

Lesson 7 - Aluminium

Task 1

Read the following text about recycling of aluminium and make a flow chart summarizing the main steps:

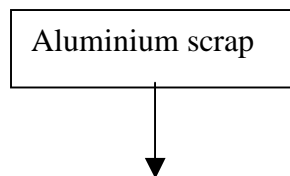
Aluminium Recycling Process

All aluminium products can be recycled after use. Scrap is generally taken by road to the recycling plant where it is checked and sorted to determine composition and value. If the scrap is of unknown quality the aluminium will first be passed through some large magnets to remove any ferrous metal. Depending upon the type of contamination present, some scrap must be processed further - beverage cans, for example, must have their lacquer removed prior to melting. The scrap aluminium is then loaded into a furnace, which melts the aluminium completely.

(Source: www.world-aluminium.org)

Vocabulary:

Scrap: ferralla. **To sort:** triar. **Lacquer:** laca, pintura.



Task 2

To produce 1 tonne of aluminium it is necessary to use 5 t of bauxite and 15MWh of electric energy, among other resources. The process produces aluminium, other by-products and CO₂.

Look at the following table of CO₂ emissions according to the source of energy:

Fuel	Amount of CO ₂ emitted
Natural gas	450 kg
Oil	500 kg
Coal	1000 kg

Emissions of CO₂ by 1MWh of consumption of energy

a) The weight of a beverage can is usually 15 gr. Work out the amount of CO₂ emitted when producing it for every type of energy

b) Let's suppose that the can is produced from recycled aluminium, with a 95% reduction of the energy. Work out the CO₂ emitted when producing it for every type of energy in this case



Task 3

Find out if the following statements are true or false

Statement	T/F?
Aluminium is a very usual substance and it can be found free in the nature	
Alumina is aluminium oxide	
From 5 tonnes of bauxite we can get some 1 tonne of aluminium at the end of the process	
The Bayer process is used to obtain aluminium from alumina	
Bauxite is the main ore of aluminium	
The modern production of aluminium doesn't pollute at all	
Using recycled aluminium to produce aluminium we need only 5% of the energy needed than if we produce it from the ore	

Task 4

Read the following chronology and answer the questions:

1853. Napoleon III (emperor of France) served the King of Siam at a state banquet with plates and cutlery made of aluminium, then a rare and precious metal. Less important guests had to eat from plates of pure gold.



Napoleon III of France

1855. A bar of aluminium, the new precious metal, is exhibited at the Paris Exhibition.

1857. The famous British writer Charles Dickens wrote about aluminium:

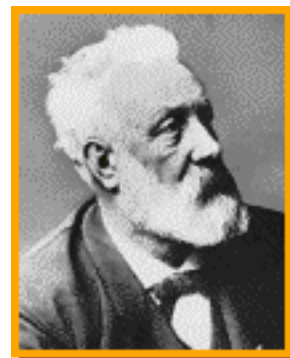
'Within the course of the last two years a treasure has been unearthed and brought to light ... what do you think of a metal as white as silver, as unalterable as gold, as easily melted as copper, as tough as iron, which is malleable, ductile, and with the singular quality of being lighter than glass? Such a metal does exist and that in considerable quantities on the surface of the globe.'



Charles Dickens

1865. The famous French writer Jules writes *From Earth to the Moon*. In the novel we can find this text about aluminium (the protagonists' space craft is to be fired from a giant gun and they decide there is one material which is perfect – aluminium):

'This valuable metal possesses the whiteness of silver, the indestructibility of gold, the tenacity of iron, the fusibility of copper, the lightness of glass. It is easily wrought, is very widely distributed, forming the base of most of the rocks, is three times lighter than iron, and seems to have been created for the express purpose of furnishing us with the material for our projectile.'



Jules Verne

1886. Héroult and Hall invent the electrolytic process. The price of aluminium drops and it starts to be produced for industrial purposes (source: www.world-aluminium.org)

- a) Why was aluminium more expensive than gold in 1853?
- b) Why did the price of the aluminium drop from 1886?
- c) Which element do you think is most abundant on earth, aluminium or gold?
- d) Fill in the chart with the statements of both writers.

	Dickens	Verne
Colour		
Does it rust?		
Can it be melted?		
Comparison with iron		
Is it abundant?		
Density (compared with...)		
Can it be easily shaped?		

- e) Decide which statements were false or exaggerated
- f) Who was more realistic in his statement, Dickens or Verne?