SIGNATAC II™
Application Notes

This is not an exact science but certain ranges/tolerances must be met to ensure a successful application. Approximations and estimates are the only field calculations available. As a rule of thumb, if you over estimate one area, under estimate the other to balance it all out. If in doubt though, over estimate.

1. **Transfer into Applicator Vehicle**

   Assuming you are totes, the best and fastest method to transfer the bulk material into the water truck or tanker is through gravity. The totes have a spout located on the bottom of the tank with manual shut-off ball valve. They also come with a plastic elbow to direct the outflow into the tank. In order to raise the tote above the tanker, the easiest method is to use a forklift. You need a forklift anyway to offload the totes from the shipper and the time it saves justifies the rental costs.

   If you do not have a forklift – you need a transfer pump. Make sure it is self-powered and comes with enough hose and head to lift it to the tank. By the time you buy the pump and fittings you will wish you had the forklift.

2. **Application Rates**

   Not only is the water-to-snot ratio important, the application rate or how many liters of snot per square meter of surface is important, too. In all cases you want to saturate the ground – the easiest way to verify that is to drive or spray the application so that there are standing pools of mix on the ground – enough to show that the initial layer has been absorbed by the soil.

Using EP&A's application rate guides, they further define ranges of application. Pick a value in the middle. For a heavy haul road, the recommended rate is 0.59 – 0.88 sqm/liter. That means one liter of undiluted snot can cover around 0.7 sq meters (of course you mix the liter with 4 liters of water – so you are going to dump around 5 liters of liquid for every 0.7 sqm of area. The inverse of that – undiluted snot per sqm – is 1.42 liter/sqm.

3. Tanker volume measurements.

Most tanker trucks do not have application rate meters – you will be lucky to have a level gauge. Tanker volumes are also notoriously inaccurate. If you can measure your water at the source with a flow meter – use it! Otherwise you will have to estimate – hence the range of application rates.

Fortunately you will never fill the tanker up to its complete volume. A 250 Gal tote mixed with 4:1 water has a liquid volume of 1250 Gal. A mixture of 8:1 yields 2,250 Gal – enough to put into a standard 3000 gallon tanker. Try your best not to use fractional totes – it gets messy. For a 3000 gal tanker – do not fill more than 2,250 gallons – at 2,500 gallons the mixtures sloshes around and you lose a lot.

With the tanker empty (or as close to empty as it will get) fill the tanker based on the gauge (assuming it has a volume gauge). If no gauge, you will have to dip stick it. Measure the inside dimensions of the tank from the bottom to the top. Depending on the tank size (say 3000 gallons) – divide the stick or count of the inches/cm to get to the fractional amount of water needed (not snot). A 4:1 application needs 1000 gal of water – so in a 3000 gal tanker, divide the height of the tank by 1/3. Fill the water to that level then add the tote contents. You will have a 4:1 mix that is close enough.

4. Rate calibration.

Most likely you will apply the mixture using the gravity bar in the back of the truck. The only control is an on/off valve so the only way to vary the application rate is change the speed of the tanker. To determine how fast (or slow) you need to go – do a test run over a known surface

using set amount of water (no snot added). The best way to do this is to take the empty tanker – the same one you will use for application – and fill it with an exact amount of water – use barrels or buckets or an empty tote (which you will not have at this point).

Your tanker will need a spotter with the driver and a spotter at the gravity bar to ensure the rate is ok (and when you start to run out). The driver spotter should be alert to any signs to speed up or slow down as the driver should be watching ahead and trying to maintain a constant speed. Speedometers do not work well in ranges less than 5 mph so all you will see is a bouncy needle. Visual review of the application by the rear spotter is essentially the only way to keep the application rate in order.

Method 1. Put 250 gallons (960 liters) of water in the tanker. Based on an application rate of 0.7 sq meters per liter, you should be able to cover 672 sq meters. Measure the width of the gravity bar (say it measures out at 3 meters) – you should be able to drive 224 meters before you run out of water. The rear spotter should see how much standing water is available based on the soil conditions. The driver and front spotter should be sensitive to the perceived speed as the speedometer will be unreliable. If the tanker gets to the end with extra water, re-apply until you run out of water. This is the level of saturation you need to be aware of.

Method 2. Measure out 672 sq meters. Fill the tanker with 250 gallons of water. Apply until the area is covered and you run out of water. This may mean multiple passes of the same area until you run out of water.

5. **Roads Building**

Roads fail for two main reasons – their sub-base did not meet the design load and erosion of the sub-base by water or wind. In short, you need a good sub-base and drainage otherwise the best lain road will fail. There is no free lunch using Signatac II – you have to have a good sub-base and drainage. What you save is the time, money and hassle of using hot pack asphalt. You still prep, compact and grade.

6. **Sub-base.**

Assuming you are repairing or replacing an existing road, there is probably a sub-base. It might not be much of a sub-base but it is there. Depending on site conditions it may be compacted soil or rolled getch with a layer of sand. If the sub-base is unstable, remove the wear course (it is probably not in a good shape to begin with). Scarify the sub-base and apply an 8:1 (water to snot) mixture at 0.5 sqm per undiluted liter (yes – it is a lot of liquid). Compact the sub-base to 95%. Once cured for 24 hours, reapply fresh wear course (4”-6”)

7. **Wear Course.**

The new wear course should be scarified and have enough volume that when finally compacted will match the drainage profile. New material may be required in order meet the final elevations. Assuming enough material is in place:

For heavy organic soil:

a. Scarify the soil up to 6 inches.
b. Apply a 4:1 water to snot mix and apply at 0.7 sqm per undiluted liter. Let dry.
c. Re-scarify/till treated soil mix.
d. Apply a 4:1 water to snot mix and apply at 0.7 sqm per undiluted liter. Let dry.
e. Grade to profile and compact to 95%
f. Apply a 4:1 water to snot mix and apply at 0.7 sqm per undiluted liter. Let dry.

For sandy soils:

a. Scarify soil up to 6 inches.
b. Compact to 95%.
c. Apply a 4:1 water to snot mix and apply at 0.7 sqm per undiluted liter. Let dry.
d. Apply a 4:1 water to snot mix and apply at 0.7 sqm per undiluted liter. Let dry.

8. Cracking.

Cracking occurs when the mixture dries too quickly. Unlike concrete, you should not apply more water during the curing phase. If the weather is very hot and dry, additional application may be required to overcome the evaporation rate. The cracking is superficial only – as long as the bulk of material has penetrated the soil. A final cap may be applied to seal the layer after 24 hours of curing.