

Name: _____

Section: _____

Recycling Plastic - Density Problems



Recycling centers use density to help sort and identify different types of plastics so that they can be properly recycled. The table on the back shows common types of plastics, their recycling code, density, and uses. Refer to the table on the back to solve problems 1-4. Show your work!

1. A recycling center has a $125,000 \text{ cm}^3$ box filled with one type of plastic. When empty, the box had a mass of 10,755 grams. The full box has a mass of 130,800 grams.
 - a. What is the density of the plastic?

 - b. What type of plastic is in the box?

2. A truckload of soft drink bottles was finely shredded at a recycling center. The plastic shreds were placed into 55,000 milliliter drums. What is the mass of the plastic shreds inside one of the drums?

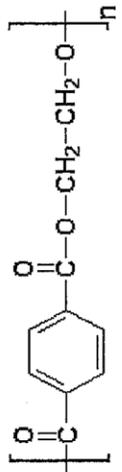
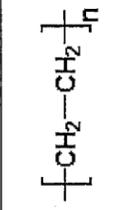
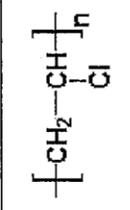
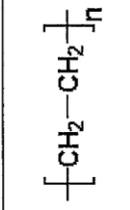
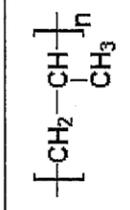
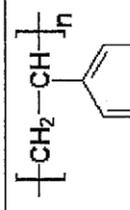
3. A recycling center has 100,000 grams of shredded shampoo bottles.
 - a. What volume is needed to hold this amount of shredded plastic?

 - b. How many 10,000 mL containers do they need to hold all of this plastic?

4. A solid will float in a liquid if it is less dense than the liquid, and sink if it is more dense than the liquid. If the density of seawater is 1.025 g/mL, which types of plastics would definitely float in seawater?

Symbol	Name	Product Examples

Plastics Information Sheet

Recycling Symbol	Name	Density (g/mL)	Monomer (base unit of the plastic polymer)	Product Examples	Recycled Products
	PETE Polyethylene Terephthalate	1.31		Soft drink bottles Food containers Rope Fabrics	Fiberfill in coats Carpet Camera film Lumber
	HDPE High Density Polyethylene	0.96		Milk jugs Grocery bags Toys Juice containers	Trash cans Floor tile Flower pots Garden furniture
	V Vinyl	1.40		Clear food packaging Shampoo bottles Credit cards Drainage pipes	Floor mats Flexible hoses Playground equipment
	LDPE Low Density Polyethylene	0.88		Bread bags Frozen food bags Grocery bags Container lids	Floor tile Furniture Garbage can liners
	PP Polypropylene	0.86		Food containers Medicine bottles Rope Wrapping films	Videocassette cases Lawn mower wheels Battery cables Landscape boarders
	PS Polystyrene	1.05		Compact Disc jackets Disposable utensils Foam cups Toys	Flower pots Trash cans Thermometers Rulers