SECTION 91-BITUMEN, TAR, AND ROAD OIL

2109. Nomenclature. Confusion arises from differences in the meaning of terms as used in UK and USA. These are set out in Table 21.1. In this book, terms are used in the British sense.

TABLE: 21.1 BRITISH AND AMERICAN NOMENCLATURES OF BITUMINOUS MATERIALS

Serial no	British term	American Term	Definition
(a)	(b)	(c)	(d)
1	Bitumen	Asphalt	A by product of the distillation of petrofeum. Also found naturally
2	Asphalt	No, dixture of serial No. 1 and maine.	Amixture of serial No I and mine. Ral matter
3	No direct synonym	Bitumen	Includes both serial No. I and tar

Bitumen

2110. Bitumen is found naturally, in combination with mineral matter, in the form of rock asphalt or lake asphalt. It is more commonly produced as a by-product from the distillation of petroleum. It can be used as a binder in the forms described in pares 477 to 479.

2111. Straight – run-bitumen. This is the residue after distillation. The particular grade is designated by its bareness, measured by the degree of penetration by a standard needle under standard conditions. The smaller the index Figures the harder the bitumen.

2112. Cut-back bitumen - This consists of straight-run bitumen which has had its viscosity reduced by the addition of a suitable volatile distillate. The type of distillate varies according to the curing or setting rate required. Grades of cut-back bitumen are designated as follows:

a. UK grades: - UK grades are medium curing, and are classified by viscosity measured on the
standard tar viscometer, e.g. 20/30 second at 40°C, or 50/- 100 seconds at 25° C.

b. USA grade: - These are divided into these ranges according to state of cure of set i.e., rapid Curing (RC) ;medium curing (MC); and slow curing (SC) . Each range comprised six grades, numbered 0 to 5 in order of increasing viscosity.

The interrelation of British and American grades is shown in Table 21.2.

2113. Bitumen emulsion. - These consist of fine dispersions of tiny globules of bitumen in water. An emulsifying agent is used to keep the bitumen in a state of dispersion. After application of the emulsion the water is lost, and a continuous film of bitumen is deposited: this is called breaking. Only after breaking does the bitumen set, and act as a binder. Emulsions are produced in three classes according to their behavior in use: -

a. Class 1. Labile (quick breaking).
b. Class2. Semi-stable (medium breaking).
c. Class 3. Stable (slow breaking).

Each class may be obtained with varying percentages of bitumen content

Road Tar

2114. The solid residue from the distillation of crude tar is a very hard base tar (pitch). Road tars are produced by blending this residue with different grades of oil distillate, is the same way as in the production of cut-back bitumen.

2115. In the UK, road tar is supplied in three types: -

Type A (rapid curing)	= Base tar + light oil
Type B (medium curing)	= Base tar + medium oil
Type C (slow curing)	= Base tar + Heavy oil

In the USA, all road tars manufactured are of the rapid curing type.

2116. Various grades are available in each type, depending on the proportions of pitch and distillate. Grades are designated by viscosity, in terms of equip-viscous temperature (EVT), which is the temperature in °C at which the time of flow in the standard tar viscometer is 50 second, eg, road tar type A 30° C EVT.

Road Oils

2117. Road oils are cut-back bitumen with a high percentage of diesel or heavy type oil. Examples are waterproofing oil and special road oil (SRO). the latter contains a reagent and is designed for use, unheated. With cold, damp aggregate, viscosity ranges available are 15/25 and 40/50 seconds at 25°C

Applications

2118. The classification of the various types and grades of British and US binders, with a guide to their uses, is set out in able 21.2.