



UNIVERSITY OF NIS
FACULTY OF MECHANICAL ENGINEERING
LABORATORY FOR MATERIALS AND MACHINE TESTING

Serbia and Montenegro
18000 Niš, A. Medvedeva 14, tel. ++38118 500696, fax. ++38118 588199

TESTING REPORT

№ 218-1/05

ORDERER: «SNG Company» 18 000 Niš, Koste Stamenkovića 9

Request : n. n. Date 12. 24. 2005.

PRODUCT DATA

Product name:	FOOT FOR TEMPORARY TRAFFIC SIGNALISATION TYPE 28
Year of production:	2005
Composition:	recycled PVC and PE
Dimensions:	860 x 440 x 100 mm.
Product label:	SNG SSG TYPE 28

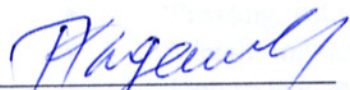
TECHNICAL CHARACTERISTICS

Nominal mase:	28 kg
Operating temperature:	-30 to 50 °C

On the basis of tests by pressing, weight impact, upturn and influence of salt water freezing-thawing, Faculty of Mechanical Engineering Nis issued this testing report № 612-22-218-1/05 for foot for temporary traffic signalisation SNG SSG TYPE 28.

Nis, 12. 26. 2005.

CHIEF OF LABORATORY


Goran Radenković, assist. prof.

DIRECTOR OF INSTITUTION


Dr Mladen Stojiljković, associate prof.





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FOOT FOR TEMPORARY TRAFFIC SIGNALISATION TYPE 28

1. Sample for testing

Three samples of the foot for temporary traffic signalisation SNG SSG TYPE 28 for testing are provided by the orderer. Figure 1 shows appearance of test sample.

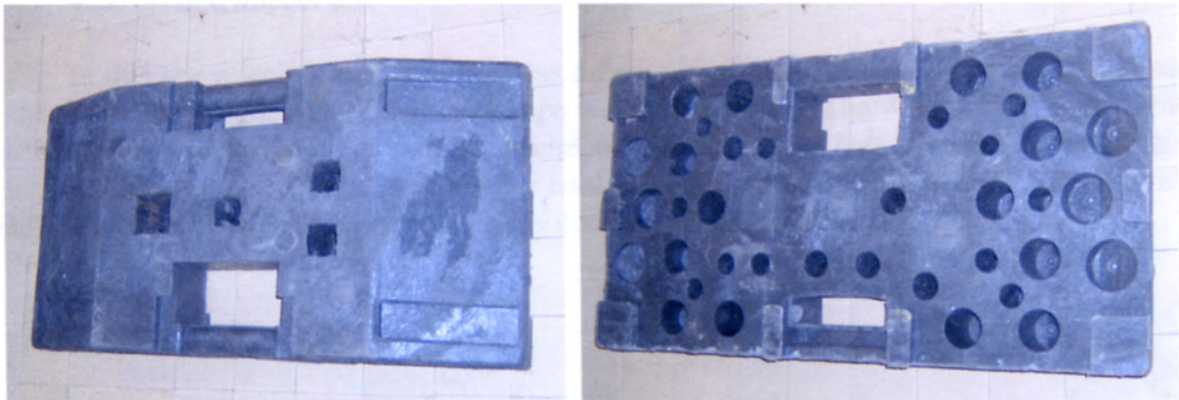


Fig. 1 Appearance of test sample, upside left and bottom side right

2. Data given by the orderer

The foot were made from recycled polyvinylchloride (PVC) and polyethylene (PE). Dimension and openings layout can be changed, based on the customer demands.

3. Performed testing

Tests performed on delivered samples were:

- Measurement of mass,
- Pressing test,
- Weight impact test,
- Upturn test and
- Salt water freezing-thawing test

4. Test results

4. 1. Measurement of mass

Measurement of mass were performed with calibrated scales, scope of 0.4-50 kg and accuracy 0.02 kg. Masses of tested samples were between from 26.64 kg to 27.10 kg.

4. 2. Pressing test

The pressing test was carried out by a hydraulic press, in order to check the behaviour of foot in the event of an accidental overpass by a vehicle. The testing force of 200 kN was chosen based on the adverse case when loaded two-axe lorry with the mass of 40 tons pass over the foot by one wheel. The testing was performed as follows: The foot was placed on the bottom metal plate of the press and with another plate the force was exerted on the upside of the foot. A rubber disk 200 mm in diameter and 20 mm thick was inserted between the upside of foot and the metal plate of the hydraulic press. The force of 200 kN does not induce failure, fracture or similar damage of the tested foot.

4. 3. Weight impact test

In this test a weight of 1 kg mass was dropped from a height of 2 m on the upside surface of the foot. The weight was of cylinder shape with rounded end. The weight was move through a plastic tube to ensure that it hits the test specimen with its rounded bottom end. The aim of this test is to simulate striking of cobbles or similar hard particles on the surface of foot. Strokes with the weight on several places did not produce any damage of the foot surface.

4. 4. Upturn test

Upturn test was performed in the following way:

- the foot were placed on the horizontal floor surface;
- a 1.2 m long steel pipe 42 mm in outer diameter and 3 mm thick was inserted in central opening in vertical position;
- at the height of 1 m a horizontal gradually increasing force was acting on the upper end of the steel pipe in order to upturn the foot.

The upturn of the foot was performed about the shorter side of the foot base rectangle (440 mm). The mass of the pipe was 3.2 kg. The detachment of the foot base edge and the floor surface happened at the horizontal force of about 50 N, so that the upturning momentum was 50 Nm. That value of momentum is for 10 Nm less than the theoretical momentum value.

Rule TL 97 of German Association for traffic safety (Verkehrssicherung an Baustellen Aufstellvorrichtungen) prescribes that traffic signs must withstand an effect of wind of 250 N/m² in settlements and 420 N/m² out of settlements. That means that the tested foot may carry a traffic sign with an area of 0.2 m² in settlements and 0.12 m² out of settlements, whose center of gravity is at 1 m above road surface. Traffic signs with larger areas than these need two or more feet, in accordance with the area, which overlies one another.

4. 5. Freezing-thawing salt water test

For this test were a few peaces of material taken, cut from available samples. The aim of this testing was to expose the material of the product to influence of environment in conditions of application, such as low temperature, salt water, raised temperature and so on. The peaces of material were put into a saturated solution of NaCl in water. After that solution was frozen (at the temperature of $-20\text{ }^{\circ}\text{C}$) and held in this condition for a few hour. Then the solution was removed from the refrigerator, allows to warm up spontaneously to room temperature and finally heated up to $+50\text{ }^{\circ}\text{C}$ by an electrical heater. The cycle was repeated ten times to estimate the influence of that on the roughening of the surface, or the appearance of cracks, crevices or similar damages of the surface.


By visual inspection after 10 cycles of freezing-heating no crack, roughening or change of appearance were found.

5. CONCLUSION

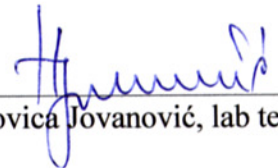
Tested feet for temporary traffic signalisation SNG SSG TYPE 28 can withstand mechanical load and influences of environment during application, such as low temperature, salt water, heating, etc., which can be expected in service. A particular advantage of this product is that it is made from used polymers, which helps preserve the environment.

Nis, 12. 26. 2005.

Testing performed:



Goran Radenković, assist. prof.
E-mail: rgoran@masfak.ni.ac.yu



Novica Jovanović, lab tech.