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Select Doser

Dosing Manual

Following are some worked examples to enable operators of the Select dosing system to prepare stock solutions and dose products accurately and easily.

Example 1

A powder product is to be dosed at a rate of **30**g product per **1000**kg bodyweight.

First –

Calculate the bodyweight of animals to be treated. If there are 100 pigs each weighing 20kg, the total weight is 100 x 20 = **2000**kg.

Second –

Calculate the amount of product to be used over the dosing period. If the dosing period is 4 hours, then in this case we should dose **2000** / **1000** x **30** = 60g over the 4 hour period. The dosing period can be any length of time as advised by the vet or on the product label.

Third –

Find how much water is drunk by the livestock over the dosing period. This can be measured by the water meter of the Select doser for the corresponding period the day before. For this example, there was 2,600 litres drunk over the same four hours the day before. We therefore have to dose 60g of product into 2,600 litres of water.
Decide what is a useful size of stock container. A 20 litre container is normally available.
The dosing ratio is a ratio between the amount of product compared with the amount of drinking water. In this case we have 20 litres of stock container capacity compared with an amount of 2,600 litres of drinking water. The dosing ratio that may be used is 2,600 / 20 = 130, or 1:130. In fact the ratio 1:130 is not normally offered as an option on the Select doser, so we normally go to the next highest ratio number. In this case this will be 1:200.

Fourth –

We calculate the exact amount of water to put into the stock container. We have decided to use a dosing ratio of 1:200. Divide the amount of drinking water by the ratio to get the amount of stock solution, so 2,600 / 200 = 13. We need 13 litres of water in the stock container.

Operation –

Put 13 litres of water into the stock container.
Mix the 60g of powder product into the water in the stock container.
Set the Select doser to use a ratio of 1:200.
Follow on-screen instructions as normal.
The stock liquid containing the powder product will be dosed over the 4 hour dosing period. If there is significantly more or less water drunk compared with the day before, the time taken to dose the stock solution may be faster or slower than expected.

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Water recording -
If no water record is available from the day before, it is possible to make an estimate of the water that will be consumed by livestock over the dosing period (or use the Logger).
On the screen of the Select doser the water flow in litres per hour is displayed. The flow rate multiplied by the dosing period will give the amount of water consumed over the dosing period. (This assumes that the flow rate does not go up or down significantly over the dosing period.) So if the flow rate is shown as **650**H, the flow rate is **650** litres per hour. If we want to dose product over 10 hours (a 10 hour dosing period), the amount of water that will be consumed is **650** x 10 = 6500 litres. This figure can be used in the Example 1 above, Section Three.

Example 2

A liquid product is to be dosed at a rate of 1ml to 5 litres of drinking water.
This is the simplest form of dosing regime for the Select doser. Generally it is not necessary and not advisable to make up a stock solution before dosing.
An amount of 1ml of product to 5 litres of drinking water is the same as saying 1ml of product to 5000ml of drinking water. This is a ratio of 1:5000.
Operation:
Set the Select doser to dose at a ratio of 1:5000.
Place the inlet tube to the Select doser directly into the product container.
Commence dosing as normal.

Example 3

Another powder example
Many vitamin powders are recommended to be dosed at a rate of 1 sachet (150g) of product to 200 litres of water for 3 to 5 days with fresh product being provided daily to preserve the potency of the vitamins.
From the water meter on the Select doser, it should be known what the daily water consumption of the poultry house (for example) is. The dosing period is one day as we will want to prepare enough stock solution to last for a complete day. The calculations are similar to Example 1.
Calculate the amount of product needed. If the daily water consumption is 3800 litres, and we need 1 sachet for each 200 litres, we need 3800 / 200 = 19 sachets of product.
You will need to consider how soluble the vitamin powder will be in the stock water. It may be necessary to use a slightly larger stock container to allow enough water for the powder to go into solution. You could also consider using a stirring device such as the Spinstir from Cambridge Agricultural to ensure that the powder remained in suspension in the stock container until dosed into the water line. For this example we will use a 40 litre stock container.

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Select a useful dosing ratio – calculate this by dividing the water consumption by the amount of stock liquid. Therefore the ratio is 3800 / 40 = 95. There is not normally a dosing ratio of 1:95 offered on the Select doser so go to the next higher available number which is 1:100. We will dose at 1:100.
Calculate the amount of water to put into the stock container. Divide the water consumption by the ratio being used – 3800 / 100 = 38 litres. No more calculations are necessary.
Operation:
Put 38 litres of water into the stock container.
Mix the 19 sachets of product into the stock water.
Set the Select doser to operate at a ratio of 1:100.
Commence dosing as normal.
The stock solution will be dosed over the complete dosing period (1 day in this example).

Example 4

Treating drinking water with a chlorine product
Chlorine products do not generally have 100% chlorine activity, this needs to be taken into account when calculating how much product to add to the stock container.
We will assume that all water used on a farm is to be treated, and that a new stock solution is prepared daily. We will aim to include 5ppm chlorine into the drinking water.
If:

Daily water consumption is **100,000** litres
We set the Select doser to dose at 1:**5000** (normal for water treatment activity)
5ppm chlorine needed in the drinking water.
The chlorine product has **65%** activity (usual for calcium hypochlorite)

First -
Calculate the volume of water to put into the stock container (a sealed dosing container as supplied by Cambridge Agricultural distributors is recommended):

$$\text{Volume of stock water (litres)} = \frac{\text{daily water consumption (litres)}}{\text{Select doser ratio}}$$

$$= \frac{100{,}000}{5000} = 20 \text{ litres}$$

Therefore in this example put **20** litres of water into the stock container.
Second –
Calculate the amount of product to be put into the stock water:

$$\text{Weight of product (g)} = \frac{\text{daily water consumption (l)} \times \text{ppm required} \times 100}{1000 \times \text{product activity (\%)}}$$

$$= \frac{100{,}000 \times 5 \times 100}{1000 \times 65} = 769 \text{ g}$$

Therefore mix 769g of the chlorine product into the **20** litres of water in the stock container.
Operation:
Commence dosing as normal with the Select doser set at a ratio of 1:5000. The stock container will be used over the full day.

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Note:
In this example 769g of product is used per 20 litres of stock solution, or 38g per litre. If there is no change made to three factors; Select dosing ratio, product activity, or the ppm concentration of chlorine required in the drinking water, it can be assumed that a stock solution made up of 38g of product per litre of stock water will give an accurate result. If any of these factors are changed, a new calculation should be made of the amount of stock water and the amount of product required.

Note:
The following are useful formulae:

Quantity of drinking water used (litres) = amount of stock solution that will be used (l)
Select dosing ratio

Stock solution volume (l) x Select doing ratio = amount of drinking water that can be dosed.

Amount of drinking water used in dosing period = Select dosing ratio required
Amount of stock solution