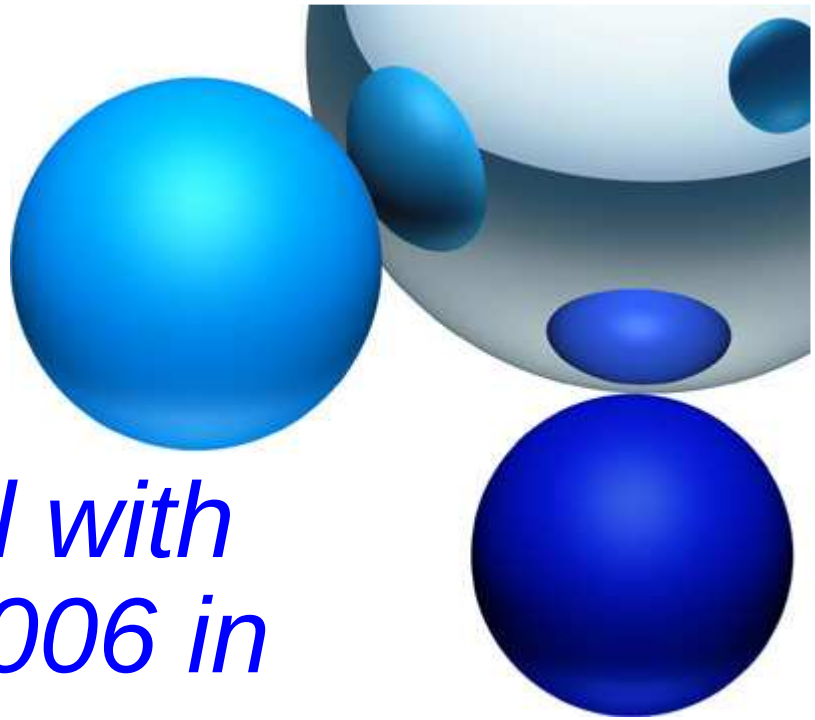

Crumbed Rubber trial with Sasobit – 21-22/11/2006 in Newcastle

Objective : To pave with 2 - 2.5% crumbed rubber content in the asphalt, achieve all normal asphalt specifications and reduce the fumes to a minimum.

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The problem

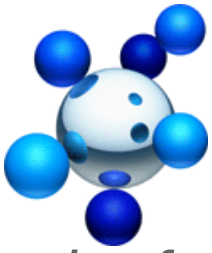
At normal mixing temperatures of 170-180 ^{o}C working with crumbed rubber causes excessive fuming.

This means the asphalt must be potentially be produced outside of suburban areas, paving of the asphalt needs to be done with appropriate PPE and a very negative perception is formed by the public passing by.

Any drop in paving temperature also leads to potential non-conformance of the asphalt to the normal specification limits such as compaction.

It can also lead to very difficult paving conditions for the crew and thus non-achievement of normal paving performance

The trial



Two sections of road to be paved – each 200 tons worth of asphalt. The layer thickness was 35 mm and the ambient temperature of approximately 25^{o}C with very little wind at the plant and at the paving site.

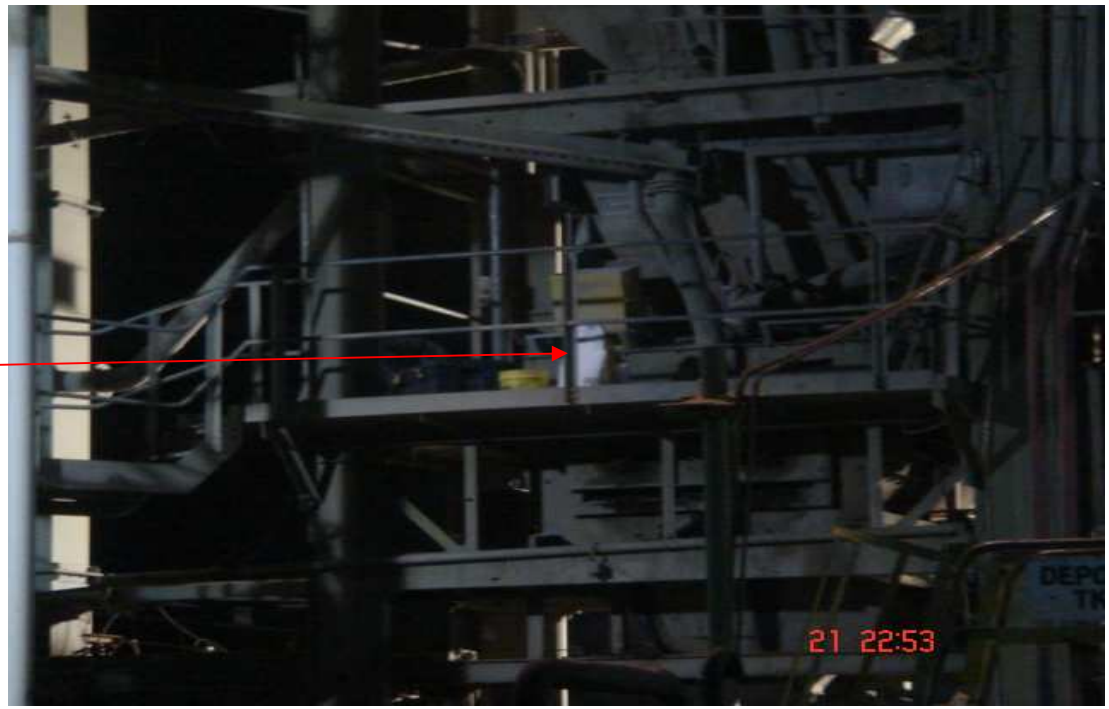
One side of the road was to be produced at normal operating temperatures (170^{o}C) without Sasobit added. Fuming at the plant and at the paving site to be monitored and visually inspected.

The second side of the road was produced at lower operating temperatures (150^{o}C). Again fuming at the plant and the paving site to be monitored and visually observed.

Sasobit addition

The Sasobit was added to the pug mill. As there were other works being carried out on the same night it was not feasible to add it into the binder tank. The addition rate was at 1% of the binder content which was at 8.0% of the total mix.

Sasobit addition point



Operating conditions at the plant

No problems were found in the manufacture of the crumbed rubber formulations with and without Sasobit. In each case a degree of fumes were observed but the lower operating temperatures of the plant when using the Sasobit saw a marked decrease in the amount of fumes generated.

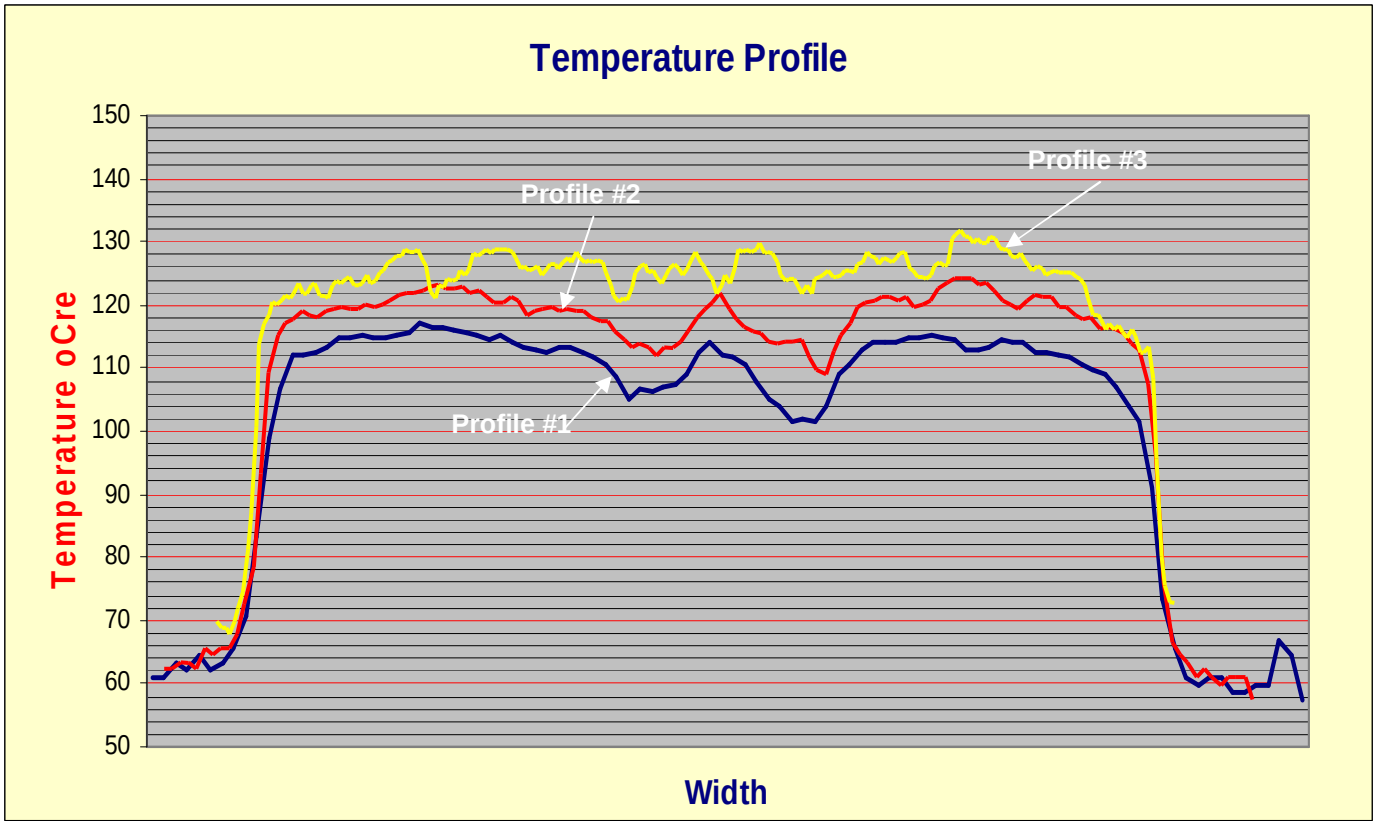
With Sasobit : Picture 023.mpg

Without Sasobit :Picture 020.mpg

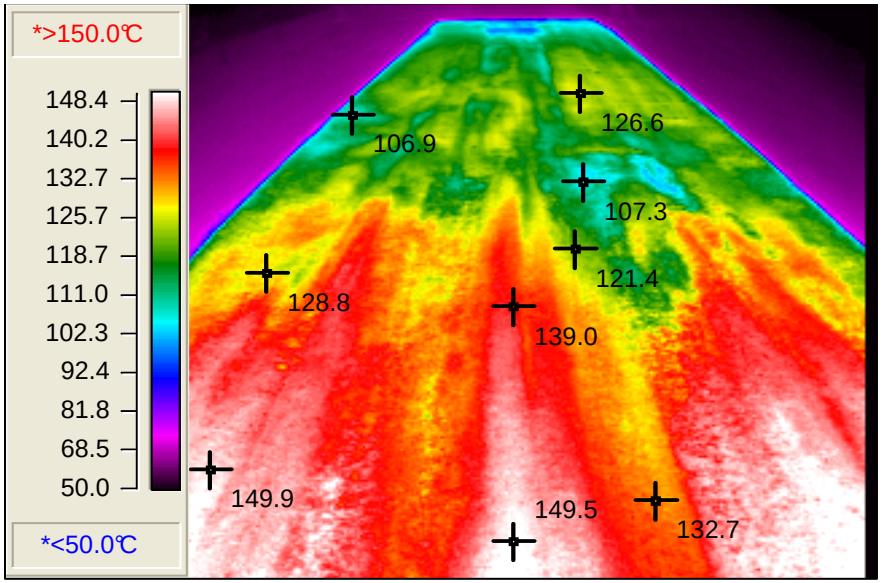
Paving operations – First section with higher temperatures

No problems were experienced when paving with this layer. Average temperatures in the paver ranged between 73°C and 188°C. Fuming was higher the higher the temperature

Temperature profile of road immediately after paving



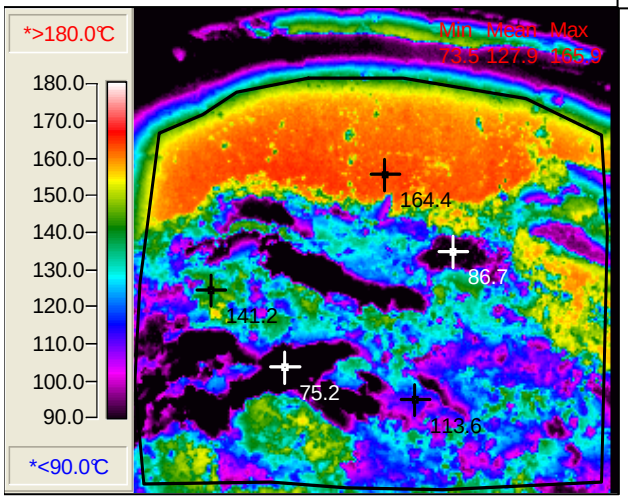
Temperature profile of road from back of paver



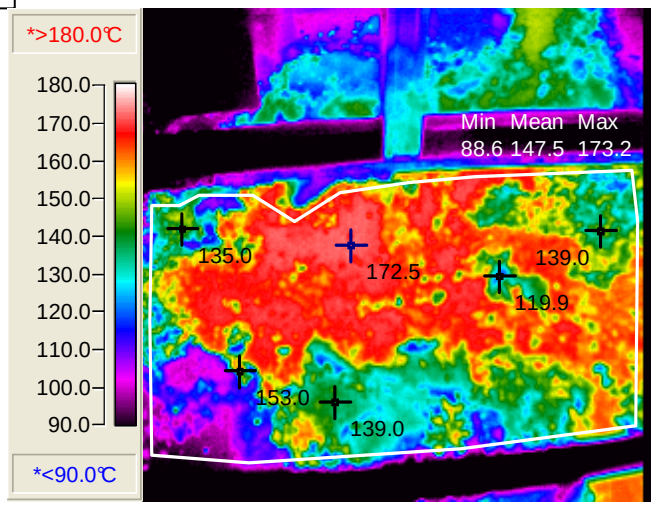
Typical temperature readings from truck's

Truck	Min Time:	Mean	Max
#10	96.50 20:36:07	156.60	184.90
	96.00 20:36:14	158.50	184.30
	91.20 20:36:26	153.10	180.70
	88.60 20:36:35	161.10	185.60

Temperature profile of asphalt truck 1



Temperature profile of asphalt truck



Paving operations – first section with high temperatures

The higher the temperature was the more the fumes were evident. Fuming was easily seen and easily smelt although it was still possible to pave under these conditions.

First section fuming :

Picture 026.mpg;

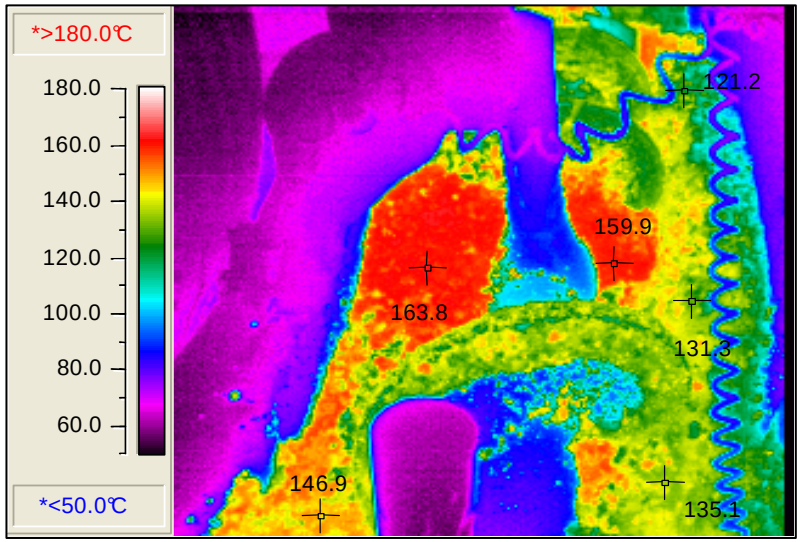
Picture 027.mpg

Paving operations – Second section with high temperatures

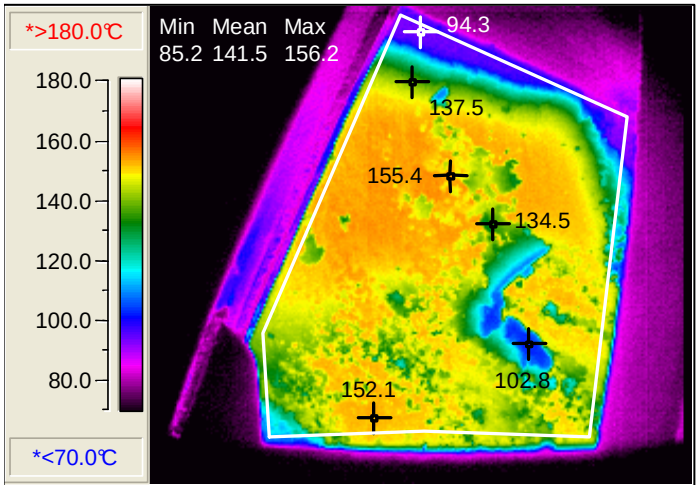
No problems were experienced when paving with this layer. Average temperatures in the paver ranged between 56°C and 166°C. Fuming was minimal throughout this section of the trial.

Truck	Min	Mean	Max	Time:
#1	83.20	148.80	166.90	21:39:27
	90.90	151.20	166.90	21:39:34
	56.70	123.50	160.30	21:40:07
	65.70	116.60	161.10	21:44:32

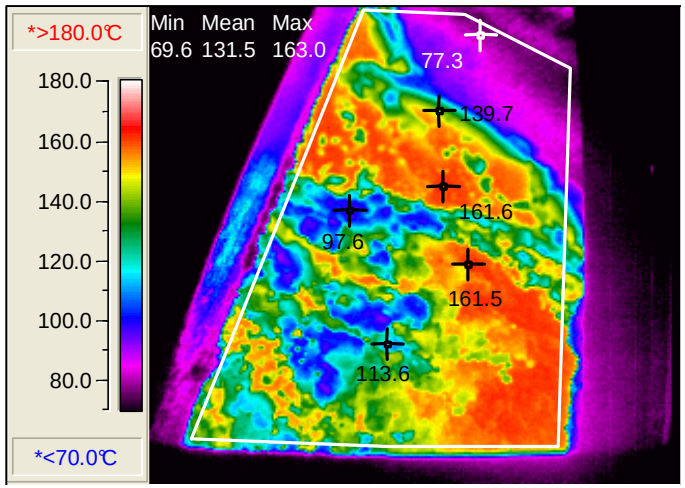
Temperature profile of auger at paver



Temperature profile of asphalt truck 6



Temperature profile of asphalt truck 4



Paving operations – Second section with lower temperatures

With the lower temperatures very little fuming was visible. There was a marked difference in the fuming between the two temperature runs but there was no difference in the normal paving operations.

Second section fuming :

Picture 025.mpg ;

Picture 024.mpg

Conclusion

Using Sasobit to reduce the operating and paving temperatures of crumbed rubber asphalt greatly reduces the fuming at the operating plant as well as at the paving site with no effect on paving efficiencies or performance.