

# **INVERTED PROFILE THERMOPLASTIC SLUMP TEST PROCEDURES (RLC-1PS)**

## **Test Procedure Principles:**

### **Purpose:**

To determine whether the thixotropic nature of a thermoplastic material is suitable for use in inverted profile traffic striping.

### **Summary:**

By using a special calibrated slump test die to extrude a strip of preheated thermoplastic material onto a sample plate and measuring the distance between the adjacent profiles, it can be determined if the profilability of the thermoplastic material is within the proper limits.

### **Apparatus:**

A die box shall be formed that is enclosed on three (3) sides, utilizing 1/8 X 2" flat steel (Fig. 4). The parts shall be welded in order to form a screed box (Fig 4A). The rear door shall have gaps (openings) milled in accordance with the dimensions shown in Figure 4B. These gaps will cause a profiled thermoplastic line to be extruded when the die is moved across a test plate. The rear of the die shall be joined together with a piece of 1/2" cold rolled steel. A handle can be affixed to the rear in order to move the die (Fig. 4C).

### **Test Procedure:**

Pre-heat a 500-gram sample of thermoplastic material in a suitable container while continuously stirring the sample. Heat to a temperature of 400° F (204 Celsius) minimum. At the same time pre-heat the slump test die to a temperature of 400° F (204 Celsius).

Place the pre-heated die on a suitable sample board on a sturdy worktable. When the 500-gram sample is at the prescribed temperature, pour the pre-heated liquid thermoplastic into the open top of the slump test die (See Fig. 1). After pouring in the preheated thermoplastic, slide the die to the rear of the sample board at the rate of approximately 12" in five (5) seconds. Hold the empty sample container under the rear edge of the sample board to catch any excess material (See Fig. 2). Upon completion of step 2 you should have an extruded, profiled line that is formed on the sample board (Fig. 3). After the sample has cooled to room temperature, the profiled sample can be measured for slump rate (Fig. 3).

Utilize a dial or electronic digital type caliber to measure the distance between two (2) vertical surfaces of the sample. Measurement should be made near the bottom corners of the formed grooves. The minimum distance between profiles of a passing sample should be no less than 7/32", .2888", or .556 mm.

# INVERTED PROFILE PLATE COMPRESSION TEST

## PROCEDURES

### RLC-1BT

**Purpose:**

To determine whether a thermoplastic material has suitable cold flow slump resistance properties for use in Inverted Profile Striping.

**Summary:**

By casting a test cube of thermoplastic material, conditioning it to room temperature, placing it under a static load in a convection oven at a specified temperature and then measuring the spread, it can be determined whether the slump resistance of the material is within the proper limits and suitable for use in Inverted Profile Striping.

**Apparatus:**

A rectangular steel form is fabricated out of 5/8" x 5/8" steel cold rolled stock. This form shall have an inside measure of 1.6" x 3.9". The test form shall be assembled at the edges with socket head cap screws that can be used for easy disassembly. (See Fig. 5)

**Test Procedure:**

Clean and lubricate the test mold using a silicon spray as a releasing agent. Place the lubricated mold on a suitable hard board surface. In a suitable container, pre-heat a 500 gram sample of thermoplastic material to 400° F and stir for eight (8) minutes to ensure a homogenous mixture. Pour the heated thermoplastic mixture into the pre-lubricated mold, being careful to fill all corners and voids and screeding any excess material off level with the top of the mold. Allow the filled mold to air cool for four (4) hours at room temperature before removing the sample from the mold.

Place the completed sample on a suitable masonite hard board surface that is about 8" square. Cover the top of the sample cube with a piece of silicone release paper that is slightly larger than the test cube itself. Place a standard house building brick, weighing approximately 2500 grams, squarely on top of the test cube, taking care to center it exactly on all sides. (See Fig. 6)

Place the hard board, sample cube, release paper, and brick into a pre-heated convection oven at 185° F. for four (4) hours. At the end of the four (4) hours, remove the sample from the oven, remove the brick and release paper and allow to cool. Measure the approximate surface area of the cured sample and compare it to the original area. The surface area should increase by no more than 10%. (See Fig. 7)