

Appendix A. Benefit analysis TonerPave

Downer Infrastructure has indicated that adding 0.5% MTP (Modified Toner Powder) to an asphalt mixture (TonerPave™) reduces bitumen content by 0.3% and filler by 0.2%. Energetics has analysed the net impact of the addition of MTP under this scenario. Our analysis takes into account:

- Production of 1 tonne of MTP
- Replacement of 600 kg of bitumen
- Replacement of 400 kg of filler
- Additional natural gas usage at Somerton associated with the above change in mix composition.

As shown in Figure 4, the key benefit from adding MTP to asphalt is found in the substitution of bitumen. The overall net benefit is 0.27 t CO₂e per tonne of MTP that is added. This result is heavily influenced by the data for MTP¹ and the data for bitumen (Australian data from SimaPro database).

Due to the very low embodied emissions associated with filler production and delivery, the benefits from substitution of filler are almost negligible. The additional gas usage at the Somerton plant from substituting bitumen and filler for MTP is minimal.

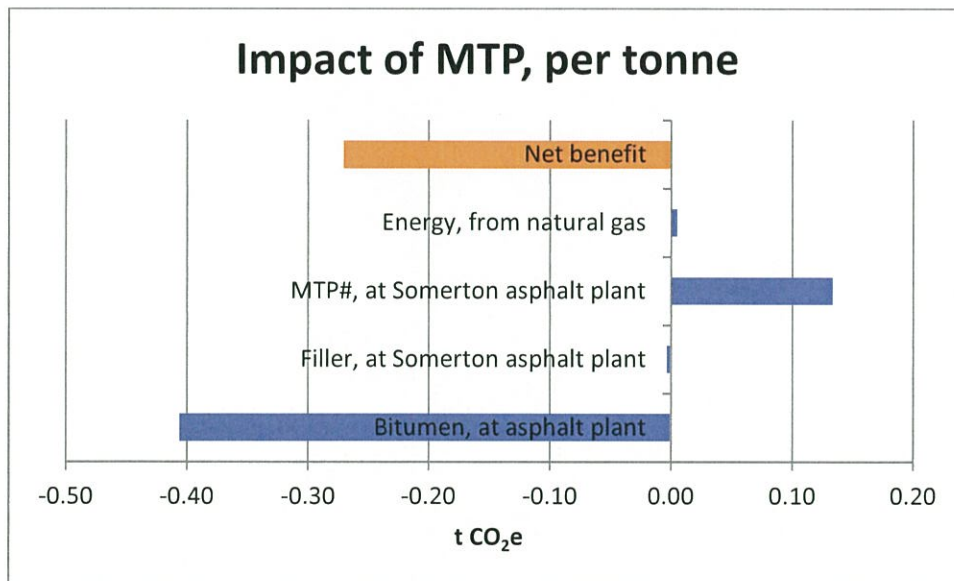


Figure 4. Impacts of using 1 tonne of MTP, replacing bitumen and filler

¹ MTP carbon footprint data have been based on "Streamlined Carbon Footprint of Close the Loop Low Carbon Modified Toner Products", October 2013. After reviewing the original source data on re-refined oil, Energetics estimates the footprint of MTP at 133 kg CO₂e per tonne of MTP.