**Chemicals in products**

One reason to study chemistry is that chemicals are all around us in everyday products.

Five examples of products are provided for you to examine:

Baking soda Pine-o-cleen Mr Muscle

Methylated spirits Toothpaste

For each product, fill in a row of the table below. An example has been provided for you. You might need to google each product to find some of the required details.

Add 3 products from home of your own choosing to this table.

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| --- | --- | --- | --- |
| Product name | Active ingredient, name and chemical formula | Amount per container | Role of active ingredient |
| Saline eye drops | Sodium chloride, NaCl | 0.9 mg L-1  10 mL container = 9mg | Kills germs in eye, lubricate surface of eye |
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**Questions**

1. Each 10 mL saline capsule contains 0.9 mg per mL of sodium chloride.

a. What is the chemical formula of sodium chloride? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. What mass of sodium chloride is in each capsule? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. Capsules are sold in packs of 5. What mass of sodium chloride is in a pack of saline?

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2. The sodium fluoride concentration in toothpaste is 0.22 % (w/w).

a. What is the chemical formula of sodium fluoride? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. What mass of sodium fluoride is in a 175 g tube of toothpaste?

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c. What mass of sodium is in a 175 g tube of toothpaste?

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3. The volume of ethanol in a 375 mL stubby of beer is 16 mL.

a. What is the percentage alcohol? (%v/v)

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b. A bottle of red wine contains 14 %(v/v) ethanol. What is the volume of ethanol in a 750 mL

bottle of wine?

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4. Dettol contains 48 mg/mL of chloroxylenol.

What mass of chloroxylenol is there in a 250 mL container of Dettol?

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5. Caltrate tablets are prescribed to prevent osteoporosis. A 250 mg tablet contains 190 mg of calcium carbonate.

a. What is the chemical formula of calcium carbonate? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. What is the percentage of each tablet that is calcium carbonate?

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c. What mass of calcium carbonate is required to make a pack of 60 caltrate tablets?

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6. Draino contains sodium silicate, sodium hydroxide and sodium silicate.

a. Write the chemical formulas of these three compounds. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. The sodium hydroxide concentration is 305 g/kg.

What mass of sodium hydroxide is required to make 600 g of Draino?

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