

PGAC SPECIFICATION GUIDELINES

RECOMMENDED SUPERIOR PGAC SPECIFICATION FOR MUNICIPALITIES

In light of the proliferation of PGAC municipal specifications in Ontario, McAsphalt Industries has issued the following guidelines, with the scope of helping municipalities to specify superior quality PG asphalt cements.

- Select the proper PGAC grade using the LTPPBind software. The PG grade will vary based on climatic conditions of the project location, traffic levels and the desired reliability (minimum 98% recommended). The current MTO PG grade zones can be used as reference, but there are some areas in Ontario where the minimum air temperatures can get colder than the MTO specified PGAC low temperatures.
- Specify your base **PG Grading** as per AASHTO M320 or OPSS.MUNI 1101. ([Web Link Here](#))

In addition, the following tests are recommended to be part of the PGAC specifications for all modified grades (not applicable for base grades PG 58-28 and PG 52-34, with the exception of Ash Content):

- **Ash Content** as per LS-227 – applicable for base and for modified grades
 - Recommended acceptance criteria: 1.0% max ash content
 - *Significance of the test: similar to the old solubility spec but cleaner and safer. Enforcing this test will ensure that certain additives (ex REOBs) can't be abused or used at unsafe levels.*
- **Multiple Stress Creep and Recovery (MSCR)** as per AASHTO T350. Always tested on RTFO residue at the environmental temperature (can be different than the PG grade). This test has two parameters:
 - Non-recoverable Creep Compliance $J_{nr\ 3.2}$ – an inverse of a modulus. A lower value means a stiffer PGAC. Acceptance is usually below 4.5 MPa, but can be lowered for heavy traffic (AASHTO M332)
 - Recovery – this is the part that will ensure the usage of an elastic polymer. To be considered elastic, the Recovery must meet the following equation: $R > 29.371 * (J_{nr\ 3.2})^{-0.2633}$
 - Recommended acceptance criteria for the Recovery: X-10% should be considered borderline.
 - *Significance of the test: The J_{nr} parameter measures the permanent deformation of the PGAC at high temperature. This relates closely to the rutting susceptibility. The Recovery parameter measures the elasticity of the PGAC and the robustness of the polymer network. This parameter will impact the behavior of the PGAC at both high and low temperatures.*
- **Double Edge Notched Tension (DENT)** test, as per LS-299
 - Recommended acceptance criteria: min 10 mm for XX-28 grades; min 14 mm for XX-34 grades; min 18 mm for XX-40 grades
 - Recommended tolerances: X-4 mm should be considered minor borderline; X-(4 and 6) major borderline; below X-6 should be rejectable.
 - *Significance of the test: this is a fatigue-related test for the PGAC and measures the work of fracture and the strain tolerance at ambient temperature. This test will pretty much ensure that no air blown or PPA modified asphalts are used.*

For details about how to specify the tests described above and the detailed acceptance criteria, McAsphalt recommends reviewing the MTO Special Provision 111F09 with the issue date of February 2015. ([Web Link Here](#))

Please do not hesitate to contact McAsphalt for any questions regarding the directions above. We offer technical support for every stage of the HMA road building process, from specifications to formulation, design and construction.