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## Verification Of Binder Spread Rate for Insitu Stabilisation

### 1 SCOPE

This test method sets out the procedure for determining the spread rate of a binder for an insitu stabilised pavement using either the calibrated load cells on the spreader, or three trays or a mat placed on the surface prior to spreading. This procedure is only applicable where the binder is spread by means of a mechanical spreader and the spread rate is specified in kg/m<sup>2</sup>.

The number of samples taken per day or project size is determined by the Project Manager and set in the contract documents, or otherwise, by the contractor's quality system manual.

When using lime the design spread rate must be adjusted to allow for the equivalent calcium oxide content in the lime.

### 2 APPARATUS

When using the spreader vehicle to verify spread rate the calibrated electronic load cells shall have a readout in kg. The length of the spread run shall be measured by a calibrated walking wheel, surveying equipment, odometer or other measurement device with a readout to 1 m. If trays or mats are used a balance is required with a 30 kg capacity accurate and readable to 0.1 kg within the operating range.

When measuring spread rate using trays three galvanised iron trays are required with internal measurements 1 m x 0.33 m with sides minimum 40 mm high.

For mats, the mat size shall be 1 m by 1 m, with eyelets at each corner.

### 3 PROCEDURE

#### 3.1 Load Cells

The operator shall take an initial reading of the load cell at the commencement of spreading. At the end of the spread run a final reading of the load cell shall be taken. The length of run shall also be determined by the apparatus noted in Section 2.

The width of the auger of the spreader will be taken as the width of the binder spread.

#### 3.2 Trays

Place the metal trays on the pavement to be stabilised with its long side parallel to the edge of the pavement. Ensure that the wheels of the mechanical spreader will not touch the trays.

Remove the trays immediately after the spreader has passed over the tray and record the weight of binder retained in the trays. Be sure to consider the weight of the trays when determining the weight of the binder retained on the trays.

#### 3.3 Mats

Place the mat on the centre of the pavement to be stabilised with one side parallel to the edge of the pavement.

Remove the mat immediately after the spreader has passed over the mat and record the weight of binder retained on the mat. Be sure to consider the weight of the mat when determining the weight of the binder deposited on the mat.

## 4 CALCULATION OF SPREAD RATE FROM SAMPLE

### 4.1 Load Cell

Spread rate ( $\text{kg/m}^2$ ) of the binder is calculated by the following equation:

$$\frac{\text{Final} - \text{initial}}{\text{Width}} \times \frac{\text{readout}(\quad)}{\text{auger}(m) \times \text{run}(m)}$$

### 4.2 Trays

Spread rate ( $\text{kg/m}^2$ ) of the binder is equal to the weight of binder retained (kg) on the three trays.

### 4.3 Mats

Spread rate ( $\text{kg/m}^2$ ) of the binder is equal to the weight of binder retained (kg) on the mat over area of mat ( $\text{m}^2$ ).

## 5 REPORTING

Report the spread rate of the binder to the nearest  $0.1 \text{ kg/m}^2$  and unless otherwise specified, it should be within  $\pm 10\%$  of the target specified rate.

### Appendix 1 Calculation Of Spread Rate from the Design Binder Content

The calculation of the contract spread rate may be determined from first principles or from **Table 1**. For example, if the binder content is 4% for a 300-mm deep-lift pavement with the soil density  $1.8 \text{ t/m}^3$ , the binder spread rate is  $21.6 \text{ kg/m}^2$ .

For further information, please contact the Secretary, AustStab, PO Box 1889, North Sydney 2059 or Email: vorobief@auststab.com.au

**Table 1** The binder spread rate for various compacted pavement depths, binder content and pavement soil density.

Density of Soil ( $\text{t/m}^3$ )	% of binder	Spread rate ( $\text{kg/m}^2$ ) for various compacted depths					
		100-mm	150-mm	200-mm	250-mm	300-mm	350-mm
1.6	2	3.2	4.8	6.4	8.0	9.6	11.2
	3	4.8	7.2	9.6	12.0	14.4	16.8
	4	6.4	9.6	12.8	16.0	19.2	22.4
	5	8.0	12.0	16.0	20.0	24.0	28.0
	6	9.6	14.4	19.2	24.0	28.8	33.6
1.8	2	3.6	5.4	7.2	9.0	10.8	12.6
	3	5.4	8.1	10.8	13.5	16.2	18.9
	4	7.2	10.8	14.4	18.0	21.6	25.2
	5	9.0	13.5	18.0	22.5	27.0	31.5
	6	10.8	16.2	21.6	27.0	32.4	37.8
2.0	2	4.0	6.0	8.0	10.0	12.0	14.0
	3	6.0	9.0	12.0	15.0	18.0	21.0
	4	8.0	12.0	16.0	20.0	24.0	28.0
	5	10.0	15.0	20.0	25.0	30.0	35.0
	6	12.0	18.0	24.0	30.0	36.0	42.0
2.2	2	4.4	6.6	8.8	11.0	13.2	15.4
	3	6.6	9.9	13.2	16.5	19.8	23.1
	4	8.8	13.2	17.6	22.0	26.4	30.8
	5	11.0	16.5	22.0	27.5	33.0	38.5
	6	13.2	19.8	26.4	33.0	39.6	46.2
2.4	2	4.8	7.2	9.6	12.0	14.4	16.8
	3	7.2	10.8	14.4	18.0	21.6	25.2
	4	9.6	14.4	19.2	24.0	28.8	33.6
	5	12.0	18.0	24.0	30.0	36.0	42.0
	6	14.4	21.6	28.8	36.0	43.2	50.4