

Exhibit

Waterblasting – 2017

TNZ M/20: 2003

SPECIFICATION FOR LONG-LIFE ROADMARKING MATERIALS

1. SCOPE

This specification sets out requirements for marking materials which have a long service life and which are typically applied at thicknesses of about 0.9 mm or more. The specification is applicable to these markings when applied over bituminous or concrete road surfaces.

The specification particularly applies to thermoplastic roadmarkings. For materials other than thermoplastic, test procedures need to be agreed with the testing agency.

2. MATERIAL REQUIREMENTS

2.1 Markings of Materials Other Than Thermoplastic

Markings of materials other than thermoplastic shall meet the field test requirements of clause 3 below. The packaging/labelling requirements shall meet the requirements of clauses 9 and 10. Additionally, when used, they must meet the requirements of TNZ P/12 for maximum thickness of markings.

Specific requirements for these materials will be defined as part of the Approval.

2.2 Markings of Thermoplastic Materials

Markings of thermoplastic materials must meet all clauses of this specification, with the exception of 2.1 above.

3. FIELD TESTING

3.1 General

Beaded test lines shall be applied in accordance with Appendix B, in a lane which is subjected to 1,500,000 vehicle passes within a period of more than three but less than nine months, and be assessed for skid resistance, retroreflectivity, degree of wear and colour after the stated numbers of vehicle passes.

3.2 Skid Resistance

When tested in the wheelpath in accordance with Roadnote 27 of Transport Road Research Laboratory at 1 hour after application and at any time thereafter, the skid resistance on a test line shall be not less than 50 BPN and no greater than 65 BPN.

3.3 Retroreflectivity Testing

When tested in accordance with Appendix C, the retroreflectivity of a test line, at any time in the period from 24 hours after application until 3,000,000 vehicle passes, shall be not less than $100 \text{ mcd.m}^{-2}.\text{lux}^{-1}$ for white material and not less than $80 \text{ mcd.m}^{-2}.\text{lux}^{-1}$ for yellow material, as assessed by a retroreflectometer which has equivalent characteristics to the "Mirolux 12", and which is referenced to a common base as described in Appendix 3 of TNZ P/20.

Note: drop-on beads may be required to achieve initial values

3.4 Degree of Wear

When assessed for degree of wear on a test line using the photographic scale of Appendix B after 3,000,000 vehicle passes the photographic rating shall not be less than 8.

3.5 Retention of Colour

When assessed in accordance with Appendix D, the colour of the marking after 3,000,000 vehicle passes shall not be more than 4.

3.6 Luminance Factor

When tested in accordance with Appendix H, after 3,000,000 vehicle passes the luminance factor of a test strip shall not be less than 45%.

4. REFERENCED DOCUMENTS

A list of documents referred to in this specification is given in Appendix A.

5. DEFINITIONS RELEVANT TO THERMOPLASTIC MATERIALS

For the purpose of this specification, the definitions below apply.

Materials

- Paint is a liquid product containing solids suspended in an organic solvent or in water. It can be supplied in single or multi-component systems. When applied by brush, roller, spray or any other appropriate method it produces a cohesive film by the process of solvent evaporation and/or by a chemical process.
- Thermoplastics is a solvent-free marking substance supplied in block, granular or powder forms. It is heated to a molten state and then applied with an appropriate hand or mechanical applicator. It forms a cohesive film by cooling.