



Safer
Sustainable
Solutions

REUSING ONE OF OUR MOST VALUABLE ASSETS — RAP



The Golden Highway which was rehabilitated using asphalt with 25% RAP



Asphalt is 100% reusable which means that at the end of its service life it can be reused to produce new asphalt. Reclaimed Asphalt Pavement should not be considered as a waste but an engineered product. Therefore RAP should not be disposed of but reused in the production of new asphalt.

“Trade in your old asphalt pavement for a new one.”

The aggregate in the RAP was produced to a specification. Through milling and reprocessing it can be reused to produce new asphalt. The bitumen in the RAP would have undergone hardening mainly through oxidation during its service life but by reheating the RAP it will come along with virgin bitumen making it suitable for reuse.

The practice of reusing RAP is a well proven technology, incorporated in specifications across the world and offers the following benefits to road asset owners and society:



By reusing RAP we will **help preserve our scarce non-renewable raw materials** like bitumen and high-quality aggregates for future generations and keep RAP out of landfills.



By reusing existing raw materials we **reduce the energy and green house gas emissions** generated during the extraction and processing required in the production of virgin materials.



The **value of RAP is in the new materials it replaces** – bitumen and aggregates. This does not only include the cost of producing these materials but also the transport and heating less the cost of processing the RAP. The best economical return on RAP is to reuse it in asphalt and not use it for a low value material in other applications.



Can **improve the performance of the asphalt** in-service because:

- the aged binder in the RAP helps stiffen the asphalt so it can withstand rutting under heavy traffic at high road surface temperatures.
- The RAP aggregate is precoated with the aged binder so it makes the asphalt less sensitive to the binder stripping from the aggregate due to moisture.

“By reusing RAP you will help ensure that asphalt remains economical. It’s your hedge against inflation.”

WHAT IS RAP?

RAP can also be known by various names such as Recovered Pavement Material or Recycled Asphalt. RAP can be sourced from old asphalt in existing pavements, returned new asphalt from job sites, plant waste generated at startups or end of production runs. RAP is normally recovered during milling operations when removing an old asphalt layer, cutting keys for overlaying an existing asphalt surface, milling out cracked or damaged asphalt during road maintenance or new asphalt from temporary ramps built during construction.

During the profiling of RAP it is critical not to contaminate the RAP with the granular base course so it can be reused. This might mean double profiling the existing asphalt surface to ensure that it is reusable.



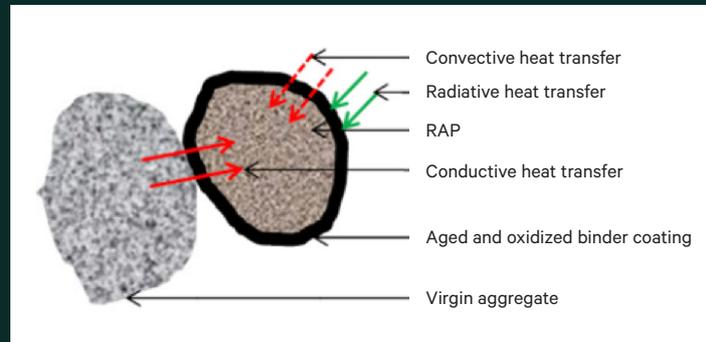
Screening RAP into different fractions

MAKING ASPHALT MORE SUSTAINABLE

During the manufacture of the new asphalt the heat from the superheated virgin aggregates transfers to the RAP reactivating the aged binder. Most of the COLAS plants use bitumen foaming systems to improve the coating of RAP and the virgin aggregates during plant mixing and to help improve the workability of the asphalt during placement. The use of the foam bitumen systems also helps reduce the mixing temperature of our asphalt which is a win-win for the environment.

RAP can be used in conjunction with other secondary waste materials like recycled crushed glass, steel slag, fly ash and crumb rubber from old tyres to reduce the demand for virgin materials to produce new asphalt without compromising the overall performance of the asphalt.

At COLAS we are RAP'd about making our asphalt more sustainable.



Schematic showing the heat transfer between the virgin aggregate and RAP

HOW MUCH RAP CAN BE REUSED?

The use of RAP must not compromise the quality or performance of the new asphalt that is produced. The amount of RAP that can be reused will depend mainly on the following factors, namely:

- The availability of suitable RAP for reuse;
- The capability of the asphalt plant to reuse RAP;
- The type of mix and/or binder type used in the new asphalt.

The incorporation of up to 15% RAP in dense graded asphalt will have little or no influence on the performance properties of the mixes. The maximum % that can be used will be influenced mainly by the above factors.

At COLAS we strive to optimize the amount the RAP we use in our mixes so that we achieve the same if not more improved performance of our mixes. To do this we monitor the:

- quality of our processed RAP on an ongoing basis by measuring binder and moisture contents, gradings and recovered properties of the aged binder;
- conduct laboratory-based performance tests on our mixes like tensile stress ratios, wheel tracking, fatigue and modulus

For further information

Centre State Asphalting

3 Lewis Drive,
Castlemaine, VIC 3450

T: +61 3 5470 5028

E: info@primalsurfacing.com.au

Topcoat Asphalt

50-54 Millers Road,
Wingfield, SA 5013

T: +61 8 8347 2030

E: asphalt@topcoat.com.au

COLAS NSW

12 Grand Avenue,
Camellia, NSW 2142

T: +61 2 9624 0102

E: info.nsw@colas.com.au

COLAS QLD

Level 1, Building 2, 747 Lytton Road,
Murarrie, QLD 4172

T: +61 7 4191 2900

E: info.qld@colas.com.au

The material in this brochure is for information purposes only. COLAS does not guarantee that the information is complete or correct and does not accept any responsibility for loss or damage suffered by any person or body relying on any information contained. This brochure does not constitute advice and COLAS does not accept any liability for any decisions made on the basis. COLAS urges you to obtain your own advice with any selection or application of our products covered in this brochure.

