

Teacher modelled question

Copy the modelled answer down after watching the video

Poly(ethene) is a polymer made from ethene.

Poly(ethene) is used to make plastic bags.

Table 6 is from a life cycle assessment comparing paper bags and plastic bags.

Table 6

	Paper bag	Plastic bag
Raw material	Wood (renewable)	Oil or gas (non-renewable)
Energy used to make in MJ	1.7	1.5
Solid waste produced in g	50	14
Carbon dioxide produced in kg	0.23	0.53

Evaluate which type of bag is more environmentally friendly.

[6 marks]

Use data from **Table 6** and your own knowledge to support your answer.

Student question

Answer using the same approach as the teacher modelled question

	Glass milk bottle	Plastic milk bottle
Raw materials	Sand, limestone, salt	Crude oil
Bottle material	Soda-lime glass	HD poly(ethene)
Initial stage in production of bottle material	Limestone and salt used to produce sodium carbonate.	Production of naphtha fraction.
Maximum temperature in production process	1600 °C	850 °C
Number of times bottle can be used for milk	25	1
Size(s) of bottle	0.5 dm ³	0.5 dm ³ , 1 dm ³ , 2 dm ³ , 3 dm ³
Percentage (%) of recycled material used in new bottles	50 %	10 %

Evaluate the production and use of bottles made from soda-lime glass and those made from HD poly(ethene).

Use the information given and your knowledge and understanding to justify your choice of material for milk bottles.

[6 marks]