

Surfacing Aggregate

Aggregate - product brochure



Surfacing Aggregate



Product overview

Surfacing aggregate are those aggregates used in the production of the surface layer of road construction usually applied by chip spreaders. These aggregates shall comply with the relevant specifications.

Process overview

- Bitumen binder sprayed onto prepared base course layer.
- Aggregate cover is applied immediately and rolled to achieve a mosaic pattern.
- Rolling causes binder to move into voids between the particles.

Types of seals

There are a number of seals in use:

- Single seal
- Double seal (bituminous)
- Bituminous single seal with slurry (Cape seal)
- Sand seal

• Single seal

The construction of new surfaces as well as overlays for the rehabilitation of existing surfaces. Coarse aggregate consists of crushed stone complying with the requirements of COLTO.* Fine aggregate may be natural sand or crusher sand, complying with the project specifications.

- Traffic volume determines the aggregate size.
- Layers with aggregate larger than 13.2 mm may require a second application of binder.
- Pre-coating of aggregates should be considered to improve adhesion.

• Double seal

It is constructed using a combination of either 19,0 & 9,5, 13,2 & 6,7 mm, or 19,0 & 6,7 mm aggregate.

- Two layers where the top layer contains a smaller aggregate than the bottom layer.
- Larger aggregates are suitable for roads carrying heavy traffic.

• Slurry seal

- For roads with varying surface texture.
- Uniform texture results from slurry application.
- Slurry seals are also used for pre-treatment before single or double seals.
- Not advisable for smooth-textured surfaces.

• Sand seal

As the specification is essentially for use in low cost construction, the grading of the sand may vary. Fine aggregate must be crusher sand complying with COLTO standards.* Fine aggregate may be natural sand or crusher sand, complying with the project specifications.

Water may be used to assist the screening process and to clean the sand of excess fines. The sand equivalent shall be at least 35.

- Use on low traffic roads and as dust palliatives.
- Use as pre-treatment for construction of single and double seals.

Afrisam aggregates comply to specifications as listed in the following tables. *

Properties and requirements of surfacing aggregates Single - sized crushed aggregate grades 1, 2 and 3.

| Sieve size (mm) | Grade | Percentage by mass passing | | | | | | |
|--|--------------|--|----------------------|----------------------|--------------------|---------------------|----------------------|----------------------|
| | | 26,5 mm nominal size | 19,0 mm nominal size | 13,2 mm nominal size | 9,5mm nominal size | 6,7 mm nominal size | 4,75 mm nominal size | 2,36 mm nominal size |
| 37,50 | Grades 1 & 2 | 100 | - | - | - | - | - | - |
| 26,50 | | 85 - 100 | 100 | - | - | - | - | - |
| 19,00 | | 0 - 30 | 85 - 100 | 100 | - | - | - | - |
| 13,20 | | 0 - 5 | 0 - 30 | 85 - 100 | 100 | - | - | - |
| 9,50 | | - | 0 - 5 | 0 - 30* | 85 - 100 | 100 | - | - |
| 6,50 | | - | - | 0 - 5** | 0 - 30* | 85 - 100 | 100 | - |
| 4,75 | | - | - | - | 0 - 5** | 0 - 30* | 85 - 100 | 100 |
| 2,36 | | - | - | - | - | 0 - 5** | 0 - 30 | 0 - 100 |
| | Grades 3 | Grading shall comply with the requirements for grades 1 and 2 with the following exceptions: *0 - 50 / ** 0 - 10 | | | | | | |
| Fines content: Material passing a 0,425 mm sieve (max) | Grades 1 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 1,0 | 15,0 |
| | Grades 2 | 1,5 | 1,5 | 1,5 | 1,5 | 2,0 | 2,5 | 15,0 |
| | Grades 3 | N/A | N/A | 2,0 | 2,0 | 3,0 | 3,5 | 15,0 |
| Dust content: Material passing a 0,075 mm sieve (max) | Grades 1 | N/A | N/A | N/A | N/A | N/A | N/A | 2,0 |
| | Grades 2 | 0,5 | 0,5 | 0,5 | 0,5 | 1,0 | 1,0 | 2,0 |
| | Grades 3 | N/A | N/A | 1,5 | 1,5 | 1,5 | 1,5 | 2,0 |

from COLTO table 4302/8

Hardness

When tested in accordance with TMH1 method B1, the aggregate crushing value shall not exceed 21 and when tested in accordance with TMH1 method B2 the 10% FACT value (dry) shall be at least 210kN. The wet to dry ratio shall be at least 75%. The polishing aggregate value shall be at least 50 unless otherwise specified or approved by the engineer.

Shape

The maximum flakiness index, when tested in accordance with TMH1 method B3, shall comply with the requirements in the following table:

| Normal size of aggregate | Maximum flakiness index % | |
|--------------------------|---------------------------|---------------|
| | Grade 1 | Grade 2 and 3 |
| 19,0 mm | 25 | 30 |
| 13,2 mm | 25 | 30 |
| 9,5 mm | 30 | 35 |
| 6,7 mm | 30 | 35 |

from COLTO table 4302/10

If so required for special purposes, the average least dimension (ALD) shall be indicated in the project specifications.

Sand grading limits and sand equivalent for sand for slurry

Sand for slurry shall be an approved crusher sand obtained from parent rock with an aggregate crushing value not exceeding 30 or a mixture of crusher sand and clean natural sand, where the mixture does not contain more than 25% of natural sand. The sand shall be clean, tough, durable and angular in shape.

Fine aggregate for slurry seals

| Property | SABS and COLTO requirements | | | | |
|---|-----------------------------|--------------|--------------|---------------|----------|
| | Fine slurry | | | Coarse slurry | |
| | Fine grade | Medium grade | Coarse grade | Type 1 | Type 2 |
| Grading limits, % (m/m) passing sieve sizes, mm | | | | | |
| 13,2 | | | | | 100 |
| 9,5 | | | | 100 | 85 - 100 |
| 6,7 | | 100 | 100 | 82 - 100 | 70 - 90 |
| 4,75 | 100 | 82 - 100 | 70 - 90 | 70 - 90 | 60 - 80 |
| 2,36 | 90 - 100 | 56 - 95 | 45 - 70 | 45 - 70 | 40 - 60 |
| 1,18 | 65 - 95 | 82 - 75 | 28 - 50 | 25 - 45 | 25 - 45 |
| 0,600 | 42 - 72 | 22 - 50 | 19 - 34 | 15 - 30 | 15 - 30 |
| 0,300 | 23 - 48 | 15 - 37 | 12 - 25 | 10 - 20 | 10 - 20 |
| 0,100 | 10 - 27 | 10 - 20 | 7 - 10 | 6 - 15 | 6 - 15 |
| 0,075 | 4 - 12 | 4 - 12 | 2 - 8 | 4 - 10 | 4 - 10 |
| Sand equivalent minimum | 35 | | | | |
| | | | | | |
| | | | | | |

from SABS 1200 - M:1996 table 2 and COLTO table 4302/11



Note: All SABS specifications will be replaced by SANS specifications, but the data contained therein will remain constant.

Note: All typical gradings and water demands may be obtained, on request, from the product technical department.

***Note:** As members of ASPASA (Aggregate & Sand Producers Association of South Africa) we comply with COLTO specifications except where amended by ASPASA.



Aggregate Quarry Locations

| | |
|-----------------|----------------------|
| Gauteng | KwaZulu-Natal |
| Eikenhof | Coedmore |
| Ferro | Ladysmith |
| Jukskei | Newcastle |
| Olifantsfontein | Pietermaritzburg |
| Roodekrans | Umlaas |
| Rooikraal | Verulam |
| Vogels | |
| Witbank slag | |
| Zeekoewater | Western Cape |
| | Peninsula |
| | Philippi (Depot) |
| | Rheebok |

Contact the regional office in your area for Sales or Technical Services or any other information.

| | | |
|----------------|--------------|----------------|
| Gauteng: | 0860 141 141 | (011) 670 5666 |
| KwaZulu-Natal: | 0800 313 151 | (031) 460 9000 |
| Western Cape: | 0860 009 114 | (021) 659 3100 |

customer.service@za.afrisam.com
www.afrisam.com

