

THE PENNSYLVANIA RAILROAD

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Instructions for Painting Freight Equipment Cars at Samuel Rea Shops  
(Superseding Instructions Dated December 1, 1955)

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## I. GENERAL INSTRUCTIONS

Due to the specialization of painting using automatic hot spraying apparatus for painting equipment cars and other factors at the Samuel Rea Shop, Hollidaysburg, Pa., the painting procedures to be followed at this shop will deviate somewhat from the procedures for other shops on the System.

All metal parts of cars must be free from rust, thoroughly cleaned and properly prepared before any paint is applied.

### 1. Metal on Metal - Riveted Construction:

All surfaces where metal is placed on metal must be painted with Lap and Joint Compound, Acct. 47, Ref. 1595, before assembly.

### 2. Parts Inaccessible:

All steel and wood surfaces which are not accessible after assembling, except the back of wood linings and surfaces to be welded, Must be painted before assembling with one coat of Red Freight Car Paint, Direct-to-Metal, Acct. 47, Ref. 2337.

### 3. Stenciling:

All stenciling must be done by spraying with an approved stenciling paint or enamel unless otherwise authorized. The following stenciling paint materials are made standard in these instructions:

White Stenciling Paint, Acct. 47, Ref. 2347, for brushing.

White Synthetic Stenciling Enamel, Acct- 47, Ref. 3146, for spraying,

Black Stenciling Paint (Freight Cars Exclusive of Covered Hopper Cars), Acct. 47, Ref. 2536, for spraying.

Black Stenciling Paint (Covered Hopper Cars), Acct. 47, Ref. 2551, for spraying.

### 4. Assembled Underframes, Sides, Ends and Doors:

Before shipping new sub-assemblies such as underframes, car sides, ends, doors, etc., to another point, they must be painted at the point of manufacture with one coat of Synthetic Freight Car Primer, Acct. 47, Ref. 3270. All other painting must be done at the shops where the car bodies are assembled.

### 5. Trucks, Couplers, Wheels, Axles, Etc.:

On new cars the assembled trucks, new or reconditioned, except wheels and axles, are to be painted with one coat of Hard Drying Black Enamel, Acct. 47, Ref. 2016. In the painting procedures that follow for painting repaired cars, the trucks are not to be painted.

Couplers, wheels, axles, air hose and truck side frames (see paragraph above) shall not be painted and must be covered during painting operation to protect them from inadvertently being painted. Any part of the air brake system

which has a vent to the atmosphere, such as AB valve, breather on non-pressure head of brake cylinder and retaining valve, shall also be protected so that paint does not foul the vent.

6. Paint Identification:

The identity of the finish coat or coats of paint used (not primers) and number of coats applied must be stenciled in code on the cars in accordance with Tracing E-446477, "Code Letters for Identification of Paint Manufacturers", and according to the latest lettering arrangement for the class of car painted.

7. Lettering:

All lettering shall be in accordance with latest lettering arrangements specified on drawings applicable to the class of freight car being painted.

8. Coating - Film Thickness:

The wet film thickness for the one coat of Black Freight Car Paint, Direct-to-Metal, on Open Top Hopper Cars, should be approximately 4-1/2 mils, while the one coat of Red Freight Car Paint, Direct-to-Metal, used on other freight cars, and Gray Paint, Direct-to-Metal, used on covered hopper cars, should be approximately 6-1/2 mils wet film thickness.

The wet film thickness shall be measured as soon as possible after application of the paint coating but before the paint has set up.

The aim, on open top hopper cars, is to approximate with one coat the end result of 2 mils dry film thickness, and on other freight cars, to approximate with one coat the end result of 3 mils dry film thickness.

The wet film measurement shall be made with a suitable measuring gage, such as Interchemical Direct Reading Wet Film Thickness Gage, range 2-12 mils, which can be purchased from the Gardner Laboratory, Inc., Bethesda, Maryland. The gage is rolled over the wet film and a reading then made of the wet film thickness directly on the side of the gage.

When it is desired to determine the overall film thickness of dry paint coatings, a dry film measurement gage should be used, such as the New Gardner Film Thickness Gage, obtainable from Gardner Laboratory, Inc. Readings obtained with this gage are independent of the composition or thickness of the base metal on which the coating is being measured, the only requirement being that the base metal on which the coating is applied must be electrically conductive.

No other measuring gages shall be used unless approved by the Engineer of Tests.

The above gages are not suitable to measure the coating thickness of car cements. This measurement can be easily made with a steel rule inserted into the coating to the base surface.

9. Thinning:

All paint materials are to be used, as far as possible, in the as-received condition. If, at any time, it is found necessary to add thinners to a material to make it work properly, the Engineer of Tests should be contacted as to the proper use of Spraying Thinner, Acct. 47, Ref. 2489, for synthetic enamels and primers.

Asphaltum Compounds (Car Cement), Acct. 47, Refs. 531, 555 and 556, are not to be thinned. The Acct. 47, Refs. 531 and 555 Car Cements shall be heated in conjunction with the spray equipment, if reduction in viscosity is required for satisfactory spraying.

10. Car Cements:

Asphaltum Compounds (Car Cements) come in three consistencies, based on specific work application with specific equipment for applying the cements. Compound, Asphaltum-Asbestos, Light Consistency, Approved Brand (Air gun or brush), Acct. 47, Ref. 531, is applied to metal surfaces, except car roofs, by spray or brush. Compound, Asphaltum-Asbestos, Medium Consistency, Approved Brand (one coat operation using pressure pump spray equipment), Acct. 47, Ref. 555, is primarily approved for application only to car roofs but it may be used for other purposes as specified in these instructions. Compound, Asphaltum-Asbestos, Heavy Consistency, Approved Brand (for caulking end of floor boards only), Acct. 47, Ref. 556, is a heavy duty material. This compound shall not be thinned for the purpose of spraying.

11. Keystone Shadows:

On standard box and open top cars painted with the specified red freight car paint, apply shadows with Black Stenciling Paint, Acct. 47, Ref. 2536. on covered hopper cars, apply shadows with Alkali-Resisting Black Stenciling Paint, Acct. 47, Ref. 2551. On open top hopper cars, which are painted black, the black shadowing at the Keystone shall be omitted.

In addition to the foregoing General Instructions, the following detailed painting procedures are applicable to the various types of freight equipment cars.

## II. STANDARD HOPPER, GONDOLA, FLAT AND WELL CARS

### A. Standard Hopper Cars - New and Heavy Repairs:

1. Remove rust, paint and scale by abrasive blasting.
2. Cars must be spray painted over the exterior, except the underframes and exterior surfaces of slope and floor sheets and doors with one coat of Black Freight Car Paint, Direct-to-Metal, hot automatic spraying, Acct. 47, Ref. 2553, immediately after preparing the surface for painting. The exterior surfaces of the underframes, doors, slope sheets and floor sheets shall be painted with one coat of Asphaltum Compound (Car Cement), Acct. 47, Ref. 555.
3. Hopper cars are not to be painted on the interior unless specifically authorized to do so by the Chief Mechanical Officer.
4. Stencil with White Synthetic Stenciling Enamel, Acct. 47, Ref. 3146, for spraying. Stenciling shall be done at any time after the paint has dried sufficiently hard so that the paint film is not marred during the stenciling operation.

### B. Gondola Cars - New and Heavy Repairs:

1. Remove rust, scale and paint by abrasive blasting.
2. The top surface of all underframe details of cars, new or undergoing extensive repairs which are to have wood floors applied, shall be painted with one coat of Asphaltum Compound (Car Cement), Acct. 47, Ref. 531. When wood floors are applied, the space between the end of the floor boards and the side of the car shall be filled with Asphaltum Compound (Car Cement), Acct. 47, Ref. 556.
3. Cars must be spray painted all over, inside and outside, except treated wood floors, with one coat of Red Freight Car Paint, Direct-to-Metal, hot automatic spraying, Acct. 47, Ref. 2337, immediately after preparing the surface for painting. However, when repainting gondola cars which have had no new steel applied, the inside painting is to be omitted if the corners and crevices are still properly protected.
4. Stencil with White Synthetic Stenciling Enamel, Acct. 47, Ref. 3146, for spraying. Black Stencil Paint, Acct. 47, Ref. 2536, shall be used for spraying the Keystone shadows. Stenciling shall be done any time after the paint has dried sufficiently hard so that the paint film is not marred during the stenciling operation.

### C. Flat and Well Cars - New and Heavy Repairs:

1. Remove rust, scale and paint from the metal surfaces with abrasive blasting.
2. The top surface of all underframe details of cars, new or undergoing extensive repairs which are to have wood floors applied, shall be painted with one coat of Asphaltum Compound (Car Cement), Acct. 47, Ref. 531.

3. Paint all metal parts and untreated wood floors with one coat of Red Freight Car Paint, Direct-to-Metal, hot automatic spraying, Acct. 47, Ref. 2337, immediately after preparing the surface for painting. Treated wood floors are not painted.

4. Stencil with White Synthetic Stenciling Enamel, Acct. 47, Ref. 3146, for spraying. Stenciling shall be done at any time after the paint has dried sufficiently hard so that the paint film is not marred during the stenciling operation.

### III. STANDARD BOX CARS

#### A. New Cars and Heavy Repairs:

1. Clean all exterior surfaces by abrasive blasting.

2. Spray all interior metal surfaces, including doors, of all new cars, except underside of galvanized roof sheets, with one coat of Red Freight Car Paint, Direct-to-Metal, hot automatic spraying, Acct. 47, Ref. 2337. The paint is not applied to the 24 inch area above the butt which is coated with Asphaltum Compound. Apply 1/8 to 1/4 inch coating of Asphaltum Compound (Car Cement), Acct. 47, Ref. 531, or Acct. 47, Ref. 555, to the side sills, side posts, and side and end sheets to a distance of 24 inches from the butt. When new cars are assembled with steel roofs (not galvanized) the underside of the steel roofs shall receive one coat of Red Freight Car Paint, Direct-to-Metal, hot automatic spraying, Acct. 47, Ref. 2337.

3. When box cars are undergoing heavy repairs and the lining is removed, totally or in part, the exposed areas of side posts, side and end sheets shall be scraped clean of rust, scale and dirt and then painted with one coat of Red Freight Car Paint, Direct-to-Metal, hot automatic spraying, Acct. 47, Ref. 2337. Also when cars are undergoing heavy repairs the underside of the roofs shall be scraped clean of rust, scale and dirt, and then painted with one coat of Red Freight Car Paint, Direct-to-Metal, hot automatic spraying, Acct. 47, Ref. 2337. Apply a 1/8 to 1/4 inch coating of Asphaltum Compound (Car Cement), Acct. 47, Ref. 531, or Acct. 47, Ref. 555, to the side sills, side posts and side and end sheets to a distance of 24 inches from the butt.

4. Spray the exterior sides, ends, underframes and roofs (if not new galvanized) with one coat of Red Freight Car Paint, Direct-to-Metal, hot automatic spraying, Acct. 47, Ref. 2337.

5. All roofs (exterior surface) shall be spray painted with Asphaltum Compound (Car Cement), Acct. 47, Ref. 555. This compound should be used with pressure pump spray equipment. The coating shall be from 1/8 to 1/4 inch thick. It may be possible to obtain this thickness with one spray application.

During assembly of roofs, all surfaces where metal is placed on metal shall be coated with Asphaltum Compound (Car Cement), Acct. 47, Ref. 531, as a contact paint to assure against leaks.

6. Stencil with White Synthetic Stenciling Enamel, Acct. 47, Ref. 3146, and Black Stenciling Paint, Acct. 47, Ref. 2536. Stenciling can be applied after three hours.

7. Box cars with special interior equipment, such as DF loaders, etc., often having no wood lining, shall, when authorized, have the interior sides, ends, racks, doors and ceiling, if the roof sheets are not of galvanized construction, spray painted with one coat of Ready-Mixed Aluminum Paint, Acct. 47, Ref. 3261, over the Red Freight Car Paint.

#### IV. COVERED HOPPER CARS

Unless otherwise specified, the following instructions are to be used when painting all covered hopper cars and any steel box cars which are assigned to the alkali trade. Such cars are painted on the exterior only.

##### A. New and Heavy Repairs:

1. Remove all rust, loose scale and loose paint by abrasive blasting. Blow the surfaces with clean, dry compressed air.

2. Spray paint the exterior sides, ends, underframes, and roof (if not new galvanized) with one coat of Gray Paint, Direct-to-Metal, automatic spraying, Acct. 47, Ref. 2255.

3. Spray paint all roofs with Asphaltum Compound. Medium Consistency, Acct. 47, Ref. 555. This Asphaltum Compound should be used with pressure pump spray equipment. The coating shall be from 1/8 to 1/4 inch thick. It may be possible to obtain this thickness in one spray application.

4. Stencil with Black Stenciling Paint, Acct. 47, Ref. 2551. Stenciling shall be done any time after the paint has dried sufficiently hard so that the paint film is not marred during the stenciling operation.

V. DESCRIPTION OF APPROVED PAINT MATERIAL

The following table lists, under their Account and Reference Numbers, the description of approved materials covered by these Instructions:

<u>Account &amp; Reference Number</u>	<u>Standard Catalog Description of Approved Materials</u>
47-531	Compound, Asphaltum-Asbestos, Light Consistency
47-555	Compound, Asphaltum-Asbestos, Medium Consistency
47-556	Compound, Asphaltum-Asbestos, Heavy Consistency
47-1595	Compound, Lap and Joint (Contact Paint)
47-2016	Black, Locomotive, Hard Drying
47-2255	Paint, Gray, Direct-to-Metal, Automatic Spraying (Covered Hopper Cars)
47-2337	Paint, Freight Car Red, Direct-to-Metal, Hot Automatic Spraying
47-2347	Paint, White, Stenciling
47-2489	Thinner, Spray Application
47-2536	Black Stenciling Paint, for Spraying on Freight Cars Exclusive of Covered Hopper Cars
47-2551	Black Stenciling Paint, for Spraying Covered Hopper Cars
47-2553	Paint, Freight Car Black, Direct-to-Metal, Hot Automatic Spraying, For Open Top Hopper Cars
47-3146	White Synthetic Stenciling Enamel, For Spraying
47-3261	Paint, Aluminum, Ready-Mixed
47-3270	Primer, Freight Car, Synthetic

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