILIBRIUM

$2\text{NO}_2(\text{g}) \rightleftharpoons \text{N}_2\text{O}_4(\text{g})$
Temperature decreases move 2 spaces towards the product as forward reaction is exothermic.

EQUILIBRIUM

EQUILIBRIUM

$\text{CaCO}_3(\text{s}) \rightleftharpoons \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
Calcium Carbonate is heated in an open system. Reaction moves to completion.
Move 2 spaces towards the product.

EQUILIBRIUM

EQUILIBRIUM

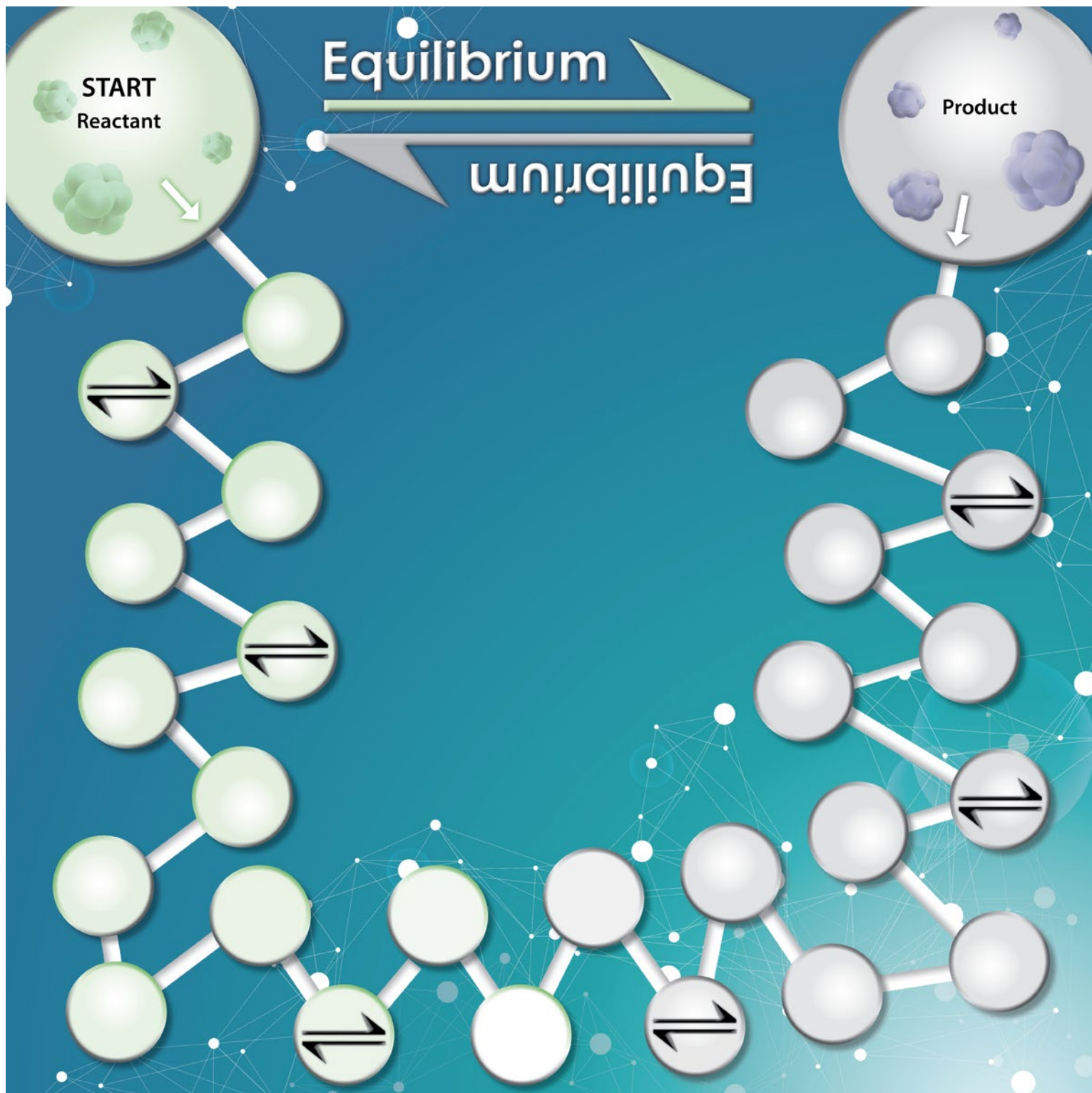
$\text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{H}_2\text{O}(\text{g})$
You use the car fan to demist the car window.
Move 2 spaces towards the product.

EQUILIBRIUM

EQUILIBRIUM

$\text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{H}_2\text{O}(\text{g})$
Dew forms on leaves in the evening.
Move 2 spaces towards the reactant.

EQUILIBRIUM



Equilibrium the Board Game

Rules

- You will need one die and one counter.
- Mix the Challenge and Equilibrium cards up and place them face down in the centre of the board.
- Work in pairs (two taking on role of reactants and two taking on role of products).
- Reactant pair throws the die and moves the counter around the board towards the product. The reactant pair then throws the die a further three times and moves the counter with each throw.
- Product pair then starts rolling the die and moving towards the reactant.
- Take it in turns to throw the die and move towards your goal.
- When you reach an 'Equilibrium' block on the board select a card from the centre of the board and follow the instructions.
- If you get a Challenge question you need to make a decision about how the conditions on the board affect the equilibrium position. If you want to, you can pass on a Challenge question.

The game should be played for around 15 minutes or until one party reaches the other side.



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