

**TABLE 6/1: (11/09) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                                                            |   | General Material Description                | Typical Use | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                                                                                                                                                                                                                                   | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                              |                                        |                           | Compaction Requirements in Clause 612 | Class |       |
|----------------------------------------------------------------------------------|---|---------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------|---------------------------|---------------------------------------|-------|-------|
| 6                                                                                | F |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                                                                                                                                             | Property (See Exceptions in Previous Column) | Defined and Tested in Accordance with: | Acceptable Limits Within: |                                       | Lower | Upper |
| S<br>E<br>L<br>E<br>C<br>T<br>E<br>D<br><br>G<br>R<br>A<br>N<br>U<br>L<br>A<br>R | 1 | Selected granular material (fine grading)   | Capping     | Any material, or combination of materials - including recycled aggregates with not more than 50% by mass of recycled bituminous planings and granulated asphalt, but excluding materials that contain tar and tar-bitumen binders, unburnt colliery spoil, argillaceous rock and chalk.<br><br>Property (vi) in the next column shall not apply if the Class Ra (asphalt) content of any recycled aggregate is 20% or less.                                                           | (i) grading                                                                                                                                   | BS 1377 : Part 2                             | Tab 6/2                                | Tab 6/2                   | Tab 6/2                               | 6     | 1     |
|                                                                                  | F |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (ii) optimum mc                                                                                                                               | BS 1377 : Part 4 (vibrating hammer method)   | -                                      | -                         |                                       |       |       |
|                                                                                  |   |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (iii) mc                                                                                                                                      | BS 1377 : Part 2                             | Optimum mc - 2%                        | Optimum mc                |                                       |       |       |
|                                                                                  |   |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (iv) Los Angeles coefficient                                                                                                                  | Clause 635                                   | -                                      | 60                        |                                       |       |       |
|                                                                                  |   |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (v) Class Ra (asphalt) content                                                                                                                | Clause 710                                   | -                                      | 50%                       |                                       |       |       |
|                                                                                  |   |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (vi) bitumen content                                                                                                                          | BS EN 12697-1 or BS EN 12697-39              | -                                      | 2.0%                      |                                       |       |       |
| F<br>I<br>L<br>L                                                                 | 2 | Selected granular material (coarse grading) | Capping     | Any material, or combination of materials - including recycled aggregates with not more than 50% by mass of recycled bituminous planings and granulated asphalt, but excluding materials that contain tar and tar-bitumen binders, unburnt colliery spoil and argillaceous rock.<br><br>Property (i) in the next column shall not apply to chalk.<br><br>Property (vi) in the next column shall not apply if the Class Ra (asphalt) content of any recycled aggregate is 20% or less. | (i) grading                                                                                                                                   | BS 1377 : Part 2                             | Tab 6/2                                | Tab 6/2                   | Tab 6/2                               | 6     | 2     |
|                                                                                  | F |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (ii) optimum mc                                                                                                                               | BS 1377 : Part 4 (vibrating hammer method)   | -                                      | -                         |                                       |       |       |
|                                                                                  |   |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (iii) mc                                                                                                                                      | BS 1377 : Part 2                             | Optimum mc - 2%                        | Optimum mc                |                                       |       |       |
|                                                                                  |   |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (iv) Los Angeles coefficient                                                                                                                  | Clause 635                                   | -                                      | 50                        |                                       |       |       |
|                                                                                  |   |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (v) Class Ra (asphalt) content                                                                                                                | Clause 710                                   | -                                      | 50%                       |                                       |       |       |
|                                                                                  |   |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (vi) bitumen content                                                                                                                          | BS EN 12697-1 or BS EN 12697-39              | -                                      | 2.0%                      |                                       |       |       |

**TABLE 6/4: Method Compaction for Earthworks Materials: Plant and Methods (Method 1 to Method 6)**  
(This Table is to be read in conjunction with sub-Clause 612.10)

| Type of Compaction Plant                                                  | Ref No. | Category                                                                                                                                                                                                                                                                   | Method 1 |    | Method 2   |            | Method 3   |            | Method 4   |            | Method 5   |            | Method 6         |                  |                  |
|---------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|------------|------------|------------|------------|------------|------------|------------|------------|------------------|------------------|------------------|
|                                                                           |         |                                                                                                                                                                                                                                                                            | D        | N# | D          | N#         | D          | N#         | D          | N          | D          | N          | N for D = 110 mm | N for D = 150 mm | N for D = 250 mm |
| Smoothed wheeled roller (or vibratory roller operating without vibration) | 1       | Mass per metre width of roll:<br>over 2100 kg up to 2700 kg<br>over 2700 kg up to 5400 kg<br>over 5400 kg                                                                                                                                                                  | 125      | 8  | 125        | 10         | 125        | 10*        | 175        | 4          | unsuitable | unsuitable | unsuitable       | unsuitable       | unsuitable       |
|                                                                           | 2       |                                                                                                                                                                                                                                                                            | 125      | 6  | 125        | 8          | 125        | 8*         | 200        | 4          | unsuitable | unsuitable | unsuitable       | unsuitable       | unsuitable       |
|                                                                           | 3       |                                                                                                                                                                                                                                                                            | 150      | 4  | 150        | 8          | unsuitable | unsuitable | 300        | 4          | unsuitable | unsuitable | 16               | 16               | unsuitable       |
| Grid roller                                                               | 1       | Mass per metre width of roll:<br>over 2700 kg up to 5400 kg<br>over 5400 kg up to 8000 kg<br>over 8000 kg                                                                                                                                                                  | 150      | 10 | unsuitable | unsuitable | 150        | 10         | 250        | 4          | unsuitable | unsuitable | unsuitable       | unsuitable       | unsuitable       |
|                                                                           | 2       |                                                                                                                                                                                                                                                                            | 150      | 8  | 125        | 12         | unsuitable | unsuitable | 325        | 4          | unsuitable | unsuitable | unsuitable       | unsuitable       | unsuitable       |
|                                                                           | 3       |                                                                                                                                                                                                                                                                            | 150      | 4  | 150        | 12         | unsuitable | unsuitable | 400        | 4          | unsuitable | unsuitable | 20               | 20               | unsuitable       |
| Deadweight tamping roller                                                 | 1       | Mass per metre width of roll:<br>over 4000 kg up to 6000 kg<br>over 6000 kg                                                                                                                                                                                                | 225      | 4  | 150        | 12         | 250        | 4          | 350        | 4          | unsuitable | unsuitable | 12               | 20               | unsuitable       |
|                                                                           | 2       |                                                                                                                                                                                                                                                                            | 300      | 5  | 200        | 12         | 300        | 3          | 400        | 4          | unsuitable | unsuitable | 8                | 12               | 20               |
| Pneumatic-tyred roller                                                    | 1       | Mass per wheel:<br>over 1000 kg up to 1500 kg<br>over 1500 kg up to 2000 kg<br>over 2000 kg up to 2500 kg<br>over 2500 kg up to 4000 kg<br>over 4000 kg up to 6000 kg<br>over 6000 kg up to 8000 kg<br>over 8000 kg up to 12000 kg<br>over 12000 kg                        | 125      | 6  | unsuitable | unsuitable | 150        | 10*        | 240        | 4          | unsuitable | unsuitable | unsuitable       | unsuitable       | unsuitable       |
|                                                                           | 2       |                                                                                                                                                                                                                                                                            | 150      | 5  | unsuitable | unsuitable | unsuitable | unsuitable | 300        | 4          | unsuitable | unsuitable | unsuitable       | unsuitable       | unsuitable       |
|                                                                           | 3       |                                                                                                                                                                                                                                                                            | 175      | 4  | 125        | 12         | unsuitable | unsuitable | 350        | 4          | unsuitable | unsuitable | unsuitable       | unsuitable       | unsuitable       |
|                                                                           | 4       |                                                                                                                                                                                                                                                                            | 225      | 4  | 125        | 10         | unsuitable | unsuitable | 400        | 4          | unsuitable | unsuitable | unsuitable       | unsuitable       | unsuitable       |
|                                                                           | 5       |                                                                                                                                                                                                                                                                            | 300      | 4  | 125        | 10         | unsuitable | unsuitable | unsuitable | unsuitable | unsuitable | unsuitable | 12               | unsuitable       | unsuitable       |
|                                                                           | 6       |                                                                                                                                                                                                                                                                            | 350      | 4  | 150        | 8          | unsuitable | unsuitable | unsuitable | unsuitable | unsuitable | unsuitable | 12               | unsuitable       | unsuitable       |
|                                                                           | 7       |                                                                                                                                                                                                                                                                            | 400      | 4  | 150        | 8          | unsuitable | unsuitable | unsuitable | unsuitable | unsuitable | unsuitable | 10               | 16               | unsuitable       |
|                                                                           | 8       |                                                                                                                                                                                                                                                                            | 450      | 4  | 175        | 6          | unsuitable | unsuitable | unsuitable | unsuitable | unsuitable | unsuitable | 8                | 12               | unsuitable       |
| Vibratory tamping roller                                                  | 1       | Mass per metre width of a vibrating roll:<br>over 700 kg up to 1300 kg<br>over 1300 kg up to 1800 kg<br>over 1800 kg up to 2300 kg<br>over 2300 kg up to 2900 kg<br>over 2900 kg up to 3600 kg<br>over 3600 kg up to 4300 kg<br>over 4300 kg up to 5000 kg<br>over 5000 kg | 100      | 12 | 100        | 12         | 150        | 12         | 100        | 10         | unsuitable | unsuitable | unsuitable       | unsuitable       | unsuitable       |
|                                                                           | 2       |                                                                                                                                                                                                                                                                            | 125      | 12 | 125        | 12         | 175        | 12*        | 175        | 8          | unsuitable | unsuitable | 12               | unsuitable       | unsuitable       |
|                                                                           | 3       |                                                                                                                                                                                                                                                                            | 150      | 12 | 150        | 12         | 200        | 12*        | unsuitable | unsuitable | unsuitable | unsuitable | 8                | 12               | unsuitable       |
|                                                                           | 4       |                                                                                                                                                                                                                                                                            | 150      | 9  | 150        | 9          | 250        | 12*        | unsuitable | unsuitable | 400        | 5          | 6                | 10               | unsuitable       |
|                                                                           | 5       |                                                                                                                                                                                                                                                                            | 200      | 9  | 200        | 9          | 275        | 12*        | unsuitable | unsuitable | 500        | 6          | 6                | 10               | unsuitable       |
|                                                                           | 6       |                                                                                                                                                                                                                                                                            | 225      | 9  | 225        | 9          | 300        | 12*        | unsuitable | unsuitable | 600        | 6          | 4                | 8                | unsuitable       |
|                                                                           | 7       |                                                                                                                                                                                                                                                                            | 250      | 9  | 250        | 9          | 300        | 9*         | unsuitable | unsuitable | 700        | 6          | 3                | 7                | 12               |
|                                                                           | 8       |                                                                                                                                                                                                                                                                            | 275      | 9  | 275        | 9          | 300        | 7*         | unsuitable | unsuitable | 800        | 6          | 3                | 6                | 10               |

**TABLE 6/4: Method Compaction for Earthworks Materials: plant and Methods (Method 1 to Method 6)**  
(This Table is to be read in conjunction with sub-Clause 612.10)

| Type of Compaction Plant  | Ref No. | Category                                                                                                                                                                                                                                                                                                                           | Method 1   |    | Method 2   |    | Method 3   |     | Method 4   |    | Method 5   |   | Method 6         |                  |                  |
|---------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----|------------|----|------------|-----|------------|----|------------|---|------------------|------------------|------------------|
|                           |         |                                                                                                                                                                                                                                                                                                                                    | D          | N# | D          | N# | D          | N#  | D          | N  | D          | N | N for D = 110 mm | N for D = 150 mm | N for D = 250 mm |
| Vibratory roller          | 1       | Mass per metre width of a vibratory roll:<br>over 270 kg up to 450 kg<br>over 450 kg up to 700 kg<br>over 700 kg up to 1300 kg<br>over 1300 kg up to 1800 kg<br>over 1800 kg up to 2300 kg<br>over 2300 kg up to 2900 kg<br>over 2900 kg up to 3600 kg<br>over 3600 kg up to 4300 kg<br>over 4300 kg up to 5000 kg<br>over 5000 kg | unsuitable |    | 75         | 16 | 150        | 16  | unsuitable |    | unsuitable |   | unsuitable       | unsuitable       | unsuitable       |
|                           | 2       |                                                                                                                                                                                                                                                                                                                                    | unsuitable |    | 75         | 12 | 150        | 12  | unsuitable |    | unsuitable |   | unsuitable       | unsuitable       | unsuitable       |
|                           | 3       |                                                                                                                                                                                                                                                                                                                                    | 100        | 12 | 125        | 10 | 150        | 6   | 125        | 10 | unsuitable |   | 16               | unsuitable       | unsuitable       |
|                           | 4       |                                                                                                                                                                                                                                                                                                                                    | 125        | 8  | 150        | 8  | 200        | 10* | 175        | 4  | unsuitable |   | 6                | unsuitable       | unsuitable       |
|                           | 5       |                                                                                                                                                                                                                                                                                                                                    | 150        | 4  | 150        | 4  | 225        | 12* | unsuitable |    | unsuitable |   | 4                | 6                | 12               |
|                           | 6       |                                                                                                                                                                                                                                                                                                                                    | 175        | 4  | 175        | 4  | 250        | 10* | unsuitable |    | 400        | 5 | 3                | 5                | 11               |
|                           | 7       |                                                                                                                                                                                                                                                                                                                                    | 200        | 4  | 200        | 4  | 275        | 8*  | unsuitable |    | 500        | 5 | 3                | 5                | 10               |
|                           | 8       |                                                                                                                                                                                                                                                                                                                                    | 225        | 4  | 225        | 4  | 300        | 8*  | unsuitable |    | 600        | 5 | 2                | 4                | 8                |
|                           | 9       |                                                                                                                                                                                                                                                                                                                                    | 250        | 4  | 250        | 4  | 300        | 6*  | unsuitable |    | 700        | 5 | 2                | 4                | 7                |
|                           | 10      |                                                                                                                                                                                                                                                                                                                                    | 275        | 4  | 275        | 4  | 300        | 4*  | unsuitable |    | 800        | 5 | 2                | 3                | 6                |
| Vibrating plate compactor | 1       | Mass per m <sup>2</sup> of base plate:<br>over 880 kg up to 1100 kg<br>over 1100 kg up to 1200 kg<br>over 1200 kg up to 1400 kg<br>over 1400 kg up to 1800 kg<br>over 1800 kg up to 2100 kg<br>over 2100 kg                                                                                                                        | unsuitable |    | unsuitable |    | 75         | 6   | unsuitable |    | unsuitable |   | unsuitable       | unsuitable       | unsuitable       |
|                           | 2       |                                                                                                                                                                                                                                                                                                                                    | unsuitable |    | 75         | 10 | 100        | 6   | 75         | 10 | unsuitable |   | unsuitable       | unsuitable       | unsuitable       |
|                           | 3       |                                                                                                                                                                                                                                                                                                                                    | unsuitable |    | 75         | 6  | 150        | 6   | 150        | 8  | unsuitable |   | unsuitable       | unsuitable       | unsuitable       |
|                           | 4       |                                                                                                                                                                                                                                                                                                                                    | 100        | 6  | 125        | 6  | 150        | 4   | unsuitable |    | unsuitable |   | 8                | unsuitable       | unsuitable       |
|                           | 5       |                                                                                                                                                                                                                                                                                                                                    | 150        | 6  | 150        | 5  | 200        | 4   | unsuitable |    | unsuitable |   | 5                | 8                | unsuitable       |
|                           | 6       |                                                                                                                                                                                                                                                                                                                                    | 200        | 6  | 200        | 5  | 250        | 4   | unsuitable |    | unsuitable |   | 3                | 6                | 12               |
| Vibro-tamper              | 1       | Mass:<br>over 50 kg up to 65 kg<br>over 65 kg up to 75 kg<br>over 75 kg up to 100 kg<br>over 100 kg                                                                                                                                                                                                                                | 100        | 3  | 100        | 3  | 150        | 3   | 125        | 3  | unsuitable |   | 4                | 8                | unsuitable       |
|                           | 2       |                                                                                                                                                                                                                                                                                                                                    | 125        | 3  | 125        | 3  | 200        | 3   | 150        | 3  | unsuitable |   | 3                | 6                | 12               |
|                           | 3       |                                                                                                                                                                                                                                                                                                                                    | 150        | 3  | 150        | 3  | 225        | 3   | 175        | 3  | unsuitable |   | 2                | 4                | 10               |
|                           | 4       |                                                                                                                                                                                                                                                                                                                                    | 225        | 3  | 200        | 3  | 225        | 3   | 250        | 3  | unsuitable |   | 2                | 4                | 10               |
| Power rammer              | 1       | Mass:<br>100 kg up to 500 kg<br>over 500 kg                                                                                                                                                                                                                                                                                        | 150        | 4  | 150        | 6  | unsuitable |     | 200        | 4  | unsuitable |   | 5                | 8                | unsuitable       |
|                           | 2       |                                                                                                                                                                                                                                                                                                                                    | 275        | 8  | 275        | 12 | unsuitable |     | 400        | 4  | unsuitable |   | 5                | 8                | 14               |
| Dropping-weight compactor | 1       | Mass of rammer over 500 kg<br>weight drop:<br>over 1 m up to 2 m<br>over 2 m                                                                                                                                                                                                                                                       | 600        | 4  | 600        | 8  | 450        | 8   | unsuitable |    | unsuitable |   | unsuitable       | unsuitable       | unsuitable       |
|                           | 2       |                                                                                                                                                                                                                                                                                                                                    | 600        | 2  | 600        | 8  | unsuitable |     | unsuitable |    | unsuitable |   | unsuitable       | unsuitable       | unsuitable       |