

**CLEPA**  
**Comments on Various Topics and a Proposal for Consideration by the**  
**GRE Contour Marking Informal Group**

**Reg. 104 Vehicle Safety Tape (Conspicuity Markings)**

- 1. Applicability and Lifetime**
- 2. Durability**
- 3. Quality**
- 4. Replacement**
- 5. Proposal**

Comments

- 1. Applicability and Lifetime**
  - a. Conspicuity products are made either with a High-Frequency application backing or Pressure Sensitive Adhesive (PS Adhesive) that is protected by a release liner. The liner is removed and the material is then applied to a “clean” surface, metal or tarpaulin dependent on the system. Surface could be old or new.
  - b. The ECE Regulation 104 Standard has established basic performance for the Conspicuity Markings.
    - i. Tapes that are found suitable according to this regulation are required to have an E-mark
    - ii. Regulation 104 provides additional Conformity-of Production requirements from manufacturers to ensure conformance with the standard
  - c. Conspicuity Markings have been in use in Europe 10+ years [conspicuity tapes, truck planks, truck flags, etc.]. Unless mechanically damaged, experience has shown they still perform well.
  - d. Conspicuity Markings have been in use in the United States >15 years [conspicuity tapes -contour marking, other marking]. Unless mechanically damaged, their performance has unquestionable reputation.
  - e. In practice, the materials have been shown to provide extraordinarily long life and increased levels of safety.
  - f. Contour Markings provide a passive safety system that is virtually fail-safe. That is, the vehicle operational system does not have to be on. The tapes do not require any power from the vehicle to operate.
- 2. Durability**
  - a. ECE Regulation 104 utilizes several evaluations to establish durability and suitability of the tapes in order to ensure future in-use performance.
    - i. Minimum photometric performance

- ii. Minimum colourimetric performance [daytime and nighttime]
- iii. Resistance to weathering in a Xenon Weather-o-meter to assure the stability in time of the optical properties and colour
  - 1. Markings that have met this requirement are being used currently and have exhibited long life performance on the vehicles.
  - 2. Requires colour and photometric performance after exposure as well as other physical characteristics.
- iv. Resistance to corrosion.
  - 1. 48 hour salt spray exposure
- v. Resistance to fuels.
- vi. Resistance to cold and heat cycles.
  - 1. -20°C through 65°C  
[in actuality, the industry has done practical performance tests indicating that the temperature range from -34 °C to +94 °C does not alter the sheeting]
- vii. Resistance to cleaning.
- viii. Resistance to the penetration of water.

### **3. Quality**

- a. Regulation 104 sets minimum performance requirements. The materials are evaluated by independent 3<sup>rd</sup> party in order to obtain the E-mark indicating conformance with standard.
- b. In addition, manufacturers provide warranties on the products. These vary by the tapes application.
  - i. Soft-sided vehicles - 3 years
  - ii. Rigid vehicles - 7 years
- c. Manufacturers in this market have stood behind their products and their performance.
- d. The consistency and quality of production is ensured furthermore by ISO 9000 compliance. Purchasers of the tape may require that Contour Marking manufacturers are ISO 9000 certified.

### **4. Replacement**

- a. The replacement of the Contour Marking system is a matter of commercial relationship, applications instructions, choice of adhesion method and warranty.
- b. The PS Adhesives for rigid applications provide a very stable bond. If damage occurs, the damaged part of the tape can be removed and replaced by a new one.
- c. The PS Adhesives for soft side applications provide a bond that is a compromise between durability, flexibility, and removal for repairs.
- d. The ability to repair/replace the tape may be dependent on the manufacturers choice of adhesive and how it was applied.

- e. However, as standard writers and experts, we should focus primarily on safety rather than on ease of application or replacement, etc., which should be of secondary consideration.

## **5. Proposal**

In order to further ensure the performance of the Conspicuity Markings, we propose to amend ECE Regulation 104 at the October 2005 session to include two more tests. One is for Bonding Strength, which already exists in ECE Regulation 70, and the other is for Cleaning, partially existing in the same Regulation.

Amend Annex 8-Resistance to External Agents, by changing Paragraph 5 to read:

### **5. Cleaning**

#### **5.1 Standard Cleaning**

- 5.1.2. A test sample smeared with a mixture of detergent lubricating oil and graphite shall be easily cleaned without damage to the retro-reflective surface when wiped with a mild aliphatic solvent such as n-heptane, followed by washing with a neutral detergent.

#### **5.2. Power Washing**

- 5.2.1. When cleaning for 5 minutes and observing the following parameters, a test sample shall no damage to the retro-reflective surface or delaminate from the substrate:
  - Maximum pressure 80 bar
  - Maximum temperature 60°C
  - Holding the cleaning jet a minimum of 60cm away from the material
  - Cleaning wand to be held at no greater than 45° degrees from perpendicular to surface

Amend Annex 8-Resistance to External Agents, by adding a new Paragraph 8:

### **8. Bonding Strength (in the case of adhesive materials)**

- 8.1 The adhesion of retro-reflective materials shall be determined.

- 8.2 The retro-reflective materials shall not be removable without tools or without damaging the material.

- 8.3 The retro-reflective materials shall need a force of at least 10 N per 25 mm width, at a speed of 300 mm per minute, to be removed from the substrate.