

L. M. S. Railway.

Carriage & Wagon Department,

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Schedule of Paints and Formulæ

for same for the Painting

of the Company's Rolling Stock.

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Revised -  
March 1929.  
Derby.

LONDON MIDLAND & SCOTTISH RAILWAY COMPANY.

Carriage & Wagon Department.

DERBY.

SCHEDULE OF PAINTS AND FORMULAE FOR SAME FOR  
THE PAINTING OF THE COMPANY'S ROLLING STOCK.

The following methods and formulae for the painting of Carriage and Wagon Stock have been agreed upon by the Paints Standardisation Committee, and no deviation must be made without reference to Headquarters.

Any question relating to quality of materials must be referred to the Chemical Laboratory, Wolverton.

Where the shade is a governing factor, standard samples indicating the agreed standard of shade are being supplied to the factories for their guidance, but it must be distinctly understood that the composition and quality is essentially governed by the specifications.

CARRIAGES.

Carriage stock will, in future, receive two coats of priming made in accordance with the following formula :-

Protective White Paint	...	112-lbs.	Special Paints Contract.
Liquid Driers.	...	9 to 12-lbs	Special Contract.
White Spirit.	...	27-lbs	Item 1, Contract 218.
Black-in-oil.	...	8 to 12-lbs	" 6 " 55.

After priming this should be followed by three coats of filling to the following formula :-

Enamel Filling.	...	112-lbs	Special Contract.
Gold Size.	...	7-lbs.	-do-
Carriage Varnish.	...	7-lbs.	-do-
Genuine Turpentine.	...	6-lbs.	Item 1 Contract 300.

Where the filling has been standing for some time in the cask, and some of the oil may have run away, it is recommended in mixing to the formula that an amount not exceeding 4-lbs of raw linseed oil be added.

The filling after rubbing down is followed by two coats of lake colour, which will be similar in composition to the formula laid down for lead colour for priming :-

One coat of lake Ground is then applied - made to the following formula :-

Lake Ground, dry. ...	30-lbs.	Item 2, Contract 279.
Raw Linseed Oil. ...	10-lbs.	" 3, " 149.

After grinding the following to be added :-

Genuine Turpentine ...	22½-lbs.	Item 1, Contract 300.
Liquid Driers. ...	2 to 5-lbs	Special Contract.
Carriage Varnish(inside)	9-lbs.	-do-
Gold Size. ...	4½-lbs	-do-

Two Coats of Crimson Lake to the following formula :-

Crimson Lake dry ...	6-lbs.	Item 1, Contract 279.
Raw Linseed Oil. ...	3-lbs.	Item 3, Contract 149.
Genuine Turpentine ...	3-lbs.	Item 1, Contract 300.

After grinding the following to be added :-

Carriage Varnish (inside)	5-lbs.	Special Contract.
Genuine Turpentine ...	3-lbs.	Item 1, Contract 300.
Liquid Driers ...	2 to 3-lbs.	Special Contract.

Where necessary all vehicles over 20 years of age to be finished with Engine Lake instead of Crimson Lake and the formula for Engine Lake is :-

Engine Lake, dry ...	6-lbs.	Item 3, Contract 279.
Raw Linseed Oil ...	3-lbs.	Item 3, Contract 149.
Genuine Turpentine ...	3-lbs.	Item 1, Contract 300.

After grinding the following to be added :-

Carriage Varnish (inside)	4-lbs.	Special Contract.
Genuine Turpentine ...	3-lbs.	Item 1, Contract 300.
Liquid Driers ...	1 to 2-lbs.	Special Contract.

Black for picking out mouldings to be in accordance with the following :-

Drop Black, Dry	56 lbs.	Item 3, Contract 55.
Raw Linseed Oil	9 lbs.	Item 3, Contract 149.
Liquid Driers	4 to 8 lbs.	Special Contract.
Genuine Turpentine	9 lbs.	Item 1, Contract 300.

Yellow for picking out mouldings :-

Zinc Sulphide White 33%	20 lbs.	Item 40, Contract 55.
Ochre Yellow in Oil	7 lbs.	Item 20, Contract 55.
Chrome Lemon in Oil	1 lb.	Item 20, Contract 55.
Liquid Driers	1 to 2 lbs.	Special Contracts.
White Spirit	1 to 3 lbs.	Item 1, Contract 218.

Vermilion for fine lining :-

Vermilion Genuine Dry	2 lbs.	Item 34, Contract 55.
Gold Size	$\frac{3}{4}$ lb.	Special Contract.
Genuine Turpentine	$\frac{1}{4}$ lb.	Item 1, Contract 300.

VARNISHING - All new work to receive 4 coats of Finishing Body Varnish and repainted jobs 3 coats.

### Ironwork.

All new Ironwork to be given two coats of Red or Purple Brown Oxide, and the exposed portion of the underframe to be given in addition one coat of black lacquer.

Formula for Red or Purple Brown Oxide :-

Oxide of Iron, Purple)		
Brown in oil	) 112 lbs.	Item 5, Contract 279.
Liquid Driers	4 $\frac{1}{2}$ to 8 lbs.	Special Contract.
Boiled Linseed Oil	54 lbs.	Item 1, Contract 149.

All ironwork other than bogies to be given one coat of Black Japan, and the solebar to be given one coat of finishing body varnish.

### Roofs.

The bare wood to receive one coat of lead colour the same as the priming coat for the bodies, afterwards to be stopped up with putty and then jointing paste applied. The canvas then to be stretched on, and after this has been done a mixture of equal parts of boiled linseed oil and jointing paste to be applied, and after this four coats of a mixture of equal parts of Protective White Paint and Tarpaulin Dressing to be applied.

### White paint for inside of carriages.

The formula for the white paint used as a ground work prior to the enamelling should be in accordance with the following :-

Zinc Sulphide White 33%	112 lbs.	Item 40, Contract 55.
Liquid Driers	3 to 6 lbs.	Special Contract.
White Spirit	27 lbs.	Item 1, Contract 218.

### Battery Box.

The battery box carried under the underframe to receive one coat of acid resisting black varnish.

### Interiors of Passenger Brake Vans.

Ceilings to receive three coats of white paint, mixed to the formula for white paint for the insides of carriages, followed by one coat of glossy white enamel. Repair jobs to have two coats of white paint and one coat of enamel.

Sides, ends, etc., to have three coats of Terra Cotta paint made to the following formula :-

Zinc Sulphide White 33%	112 lbs.	Item 40, Contract 55.
Venetian Red, dry	38 lbs.	Item 27, Contract 55.
	(ground to a suitable consistency)	
Vermilion Substitute in oil	14 lbs.	Item 35, Contract 55.
	(ground to a suitable consistency)	
Yellow Ochre in Oil	38 lbs.	Item 20, Contract 55.
Orange Chrome in Oil	28 lbs.	Item 13, Contract 55.
Boiled Linseed Oil	18 lbs.	Item 1, Contract 149.
Liquid Driers	9 lbs.	Special Contract.
White Spirit	9 lbs.	Item 1, Contract 218.

To be followed by one coat of carriage varnish.

## Sundry Passenger Stock Vehicles.

The procedure for painting sundry vehicles, i.e., Horse Boxes, Scenery Trucks, Hound Vans, Covered Carriage Trucks, etc., to be as follows :-

### Exteriors.

One coat of lead colour priming made in accordance with the priming used for carriage stock.

Stopped up.

Two coats of lead colour of the same formula as that used for carriages. (Repairs - one coat)

Two coats of Lake Ground as used for carriages.

Two coats of finishing body varnish.

### Interiors.

#### Horse Boxes (New Work.)

Ceilings (including Groom's Compartment) to receive three coats of white paint, similar to that used for the insides of carriages, to be followed by one coat of glossy white enamel.

Sides, Ends, etc., of Horse Compartment to be given three coats of Drab Paint mixed to the following formula :-

Zinc Sulphide White 33%	112 lbs.	Item 40, Contract 55.
Liquid Driers	6 lbs.	Special Contract.
Yellow Ochre in Oil	10 lbs.	Item 20, Contract 55.
Raw Umber in Oil	10 lbs.	Purchased as required.
Raw Linseed Oil	9 lbs.	Item 3. Contract 149.
Boiled Linseed Oil	27 lbs.	Item 1. Contract 149.
Venetian Red dry	1 lb.	Item 27, Contract 55.

(ground to a suitable consistency.)

Sides, Ends, etc., of Groom's Compartment to receive three coats of Drab Paint to the above formula, followed by one coat of carriage varnish.

Interiors. (Continued.)

Scenery Trucks, Covered Carriage Trucks, etc.

The whole of the interiors to receive three coats of Drab Paint. (Repairs - 2 coats.)

Wagon Stock.

All new wagons to receive three coats of paint in accordance with the following particulars :-

Priming Coat.

The first coat to be made from Zinc Sulphide White 33% mixed with \*smudge where available.

With regard to this first coat, it is difficult to lay down any strict formula owing to the varying consistency of the smudge which may be used, but it must be emphasised it should contain sufficient oil to give it the necessary binding properties.

The second and finishing coat should be to the following formula :-

Zinc Sulphide White 33%	112 lbs.	Item 40, Contract 55.
Boiled Linseed Oil	60 lbs.	Item 1. Contract 149.
Black in Oil	8 lbs.	Item 6. Contract 55.
Liquid Driers	2 to 5 lbs.	Special Contract.
Carriage Varnish (inside)	9 lbs.	Special Contract.

This formula is only to meet the requirements of paint for brush application, and is not intended to apply to those Depots where spray or flow paint is required. It is recognised that in these cases special provisions must be made to suit individual cases.

The tops of all main wagon members should be painted with one coat of acid resisting black varnish of similar quality to that used for battery boxes on carriages. (This applies to repairs only. Wood Frame Wagons.)

\* smudge = admixture of old paints used as a priming coat on new timber

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coat on new timber

### Paint for lettering.

The following should be the paint used for the lettering of wagons :-

White Protective Paint and Zinc Sulphide White 33%, equal parts, and, where necessary to bring it down to suitable consistency, approximately 5% inside carriage varnish may be added.

### Roofs.

In the case of wooden roofs the same procedure must be followed as in the case of carriage roofs.

Steel roofs to have a priming coat of Red or Purple Brown Oxide to the following formula :-

Oxide of Iron,	)		
Purple Brown in Oil)	112 lbs.	Item 5, Contract 279.	
Liquid Driers	4½ to 8 lbs.	Special Contract.	
Boiled Linseed Oil	54 lbs.	Item 1. Contract 149.	

and to be given three coats of White Protective Paint mixed with equal parts of tarpaulin dressing.

### Ironwork.

NEW IRONWORK - All new ironwork to be given two coats of Oxide of Iron, Purple Brown, to the same formula as that for steel roofs, and the exposed portions to be given one coat of black lacquer of brushing or dipping consistency.

REPAIRED IRONWORK - To receive one coat of Black Lacquer.

### Insides of Goods Brakes.

The ceiling to have two coats of white paint mixed in accordance with the formula for white paint used for painting insides of carriages.

New vehicles only to receive in addition one coat of white paint with the addition of 25% of carriage varnish.



The sides, ends, etc., should receive one coat of smudge and one coat of green mixed to the following formula :-

Brunswick Green, dry	30 lbs.	Item 15, Contract 55.
Raw Linseed Oil	15 lbs.	Item 3, Contract 149.

After grinding the following to be added :-

Liquid Driers	2 lbs.	Special Contract.
Boiled Linseed Oil	12 lbs.	Item 1, Contract 149.
Carriage Varnish (inside)	4 lbs.	Special Contract.

to be followed by one coat of this green with the addition of 25% of carriage varnish.

### ROAD VEHICLES.

#### Horse Drawn Goods Lorries - New.

The procedure for painting these vehicles to be as follows

One coat of lead colour priming (similar to that for coaches)

Afterwards to be puttied up and given one coat of dark lead colour to the following formula :-

Protective White Paint	112 lbs.	Special Contract.
Liquid Driers	9 lbs.	Special Contract.
White Spirit	27 lbs.	Item 1, Contract 218.
Black in Oil	Sufficient to)	Item 6. Contract 55.
	produce the )	
	necessary shade.)	

These vehicles should then receive one coat of finishing body varnish.

#### White for Writing.

Two coats of white to the same formula as that for the lettering of wagons, to be used for lettering.

#### Horse Drawn Vehicles - Parcels Vans.

To be treated in exactly the same manner as coaching stock up to the filling.

After rubbing down to have one coat of lead colour, to the same formula as that for the priming coat for carriages, and then to have two coats of Lake Ground to the same formula as given for Lake Ground in colours for coaching stock.

The lining to be in accordance with the standard coaching practice, and the whole of the body to be afterwards given two coats of finishing body varnish (outside).

#### Motor Parcels Vans.

The practice to be the standard coaching practice up to the filling, then one coat of lead colour priming to be followed by one coat of lake ground, and then one coat of Crimson Lake similar to that used for coaching stock.

Lining paints to be in accordance with the standard practice for coaches, and finally to have three coats of body varnish (outside).

#### Goods Motor Lorries.

One coat of lead colour priming, puttied up, and to be followed by one coat of dark lead colour, the same as Horse Drawn Goods Lorries, and followed by one coat of Ultramarine Blue to the following formula :-

Ultramarine Blue, dry	30 lbs.	Item 8, Contract 55.
Raw Linseed Oil	10 lbs.	Item 3, Contract 149.

The above to be ground together and the finished paint to consist of :-

Ultramarine Blue in Oil	40 lbs.	As prepared above.
White Spirit	9 lbs.	Item 1, Contract 218.
Liquid Driers	2 to 5 lbs.	Special Contract.
Carriage Varnish (inside)	9 lbs.	Special Contract.

The wheels of the chassis to have one coat of priming colour, and to be followed by one coat of vermilion substitute.

The priming colour for the wheels to be as follows :-

Protective White Paint	110 lbs.	Special Contract.
Liquid Driers	2 to 5 lbs.	Special Contract.
Venetian Red in Oil	20 lbs.	Prepared by grinding ) Item 27, Contract 55, ) to suitable consistency.)
Raw Linseed Oil	9 lbs.	Item 3, Contract 149.
White Spirit	27 lbs.	Item 1, Contract 218.

The formula for the Vermilion Substitute to be :-

Vermilion Substitute dry	30 lbs.	Item 35, Contract 55.
Raw Linseed Oil	15 lbs.	Item 3, Contract 149.
White Spirit	6 lbs.	Item 1, Contract 218.
Liquid Driers	4 to 7 lbs.	Special Contract.

The vehicles should receive two coats of finishing body varnish.

#### Interiors of Horse Drawn and Motor Road Vehicles.

The interiors of Horse Drawn and Motor Road Vehicles should be given three coats of paint mixed to the following formula (Repairs 2 coats) :-

Protective White Paint	56 lbs.	Special Contract.
Brunswick Green in Oil	9 lbs.	Item 16, Contract 55.
Yellow Ochre in Oil	33 lbs.	Item 20, Contract 55.
Lemon Chrome in Oil	4 lbs.	Item 11, Contract 55.
Venetian Red	1½ lbs.	Item 27, Contract 55.
Liquid Driers	4 to 7 lbs.	Special Contract.
White Spirit	4½ lbs.	Item 1, Contract 218.

this to be followed by one coat of carriage varnish (inside).

Platform Trucks and Barrows.

Two coats Red or Purple Brown Oxide to formula as for steel roofs, given under wagon stock painting.

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It is realised that small quantities of colours other than those mentioned in this schedule will be required from time to time. As these will in all probability only be used in extremely small quantities such as touching up, etc., it is not thought desirable to include these.

Derby.  
March 1929.