A3 – Crushed Rock

Crushed rock aggregates have a wide variety of uses. This Topic page gives details of crushed rocks used in:

- Bituminous mixtures
- Surface dressing.

Full details are given in:

Standard:	BS EN 13043, Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas
BS Guidance:	PD6682-2

Details about other uses of crushed rock aggregates can be found in:

- Sand and gravel (for use in concrete)
- Unbound aggregates for roads
- Other Products Zone — Aggregates.

Grading and particle shape requirements

Different types of aggregates for bituminous mixtures and surface dressing are defined using:

- Lower (*d*) sieve size
- Upper (*D*) sieve size
- Maximum % passing the 0.063mm size sieve
- Flakiness Index.

Unlike the other Standards, BS EN 13043 uses the 2mm size sieve to divide coarse and fine aggregates. Most crushed rock fine aggregates will be best defined as:

- 0/4mm size all-in aggregate.

The coarse aggregate sizes recommended for routine use in bituminous mixtures are:

- 2/6.3
- 4/10
- 6.3/14
- 10/20
- 20/31.5.

The coarse aggregate sizes recommended for routine use in surface dressing are:

- 2/4
- 2.8/6.3

- 6.3/10
- 8/14
- 14/20.

For surface dressing, the ratio *d/D* is at least 0.5.

The permitted maximum % passing the 0.063mm size sieve is also much less than that permitted for bituminous mixtures.

Detailed grading requirements

The detailed grading requirements for aggregates used in bituminous mixtures and surface dressing are complex. Aggregates used to produce bituminous mixtures are also often used at the same location without being placed on the market.

Because of these factors, a detailed specification is usually agreed between the producer and purchaser, to reflect the way in which the aggregate is to be used.

When necessary, detailed grading requirements should be developed and agreed using the guidance in PD6682-2.

Flakiness Index (particle shape)

The recommended requirements for the flakiness of coarse aggregate are:

- Bituminous mixtures – 35 maximum (but should be around 20-25)
- Surface dressing – 20 maximum.

Aggregates in bituminous mixtures for thin surface courses

Aggregates for surface dressing are often used in specialist surface course mixtures because of the closely controlled grading and improved particle shape.

Additional information

The producer must provide information that confirms the physical properties of the aggregate:

- Los Angeles Value (LA) (fragmentation) — 30 maximum
- Magnesium sulfate soundness (durability) — 25 maximum.

If the aggregate is used at the road surface, additional information must be provided to confirm:

- Polished stone value (PSV) (skid resistance)
- Aggregate Abrasion Value (AAV) (surface wear).

The requirements for PSV and AAV are specific to particular contracts.