

TEXAS DEPARTMENT OF TRANSPORTATION  
GENERAL SERVICES DIVISION

SPECIFICATION NO.  
TxDOT 192-55-78\*  
REVISED: APRIL 2007

RELEASE AGENT, ASPHALT, WATER SOLUBLE, CONTAINS  
NO SOLVENTS OR PETROLEUM HYDROCARBONS

PUBLICATION

This specification is a product of the Texas Department of Transportation (TxDOT). It is the practice of TxDOT to support other entities by making this specification available through the National Institute of Governmental Purchasers (NIGP). This specification may not be sold for profit or monetary gain. If this specification is altered in any way, the header, and any and all references to TxDOT must be removed. TxDOT does not assume nor accept any liability when this specification is used in the procurement process by any other entity.

PART I

GENERAL CLAUSES AND CONDITIONS

1. The cleaner furnished under this specification shall be the latest improved ingredients or formulation in current production, as offered to commercial trade, and shall conform in strength and quality. The respondent represents that all cleaners offered under this specification shall be new product. USED, DEMONSTRATOR, PROTOTYPE, DISCONTINUED, OR OUTDATED PRODUCT ARE NOT ACCEPTABLE.
2. Respondent should submit with the solicitation or have on file with TxDOT, Austin, Texas, the latest printed literature and detailed specifications on cleaner the respondent proposes to furnish. This literature is for informational purposes only.
3. All packaging and containers not specifically mentioned which are necessary for the cleaner to be complete and ready for use or which are normally furnished as standard packaging shall be furnished by the vendor. All product, containers and packaging shall conform in strength, quality and workmanship to the accepted standards of the industry.
4. The ingredients or formulation provided shall meet or exceed all federal and state of Texas safety and health, regulations and standards in effect and applicable to cleaner furnished at the time of manufacture.
5. It is the intent of TxDOT to purchase goods, equipment and services having the least adverse environmental impact, within the constraints of statutory purchasing requirements, TxDOT need, availability, and sound economical considerations. Suggested changes and environmental enhancements for possible inclusion in future revisions of this specification are encouraged.

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\* This Specification Supersedes Specification No. (formerly) TxDOT 190-90-19, Revised June 2000.

6. TxDOT encourages all manufacturers to comply voluntarily with the Society of Automotive Engineers (SAE) Recommended Practice for marking of plastic parts per current SAE J1344. All plastic components furnished to this specification should have an imprinted SAE symbol identifying the resin composition of the component so that the item can be recycled after its useful life. Manufacturers are encouraged to use recycled plastics and materials in the manufacture of their products in order to conserve natural resources, energy and landfill space. Respondents should note that future specification revisions may require mandatory compliance with the SAE plastic coding system.
7. TxDOT is committed to procuring quality goods and equipment. We encourage manufacturers to adopt the International Organization for Standardization (ISO) 9001-9003 standards, technically equivalent to the American National Standards Institute/American Society for Quality Control (ANSI/ASQC Q91-93 1987), and obtain certification. Adopting and implementing these standards is considered beneficial to the manufacturer, TxDOT, and the environment. It is TxDOT's position that the total quality management concepts contained within these standards can result in reduced production costs, higher quality products, and more efficient use of energy and natural resources. Manufacturers should note that future revisions to this specification may require ISO certification.

## PART II

### SPECIFICATIONS

#### 1. SCOPE

- 1.1. This specification establishes the requirements for an asphalt release agent to be used to minimize the susceptibility of bituminous paving mixtures (asphalt) to adhere to truck beds and all other paving equipment. The asphalt release agent will be sprayed on truck beds and all other equipment at the recommended dilution rate prior to contact with the asphalt.
- 1.2. The release agent shall be non-carcinogenic, environmentally safe, water soluble, and contain no solvents or petroleum hydrocarbons. The release agent shall meet the following requirements.

2. APPROVED PRODUCTS LIST: TxDOT intends to use only a release agent that is suitable for both truck beds and all other equipment for ease in operations. Release agent to be furnished with this specification must have been tested by the TxDOT Laboratory and shown on the published approved products list. The TxDOT approved products list can be found at: <http://www.dot.state.tx.us>, click on business, select material producer list and scroll down to asphalt release agents.

Only products listed as both "approved for truck beds and all other paving equipment" are suitable for use under this specification. Products listed as "approved for truck beds only" are not suitable for use under this specification.

NOTE: A vendor who wishes to have other products considered for future purchases should contact the TxDOT General Services Division at 125 E. 11th Street, Austin, Texas 78701.

3. SAFETY AND ENVIRONMENT REQUIREMENTS: The release agent shall be labeled in accordance with Title 29 Code of Federal Regulations Hazard Communication.
  - 3.1. The release agent shall contain no component listed in the Resource Conservation and Recovery Act (RCRA) Hazardous Waste Code of Federal Regulations (CFR), Title 40, Part 261, Subpart D, List of Hazardous Waste and shall contain no polychlorinated biphenyls (PCB's).

- 3.2. The release agent shall have a rating no higher than zero for all National Fire Protection Association (NFPA) Hazard Codes. If using the hazardous materials identification system (HMIS), a rating no higher than one is acceptable for Health and a zero is required for both Flammability and Reactivity codes. Any change in release agent ingredients or formulation shall require re-testing under all portions of this specification.
- 3.3. With any shipment to a TxDOT location, the manufacturer of the cleaner shall include the following:
  - 3.3.1. A Materials Safety Data Sheet (MSDS) for the release agent.
  - 3.3.2. A certification from the manufacturer, signed by an authorized company official, stating that the release agent formulation supplied conforms to that tested by TxDOT. Any change in release agent formulation shall require re-testing by the independent analytical laboratory and TxDOT.
4. PHYSICAL REQUIREMENTS
  - 4.1. The release agent shall not breakdown asphaltic concrete and shall not leave hazardous waste residue.
  - 4.2. Products that contain flammable materials, solvents, or petroleum elements are not acceptable.
  - 4.3. The release agent shall have a minimum flash point of 400°F (204°C).
5. INDEPENDENT TESTING REQUIREMENTS: The independent analytical laboratory shall test the release agent in accordance with TxDOT Test Method Tex-239-F. Test method can be found at: TxDOT website: [www.dot.state.tx.us](http://www.dot.state.tx.us), click on "BUSINESS", under "Specifications and Plans" click on "Test Procedures", click on "200-F Series", scroll down to "239-F Asphalt Release Agent".
6. Release agent must pass testing for both truck beds and other paving equipment to be approved for use by TxDOT.
7. Release agent shall be tested by an independent analytical laboratory, at the vendor's cost, for compliance with the following requirements before submittal to the TxDOT Fort Worth District Laboratory for verification.
8. The release agent shall pass all applicable laboratory tests before submittal to TxDOT for verification. Any release agent failing any part of the test shall be considered unacceptable and further testing shall cease. The following criteria will be used to determine a "Passing" rating.
  - 8.1. For Part I, only a rating of "No Stripping" will be acceptable.
  - 8.2. For Part II, the asphalt shall leave a residue of 10 grams or less on the steel plate in each of the required tests. An asphalt residue of 10.1 grams or more on any test shall be considered to be "Failing" the test.
  - 8.3. For Part III, the asphalt shall leave a residue of 0.2 grams or less on the steel plate in each of the three tests. An asphalt residue of 0.3 grams or more on any test shall be considered to be "Failing" the test.

9. VERIFICATION TESTING: Release agent that passes all tests at the independent analytical laboratory shall be submitted to the Fort Worth District Laboratory for verification testing using TxDOT Test Method Tex-239-F.
  - 9.1. Vendor shall submit a product sheet, Materials Safety Data Sheet (MSDS), a name and phone number for a Vendor point-of-contact, and a copy of the independent analytical laboratory report to:

Texas Department of Transportation  
Attn: Fort Worth District Laboratory  
2501 SW Loop 820  
Fort Worth, Texas 76133
  - 9.2. After review and approval of the submitted information, the Fort Worth District Laboratory shall request a one quart (one liter) sample of the release agent be submitted to the above address. It is anticipated that the samples submitted shall be consumed during testing. The Fort Worth District Laboratory shall retain samples that pass Verification Testing.
  - 9.3. Parts I, II and III shall be performed by the Fort Worth District Laboratory and all field tests (Part IV) shall be done by the Fort Worth District Maintenance Section. The criteria for a "Passing" rating on Parts I, II and III shall be as shown above in Para. 6.1. through Para 6.3. Any release agent failing a test shall be considered unacceptable and further testing shall cease. Release agent passing all testing procedures shall be approved for use on all pieces of equipment.
  - 9.4. Approval of the release agent shall be the responsibility of the Fort Worth District Materials Engineer. Approval shall be based upon the test results. The approved release agent shall be placed on a list of pre-approved producers. The Fort Worth District Laboratory shall maintain this list.
10. PRODUCT CONFORMITY: At the discretion of TxDOT, any shipment of release agent to a TxDOT location may be tested by infrared or gas chromatography for compliance with the MSDS and uniformity with the formulation of the approved release agent sample.

The following products have been approved according to the TXDOT General Services Division Specification No. 192-55-78 for use in all aspects of H/MAC operations.

**Release Agents**

Effective date: 04/2007

Manufacturer	Product	Approved for Truck Beds	Approved for Other Paving Equipment	Dilution Rates
Acme Soap, Inc.	Release	YES	NO	4:1 max
Atlas Speciality Chemical	R138	YES	YES	5:1 max
Arrow-Magnolia	Slick-TX	YES	NO	20:1
BG Chemical	Black Magic 13	YES	YES	Full Strength
BG Chemical	Black Magic for Rubber	YES	YES	Full Strength
BG Chemical	ThermalSlide	YES	NO	Full Strength
Chem Station	2746	YES	YES	5:1
Chem Station	6992	YES	YES	40:1 to Full Strength (Truck Beds) 4:1 to Full Strength (Other)
Chem Station	8985	YES	NO	1:1
Chem Station	8986	YES	NO	1:1
Chem Station	8987	YES	NO	1:1
Chem Station	8988	YES	NO	1:1
Chem Station	8989	YES	NO	1:1
Chem Station	8991	YES	NO	1:1
Chem Station	8992	YES	NO	1:1
Chem Station	8993	YES	NO	1:1
Chem Station	8994	YES	NO	1:1
Chem Station	8995	YES	NO	1:1

The following products have been approved according to the TXDOT General Services Division Specification No. 192-55-78 for use in all aspects of HMAC operations.

**Release Agents**

Effective date: 04/2007

Manufacturer	Product	Approved for Truck Beds	Approved for Other Paving Equipment	Dilution Rates
Chem Station	8996	YES	NO	5:1
Chem Station	8997	YES	NO	5:1
Chem Station		YES	NO	20:1
Continuum Chem Corp.	EZ Flow	YES	YES	10:1 (Truck Beds) Full Strength (Other)
Compound Technologies	No. 1 Release Agent	YES	NO	5:1 max
Envirotech	Slide Gard	YES	NO	Full Strength
G&G Products	Clean Slide	YES	YES	3:1
JACO	Release	YES	NO	15:1
KO Manufacturing	KO 4014	YES	NO	3:1
PIC, Inc.	Asphalt Release Agent	YES	NO	20:1
RoMix Chemical	Slid EZ #AR-4	YES	NO	4:1 max
Rhomar	Enviro-Slide Ultra	YES	NO	10:1
Sierra Chemical	No Phalt	YES	NO	7:1
Syn-Co Chemical	Syn-Co 40 Release	YES	NO	4:1 max
Synthetics, Inc.	SPX-7	YES	YES	Full Strength
Tec-Team Industries	TECLON-PRO	YES	YES	5:1 max
Trans Chem Engineering	TC 1-ARA 150	YES	YES	4:1 max
Zep	E2008	YES	YES	4:1 to Full Strength

# Tex-239-F, Asphalt Release Agent

## Contents:

Section 1 — Overview.....	2
Section 2 — Part I, 7-day Asphalt Stripping Test .....	3
Section 3 — Part II, Mixture Slide Test .....	5
Section 4 — Part III, Asphalt Performance Test .....	7
Section 5 — Part IV, Release Agent Field Performance Test.....	9
Section 6 — Report .....	10
Section 7 — Notes .....	11

## **Section 1**

### **Overview**

Effective date: November 2004

Use this test procedure, which consists of four parts, to determine the effect of an asphalt release agent on a bituminous mixture.

Use Part I to determine the susceptibility of asphalt stripping off the aggregates after contact with an asphalt release agent.

Use Part II to determine the susceptibility of a paving mixture for sticking to or adhering to the beds of the haul trucks after adding an asphalt release agent.

Use Part III to determine the susceptibility of hot asphalt binders for sticking to or adhering to paving equipment, rakes, shovels, etc. when using an asphalt release agent.

Use Part IV to evaluate the susceptibility of a hot asphalt mixture for sticking to or adhering to truck beds or other paving equipment.

### **Units of Measurement**

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

## Section 2

### Part I, 7-day Asphalt Stripping Test

Use this procedure to determine the susceptibility of bituminous paving mixtures to asphalt stripping off the aggregates after contact with an asphalt release agent. Use Part I to evaluate asphalt release agents used to coat truck beds and other paving equipment.

#### Apparatus

Use the following apparatus:

- ◆ Two 1 pt. (0.473 L) glass canning jars or equivalent with a lid for sealing
- ◆ Oven capable of attaining a temperature of 302 °F (150 °C) or more
- ◆ Balance, readable to 0.1 g and accurate to 0.5 g

#### Preparing Mix

Use either a plant-mixed sample or prepare a laboratory sample according to the procedure outlined in “Tex-205-F, Laboratory Method of Mixing Bituminous Mixtures.”

#### Procedure

Follow these steps to evaluate the susceptibility of stripping of asphalt from aggregates when using asphalt release agents in truck beds and on other paving equipment.

<b>7-day Asphalt Stripping Test</b>	
<b>Step</b>	<b>Action</b>
1	Obtain a representative sample of bituminous mixture. Heat the mixture to 290 °F (143 °C).
2	Place 50 g of mix into a 1 pt. (0.473 L) glass jar.
3	Place a minimum of 3 fl. oz. (100 mL) of the release agent at full strength into the glass jar containing the bituminous mixture. NOTE: Be sure the mixture is completely covered by the release agent.
4	Place 3 fl. oz. (100 mL) of the release agent at full strength into the second jar as a comparison sample.
5	Cover the samples and leave them undisturbed for 168 ± 2 hours.
6	At the end of the specified time, compare the color of the release agent containing the mix to the comparison sample. Separate the mixture from the release agent and examine for any stripping of the asphalt from the aggregate.
7	From Step 6, rate the release agent according to the following rating system: <i>No Stripping</i> - No stripping or discoloration occurred. <i>Slight Stripping</i> – Discoloration of the release agent. <i>Moderate Stripping</i> – Discoloration and stripping of the fine aggregate. <i>Severe Stripping</i> – Discoloration, stripping of the coarse and fine aggregate.

**Report**

For each release agent tested, report the amount of visual stripping that is noted. Compare these results with the requirements of the current specification to determine if the asphalt release agent is approved for use.

### Section 3

#### Part II, Mixture Slide Test

Use this procedure to determine the susceptibility of bituminous paving mixtures for sticking to or adhering to the bed of the haul truck after adding an asphalt release agent.

Use Steps 2-11 for truck bed evaluation only. Include Step 12 with Steps 2-11 for evaluating other paving equipment.

#### Apparatus

Use the following apparatus:

- ◆ Oven capable of attaining a temperature of 302 °F (150 °C) or more
- ◆ A 0.1 ft.<sup>3</sup> (2831.7 cm<sup>3</sup>) unit weight bucket filled with sand to a weight of 9.1 kg (20 lbs.)
- ◆ One 16 gage steel or aluminum plate, 12 x 12 in. (305 x 305 mm) to 18 x 18 in. (457 x 457 mm), with a textured surface that simulates the inside of an average truck bed used for hauling bituminous mixtures
- ◆ Balance, readable to 0.1 g and accurate to 0.5 g
- ◆ Waxed paper
- ◆ Spray bottle used to apply the release agent

## Procedure

Follow these steps to evaluate the susceptibility of a bituminous paving mixture sticking to or adhering to the beds of haul trucks when using asphalt release agents.

<b>Mixture Slide Test</b>	
<b>Step</b>	<b>Action</b>
1	Obtain a representative sample of bituminous asphalt mixture. Heat a minimum of 1600 g of mixture to 290 °F (143 °C) for 45 to 60 minutes.
2	Place a 0.1 ft. <sup>3</sup> (2831.7 cm <sup>3</sup> ) unit weight bucket filled with sand to a weight of 20 lbs. (9.1 kg) in an oven and heat to 290 °F (143 °C) for 45 to 60 minutes.
3	Spray the metal plate placed in the horizontal direction, with the asphalt release agent at the recommended dilution rate and provide an even coating.
4	Allow the metal plate to stand undisturbed for 5 minutes.
5	Weigh the metal plate to the nearest 0.1 g and record.
6	Place 500 ± 10 g of the mixture on the metal plate.
7	Place a sheet of waxed paper on top of the mixture.
8	Place the sand filled bucket on top of the waxed paper and mixture.
9	Allow the mixture and the sand filled bucket to stand for 1 hour ± 5 minutes, then remove the bucket from the top of the mixture.
10	Tilt the metal plate to approximately a 45° angle and tap the plate three times on the table to help loosen the mixture from the plate.
11	Reweigh the metal plate to the nearest 0.1 g and record.
12	Repeat Steps 6 through 11 two additional times, without respraying the metal plate.

## Calculations

Calculate the amount of binder that remains adhered to the plate to the nearest 0.1 g. Use the following formula:

$$\text{Amount of binder} = \text{Final weight of plate} - \text{initial weight of plate}$$

## Report

For each release agent tested, report the amount of binder in grams that remained adhered to the plate. Compare these results with the requirements of the current specification to determine if the asphalt release agent is approved for use.

## Section 4

### Part III, Asphalt Performance Test

Use this procedure to determine the susceptibility of hot asphalt binders for sticking to or adhering to paving equipment, rakes, shovels, etc. when using an asphalt release agent.

#### Apparatus

Use the following apparatus:

- ◆ Balance, readable to 0.1 g and accurate to 0.5 g
- ◆ Spray bottle used to apply the release agent
- ◆ Oven capable of attaining a temperature of 302 °F (150 °C) or more
- ◆ A 1 qt. (0.95 L) metal container, large sample pan, scoop, spatula, etc.
- ◆ One 16 gage steel or aluminum plate, 12 x 12 in. (305 x 305 mm) to 18 x 18 in. (457 x 457 mm), with a textured surface that simulates the inside of an average truck bed used for hauling bituminous mixtures

#### Preparing Asphalt

Use a PG 64-22, or equal, that has been modified by adding either SBS or SBR at a rate of 3.0% by weight of the binder.

#### Procedure

Follow these steps to determine the susceptibility of hot asphalt binders for sticking to or adhering to paving equipment, rakes, shovels, etc.

<b>Asphalt Performance Test</b>	
<b>Step</b>	<b>Action</b>
1	Pour the binder into a 0.95 L (1 qt.) container and place the container into a 290 °F (143 °C) oven for 45 ± 5 minutes.
2	Spray the metal plate with the asphalt release agent at the recommended dilution rate and provide an even coating.
3	Allow the metal plate to stand undisturbed for 5 minutes.
4	Weigh the metal plate to the nearest 0.1 g and record.
5	Remove the asphalt binder from the oven and stir for 30 ± 5 seconds.
6	Pour 20 ± 2 g of asphalt binder on the metal plate. Return the 1 qt. (0.95 L) container to the oven.
7	Allow the binder to cool to touch (normally 5 minutes). Using a small spatula, lift up one edge of the binder, and then attempt to remove the remainder of the binder with one continuous pull.
8	Weigh the metal plate to the nearest 0.1 g and record.
9	Pour another 20 g of hot asphalt binder on the same spot as in Step 6. Return the 1 qt. (0.95 L) container to the oven.

<b>Asphalt Performance Test</b>	
<b>Step</b>	<b>Action</b>
10	Allow the binder to cool to touch, then remove it from the metal plate again as in Step 7.
11	Weigh the metal plate to the nearest 0.1 g and record.
12	Repeat Steps 9 through 11 until failure or 3 times maximum, whichever occurs first.

### Calculations

Calculate the amount of binder that remains adhered to the plate to the nearest 0.1 g. Use the following formula:

$$\text{Amount of binder} = \text{Final weight of plate} - \text{initial weight of plate}$$

### Report

For each release agent tested, report the amount of binder in grams that remained adhered to the plate. Compare these results with the requirements of the current specification to determine if the asphalt release agent is approved for use.

## Section 5

### Part IV, Release Agent Field Performance Test

Use this procedure to evaluate the susceptibility of hot asphalt mixtures for sticking to or adhering to truck beds or other paving equipment. Evaluations for field testing of truck beds shall be done separately from field testing of other paving equipment.

#### Apparatus

Use the following apparatus:

- ◆ Haul trucks beds, steel wheel rollers, pneumatic rollers, pavers or lay-down machines, motor graders, shovels, rakes, lutes, and any other equipment used during the paving operation
- ◆ Spray bottle used to apply the release agent

#### Preparing Mix

Bituminous mixtures prepared at a hot mix plant.

#### Procedure

Follow these steps to evaluate the susceptibility of hot asphalt mixtures sticking to or adhering to the truck beds or other paving equipment.

<b>Release Agent Field Performance Test</b>	
<b>Step</b>	<b>Action</b>
1	Field inspectors or maintenance personnel shall perform the evaluation at the time of the paving operations.
2	Clean all parts coming in contact with the bituminous mixture prior to coating with the release agent. Parts shall be free of solvents and or petroleum based products before testing. Clean all parts that contain rubber prior to use, then coat with the release agent two or three times before the evaluation. NOTE: Rubber absorbs solvents that may have been previously used, necessitating the proper reconditioning of the parts to provide a legitimate test.
3	Apply the release agent at the manufacturer's recommended application rate.
4	During paving operations, rate the performance of the release agent using the 'Field Performance Test' (see <i>Note</i> ) form. "Pass" means that there is no sticking of the asphalt mix, or that it is easily cleaned off the part while still warm. "Fail" means that there is sticking of the asphalt mix and that it will not be easily cleaned off the part.
5	Return the evaluation form to the TxDOT testing laboratory for further processing.
<i>Note:</i> Please contact CST/M&P at 512/506-5838 for more information on this form.	

## **Section 6**

### **Report**

For each release agent tested, rate the asphalt release agent based on the criteria shown in Step 4 of the 'Release Agent Field Performance Test' procedure. Report the asphalt release agent as “Passing” or “Failing.”

**Section 7**  
**Notes**

A list of approved release agents is maintained on the TxDOT Internet site.