**Product design evaluation templates**

**Assessment of crumb rubber and recycled plastic binders against conventional binders**

Crumb rubber and recycled plastics used as a replacement for conventional bitumen should comply with relevant specifications. During the procurement process, the crumb rubber and recycled plastic binders can be assessed by comparing their properties with a conventional binder (bitumen or polymer-modified bitumen).

This is an example template for assessment of crushed glass and recycled plastic binders against conventional binders.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Supplier** |  | | | |
| Product Name |  | | | |
| Specification | e.g., AS 2008 for bitumen | | | |
| Application |  | | | |
| Test methods | Bitumen Property | Class of Bitumen | Specification range | CR or RP  Modified Binder result |
| AS 2341.2 | Viscosity at 60 °C (Pa.s) |  |  |  |
| AS 2341.2/3/4 | Viscosity at 135 °C (Pa.s) |  |  |  |
| AS 2341.12 | Penetration at 25 °C (100 g, 5 s) [0.1 mm] |  |  |  |
| AS 2341.14  ASTM D92 | Flashpoint (°C) min. |  |  |  |
| AS 2341.8 or  AS/NZS 2341.20 | Matter insoluble in toluene, % mass |  |  |  |
| AS/NZS 2341.10 AS2341.2 | Viscosity at 60 °C, % of original after RTFO treatment |  |  |  |
| ASTM D2872 AS2341.2 |  |  |  |
| AS/NZS 2341.10  ASTM D2872  AS 2341.12 | Penetration at 25 °C, after RTFO treatment (100 g, 5 s) [0.1 mm] |  |  |  |
| AS/NZS 2341.13,  AS/NZS 2341.5 | Long-term effect of heat and air, days |  |  |  |
| AS 2341.7 | Density at 15 °C, kg/m3 |  |  |  |
| AS/NZS 2341.10  ASTM 2872 | Mass change, % mass |  |  |  |

**Assessment of recycled material asphalt against conventional asphalt**

During the procurement process, councils can assess the crumb rubber, recycled plastics or recycled crushed glass asphalt mix by comparing its properties with the conventional asphalt.

This is an example template for performance assessment of recycled material asphalt against conventional asphalt.

|  |  |  |  |
| --- | --- | --- | --- |
| **Modified Asphalt Mixes** | | | |
| Supplier |  | | |
| Product Name |  | | |
| Mix Type |  | | |
| Manufacturing Process |  | | |
|  | | Conventional Asphalt | Recycled Material Asphalt |
| Aggregate size and grading | |  |  |
| Binder type and bitumen content | |  |  |
| Recycled material content | |  |  |
| Voids in mineral aggregate | |  |  |
| Binder film thickness | |  |  |
| The specification used for comparison (if relevant) | |  |  |
| Asphalt Performance Requirements1 | Test method | Performance value of modified asphalt | Specification range |
| Workability | AS/NZS 2891.2.2 AS/NZS 2891.9.2 |  |  |
| Moisture Sensitivity | AGPT-T232 |  |  |
| Deformation Resistance | AGPT-T231 |  |  |
| Flexural Stiffness  Resilient Modulus | AGPT/T274 OR  AS/NZS 2891.13.1 |  |  |
| Fatigue Performance | AGPT/T274 |  |  |
| Resistance to ravelling | AGPT-T236 |  |  |
| Handling and durability | AGPT-T235 |  |  |

Note: Not all performance requirements are required for all asphalt types, refer to relevant specifications for required performance for the relevant asphalt mix