

Technical Data

Change in form of products

Original MacRebur products

The original MacRebur product, MR6, was developed in a pelletised form. This included melting, extruding and cutting of the recycled plastic. This produced dense pellets with homogenous colour, as shown below. The density of the pellets was determined to optimise the international shipping costs, which are based on the worse case of volume and weight. By adjusting the packed density, the volume and weight based shipping costs are equal, which is optimally efficient.



When MacRebur MR10 was then developed, it was produced in an identical pelletised form for the same reasons. In contrast, MR 8 was developed as a flaked product, as shown below, to provide the most economical bitumen extender possible.



Pellet digestion

During some field trials and laboratory testing, it was observed that some pellets were not completely dissolved

into the bitumen phase of the asphalt mixture. To address this, alternate forms of MacRebur products were investigated and shredded versions were found to be preferable.

Shredded MacRebur products

To increase the ability of MacRebur products to digest into the bitumen phase during asphalt production, shredded forms of MR6 and MR8 were developed, as shown below, which is an example of MR6. MR10 did not change form, due to the more complex chemical composition requiring melting and extrusion to achieve the desired effects.



The shredded form of MR6 and MR 8 are not melted, extruded and cut into pellets, meaning they have:

- Reduced bulk density. Around 80% of the pellet density for MR6 and around 95% of the flake density for MR8.
- Greater surface area. Around 6 times the surface area for MR6 and around 3 times the surface area for MR8.

The reduced density increases the rate of heat transfer during mixing, meaning the MacRebur products reach their melting temperature more quickly. The greater surface area increases the interaction between the bitumen phase and the shredded MacRebur products, increasing the efficiency of the distribution of the product and the rate at which the product dissolves into the bitumen phase. Importantly, the shredded MacRebur products are chemically identical to the original pelletised versions, meaning the effects are the same, but the efficiency of the products is increased.