SCOPE:

This test procedure is used to determine the acceptability of asphalt release agents. The tests check the release agent for: the presence of petroleum; ability to mix and stability with water; ability to prevent loose hot mix asphalt (HMA) from adhering to metal; and detrimental effects on compacted HMA and performance-graded (PG) binder.

APPARATUS:

1. Infrared Analyzer
2. 1000 ml Graduate - 10 ml Graduations
3. Large metal pans - approximately 200 mm x 400 mm - 37.5 mm deep - steel or aluminum
4. Metal pan - approximately 125 mm x 200 mm - 75 mm deep
5. Controlled oven - sufficient size to take large pans - temperature to 200°C

TEST PROCEDURE:

A. Analyze the sample using Infrared Analysis for any trace of petroleum in the asphalt release agent.

If petroleum is found, no further testing will be done on this sample. If no petroleum is found, continue with the following tests.

The following test procedure will be performed using the manufacturer's recommended dilution:

B. Place 10 ml of asphalt release agent in a 1000 ml graduate and add the amount of tap water recommended by the manufacturer for the dilution rate. Stir or shake well after the addition of water is made and check for miscibility, jelling, and the ability to apply by brushing or mopping.

C. Heat approximately 1200 grams of any standard NYSDOT asphalt mix in an oven to 120°C. Following the manufacturer’s recommended dilution and application rates, coat one of the large metal pans with diluted asphalt release agent. Place the heated HMA in the coated pan. Check for adherence by tilting the pan from end to end. Allow the material to cool to room temperature and check if the material is removable from the pan in one piece.

D. Heat a second approximate 1200 gram sample of asphalt mix to 175°C. Following the manufacturer’s recommended dilution and application rates, coat the remaining large metal pan with diluted asphalt release agent. Place the heated HMA in the coated pan. Check for adherence by tilting the pan from end to end. Allow the material to cool to 120°C and check to see if the material flows freely when poured from the pan.

E. Obtain a 100 mm to 152 mm diameter HMA “core” made with a standard PG binder using a Marshall hammer or gyratory compactor. Place the HMA core in a small metal pan which contains asphalt release agent diluted as recommended. The asphalt release agent solution should be at least 50 mm deep (half the height of the core) after placing the core in the pan. Allow the core to remain in solution for 48 hours and check for the effect this has on the core and solution.

F. Prepare two PG binder samples according to ASTM D5. Completely submerge one sample in the asphalt release agent solution diluted as recommended and leave the other as a standard. Allow both to stand at room temperature for 16 hours. Conduct penetration tests on both samples as per ASTM D5.
REPORT:

Report whether petroleum was detected or not by Infrared Analysis; and if not, also include observations on the dilution of the asphalt release agent, whether the asphalt mixture sticks to the pans at 120°C and 175°C, observations on the effect of the release agent on the core soaked in the solution, and the condition of that solution, and the results of the penetration tests.

ACCEPTANCE CRITERIA:

The asphalt release agent cannot have any petroleum in its makeup as per Section 402 of the Department’s Standard Specifications. The asphalt release agent must be miscible in water, and when diluted, cannot show any signs of jelling and must be easily brushed and mopped. The loose mixture of HMA must flow freely from the pans coated with release agent and cannot stick to the pans. The release agent must not affect the HMA detrimentally in any way. There cannot be any deterioration of the HMA core or stripping of the PG Binder from the aggregate after soaking in the asphalt release agent. The core must remain intact and not easily broken apart. The maximum allowable difference between the penetration test results of the submerged sample and the control is 6.