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| AUSTROADS TECHNICAL SPECIFICATION ATS 3125  Fillers for Asphalt |  |
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# Scope

Austroads Technical Specification ATS 3125 sets out the requirements for added fillers for use in asphalt (‘Added Fillers’).

# Referenced Documents

The following documents are referenced in this Specification:

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| **Australian / New Zealand Standards**  AS 1141.8 Methods for sampling and testing aggregates - Water-soluble fraction of filler  AS 1141.11.1 Methods for sampling and testing aggregates - Particle size distribution - Sieving method  AS 1141.66 Methylene blue value  AS 1672.1 Limes and limestones - Limes for building  AS/NZS 3582.1 Supplementary cementitious materials for use with portland and blended cement - Fly ash  AS 3583.1 Methods of test for supplementary cementitious materials for use with portland and blended cement, Method 1: Determination of fineness by the 45 micrometre sieve  AS 3583.3 Methods of test for supplementary cementitious materials for use with portland cement, Method 3: Determination of loss on ignition  AS 4489.2.1 Test methods for limes and limestones - Fineness - Wet sieving  AS 4489.6.1 Test methods for limes and limestones - Lime index - Available lime  AS 4489.8.1 Test methods for limes and limestones - Free moisture - Convection oven |
| **Austroads**  ATS 3130 Aggregates for Asphalt  ATS 3410 Asphalt Pavements |
| **International / European Standards**  EN 13639 Determination of total organic carbon in limestone |

# Definitions

The following definitions apply to this Specification.

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| **Added Filler:** | A mineral material which:   1. is incorporated into an asphalt mix to modify the properties of the mix; and 2. complies with this Specification. |
| **Available Lime:** | Alkaline constituents which are readily soluble in a sucrose solution as determined by AS 4489.6.1, using the calculation for calcium hydroxide. |
| **Cement Works Flue Dust:** | A mineral material derived from the cement manufacturing process, also known as “cement kiln dust”. |
| **Fly Ash:** | The solid material extracted from the flue gases of a boiler fired with pulverized coal. |
| **Ground Limestone:** | A calcium carbonate-rich rock dust derived from the grinding of sound unfired limestone. |
| **Hydrated Lime:** | Essentially calcium hydroxide in the form of a white powder produced by the addition of sufficient water to slake quicklime. |

# Quality System Requirements

Added Fillers must be manufactured under a Quality Management System which is certified as complying with AS/NZS ISO 9001 by an organisation which is accredited by JAS-ANZ or another Accreditation Body Member of the International Accreditation Forum.

# Storage

Added Fillers must be:

1. stored in silos, bins or sheds that keep the contents dry and free from contamination; and
2. used in the order they were delivered with the earliest delivered batches to be used first.

# Properties of Added Fillers

## General

Added Fillers must:

1. comprise of a mineral material with a consistent composition; and
2. be dry and free of lumps, organic material or other deleterious matter.

Each type of Added Filler, where used, must comply with Table 6.2 and the additional requirements in Table 6.3

Table 6.2: Added Filler Requirements

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| --- | --- |
| Added Filler | Requirement |
| Cement Works Flue Dust (also known as “baghouse dust”) | Collected as residue from the cement manufacturing process in a cement manufacturing plant. |
| Ground Limestone | Contain more than 75% by mass of CaCO3 determined from an analysis of the source rock by X-ray fluorescence. |
| Fly ash | Grade 1 conforming to AS/NZS 3582.1. |
| Ground Granulated Blast-Furnace Slag (GGBFS) | Comply with AS 3582.2. |
| Hydrated Lime | Comply with AS 1672.1. |
| Cement | Comply with to AS 3972 |
| Rock Dust and Other Mineral Fillers. | Derived from rock conforming to the requirements of ATS 3130. |

## Verification of Conformity

The Contractor must ensure that the Added Fillers are tested in accordance with the requirements specified in Table 6.3 and the results submitted to the Principal with the asphalt Lot in accordance with ATS 3410. For each test (where applicable), the minimum test frequency is one test per 500 tonnes of production per source of supply.

Table 6.3: Testing of Added Fillers

| Filler | Property | Test Method | Acceptance Criteria |
| --- | --- | --- | --- |
| Cement Works Flue Dust | Particle size distribution | AS 1141.11.1 | Refer Clause 6.5 |
| Loss on ignition | AS 3583.3 | ≤ 6% |
| Water soluble fraction | AS 1141.8 | ≤ 20% |
| Moisture content | AS 4489.8.1 | ≤ 3% |
| Methylene Blue Value (MBV) of the portion of material passing the 0.075 mm AS sieve (determined in accordance with AS 1141.11). | AS 1141.66 | Report only |
| Ground Limestone | Particle size distribution | AS 1141.11.1 | Refer Clause 6.5 |
| Total organic carbon content (only required if the CaCO3 content < 80%) | EN 13639 | < 0.50% by mass |
| Moisture content | AS 4489.8.1 | ≤ 3% |
| Fly ash | Fineness | AS 3583.1 | Refer AS 3582.1 |
| Moisture content | AS 4489.8.1 | ≤ 3% |
| Water soluble fraction | AS 1141.8 | ≤ 20% |
| GGBFS | Moisture content | AS 4489.8.1 | ≤ 3% |
| Cement | Moisture content | AS 4489.8.1 | ≤ 3% |
| Hydrated Lime | Available lime content, calculated as calcium hydroxide | AS 4489.6.1 | ≥ 80.0% |
| Sieve residue: % retained 300 µm sieve | AS 4489.2.1 | ≤ 2.0% |
| Moisture content before use | AS 4489.8.1 | ≤ 1.0% |

Where GGBFS and / or cement are used, the Contractor must submit a certificate of compliance with AS 3582.1 and AS 3972 respectively.

The grading limits for ground limestone and cement kiln dust materials must comply with Table 6.5.

Table 6.5: Grading Limits for Cement Works Flue Dust and Ground Limestone

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| --- | --- |
| Sieve size (mm) | Percentage passing sieve size (by mass) |
| 0.600 | 100 |
| 0.300 | 95-100 |
| 0.075 | 75-100 |

Annexure A: Summary of Hold Points, Witness Points and Records

The following is a summary of the Witness Points / Hold Points that apply to this Specification and the Records that the Contractor must submit to the Principal to demonstrate compliance with this Specification.

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| --- | --- | --- | --- |
| **Clause** | **Hold Point** | **Witness Point** | **Record** |
| 6.3 and 6.4 |  |  | Evidence of conformity, including test results |

Amendment Record

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| --- | --- | --- | --- |
| Amendment no. | Clauses amended | Action | Date |
| - | New specification | New | November 2023 |
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| --- | --- |
| **Key** |  |
| Format | Change in format |
| Substitution | Old clause removed and replaced with new clause |
| New | Insertion of new clause |
| Removed | Old clauses removed |