Technical Data Sheet No.10

Retread and Regen

Revised by the Association's Technical Committee - August 2025

1. Introduction

There are many coated macadam, grouted, and surface dressed roads which, although the foundations are sound, have become cracked, crazed and deformed. These defects may be corrected by superimposing an overlay of new macadam or by replacing the existing surfacing. Both these methods are costly and in the case of an overlay there is the extra expense of raising footway and kerb levels.

However, as the deterioration of the existing aggregate is normally negligible it can be recoated by the Retread or Regen processes to reshape and restore a skid resistant surface. These processes are established forms of recycling road pavements and unlike many more recent concepts does not require the use of heat. It may be equally effective on water-bound, dry-bound, bitumen or tar-bound surfaces. These techniques offer the opportunity of improving the shape and camber and thereby the drainage of the road. It is possible that the processing will uncover tar-bound material and this will need to be dealt with in the appropriate manner with due consideration for the Health and Safety issues.

2. Application

The process consists of scarifying the old road to a suitable depth, breaking down the scarified material to the required size and reshaping. This is then mixed with a selected class of emulsion by spraying, followed by harrowing and rolling. Additives such as Portland Cement complying with the relevant British Standard e.g. Portland Cement to BS EN 197-1 [1] can be introduced to improve stiffness and curing times. Finally, the road is normally surface dressed. Specific guidance for the Retread and Regen processes can be found in BS 9228 [2].

The process is carried out in the following stages:

1. The existing road surface is broken up to a depth of upto 150mm. This material is then harrowed and rolled until it is reduced to a suitable grading containing no material over 75 mm in size. If the grading is deficient, new aggregate of one or more sizes is added to correct the grading of the existing surfacing. The surface is then reshaped to the required profile using an approved grader.

2. Depending on the grading and type of surface to be treated, bitumen emulsion to BS EN 13808 [3] is applied by a bulk distributor. After each application except the last, harrows are traversed to turn the stone and to distribute the emulsion evenly.

3. If necessary, the road is reshaped with a grader and then rolled preferably, with an 8 to 10 tonne deadweight roller. The surface voids are filled with 6/14mm chippings, applied at an appropriate rate and rolled.

4. The surface should then be sealed by applying bitumen emulsion to BS EN 13808 class C60B3 or C69B3 or similar polymer modified grade at a rate of 0.9 to 1.2 l/m^2 and according to the texture blinded with 2/6 mm or 4/10 mm chippings. The surface is then rolled.

5. After a period which may vary from a few days to three months depending on weather conditions, traffic etc., the treated surface should be surface dressed with bitumen emulsion to BS EN 13808 class C60B3 or C69B3 or similar polymer modified emulsions using 2/6 mm or 4/10 mm chippings. Depending on the road category the rate of application of the emulsion should be increased by approximately 0.2 l/m^2 over the appropriate recommendation for hard surfaces in TRL Road Note 39 [4]. Alternatively, a slurry surfacing or bituminous wearing course may be applied.

3. UKCA/CE marking

At the end of June 2013, the Construction Products Regulation (CPR) was fully implemented in all EU member states. Since then, Construction products covered by a harmonised European standard (EN) have a legal requirement to be CE marked in order to place them on the European market. The UK withdrew from the European Union in January 2020 and in January 2021 introduced its own UKCA mark. A transition period for implementation of the UKCA mark was introduced but this period has been extended indefinitely meaning that both CE and UKCA Marking can continue to be used.

References

[1] BS EN 197-1:2011 Cement. Composition, specifications and conformity criteria for common cements

[2] BS 9228:2021 Recycling of roads and other paved areas using bitumen emulsion, foamed bitumen or hydraulic material. Materials, production, installation and product type testing. Specification. Specification for materials, production, installation and product type testing

[3] BS EN 13808:2013 Bitumen and bituminous binders – Framework for specifying cationic bituminous emulsions

[4] Road Note 39: Design Guide for Road Surface Dressing – published by Transport Research Laboratory

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