



SUBJECT SPRAYING METAL TUBES WITH BLACK,  
 RK1m6RK HEAT RESISTANT COATING

This process uses conventional spraying technique and makes use of convection heating for baking the paint. Used on the No. 2 machine.

1. EQUIPMENT FOR SPRAYING

- a. \*Two Paasche low pressure air brushes (guns) mounted on an adjustable bracket at both spraying positions.
- b. Water wash spray booth and draft hood at spraying position. Line booth and parts subject to heavy paint covering with paper. Cover surfaces, which cannot be lined with paper, with cup grease.
- c. A conveyor chain, for holding chucks, to travel at a rate to carry chuck past a point at variable rate of 80-120 per minute.
- d. Chucks, suitably spaced, to engage with conveyor chain. Internal diameter of chuck must be such that a snug fit is assured between its inner surface and base pins of tube. Outer diameter must not be greater than diameter of tube base.
- e. 10 gallon pressure tank equipped with air driven agitator.
- f. A bake oven for drying coating after spraying. It must be of sufficient length to allow of following schedule between spraying position and removal from oven. A ventilating system for carrying off the fumes must also be provided.  
 Air drying - 1 to 1-1/2 minutes.  
 → Drying at constant temperature between range of \*60° - 100°C - 2 minutes.  
 Cooling - 1/2 to 1 minute.  
 Oven must be attached to a ventilating system for carrying off fumes.
- g. TR8F trays to hold coated tubes.  
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- h. Small covers for placing over top cap and insulating washer of capped tubes to protect them from paint.
- i. Tanks, in which water can be heated, for boiling chucks and caps in caustic soda to remove paint. Metal baskets for holding parts.

2. EQUIPMENT FOR PAINT MIXING

- a. A well ventilated, dust proof room.
- b. Paint mixer of sufficient capacity to mix 10 gallons of paint and thinner.
- c. Six and four gallon measuring containers for paint and thinner respectively.

\*\*\*Description of Freas oven deleted.



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2. EQUIPMENT FOR PAINT MIXING (Cont'd)

- d. Mechanical rollers for rolling paint drums.
- \*e. Viscosity cup type (Ford #4 style D with 5/32" orifice) for measuring viscosity of finished paint.
- f. Stop watch for timing viscosity readings.
- g. Cleaning vat, equipped with easily closed lid, for cleaning various containers used in handling paint.
- h. 150-200 mesh sieve for screening paint into 10 gallon tanks after mixing.
- i. Pumps for pumping paint and thinner into mixing machine.

3. PROCESS OF MIXING PAINT

- a. Roll paint until thoroly mixed. This usually requires 1 to 2 hrs., depending on age of the paint.
- b. Pour rolled paint into mixer.
- c. Start mixer stirring device and open valve of thinner container so that required amount of thinner will flow into paint in 10-15 min. Both paint and thinner should be at same temperature, preferably at room temperature.
- d. Continue stirring for 5 more minutes.
- \*e. Withdraw a sample of mixed paint for viscosity reading which should be \*27.5-29.5 seconds at 20°C. Adjust viscosity if necessary by adding more thinner or paint as required.
- f. When viscosity is satisfactory, run mixed paint thru screen into 10 gallon container and supply to spraying unit. Mixed paint should not stand longer than 36 hours and preferably not longer than 24 hours.

4. PROCESS OF SPRAYING

- a. For best spraying conditions and paint behavior thruout life, all loose oxide must be removed from metal with a revolving steel brush.
- b. Connect ten gal. tank of mixed paint to air and fluid lines and start stirring device.
- c. Adjust atomizing air pressure on gun to 40-50 lbs. and fluid pressure on tank to 8-12 lbs.

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SUPERSEDED DATE 11/5/46

4. PROCESS OF SPRAYING (Cont'd)

- d. When a single gun is used, as is the case with the short MT8K3 bulb (tube type 6 or 12H6), direct it at such an angle that the whole tube is covered and "creep" is avoided. The distance between gun nozzle and work must be about 4"-5". With longer shells, including top cap types MT8G19 and MT8A21, paint economy is improved by using two guns. The lower gun is set at an angle of about 5° above horizontal with respect to base of tube and directed so as to cover side and skirt of tube. The other gun is directed at an angle of about 45° above horizontal to insure coverage of top of tube. With the later gun, one opening in the spreader cap must be blocked off to prevent wasting paint. For the type with MT10A6 shell a third gun is mounted about 10° below horizontal and directed so as to cover that portion of the tube below the flange of the skirt.
  - e. Adjust amount of flow from brush so that a wet film without 'curtains' results during spraying period. Too dry a spray gives a matte surface.
  - f. Load tubes into chucks on conveyor chain and place covers over caps.
  - g. The conveyor is normally run at a speed of 12.5 ft. per min. equivalent to 6000 tubes per hour.
  - h. It is necessary that the tubes rotate not less than 2-1/2 times in order to equalize the paint film over entire surface of tube. After an interval of time, corresponding to 1 - 1-1/2 minutes in air, the tubes enter heating zone of bake oven. The temperature of the oven may have to be from  
 → \*60-100°C, depending upon the lot of paint and must be regulated so that the paint is not tacky when the tubes arrive at the point of removal.
  - i. After baking treatment load tubes in TR8F trays.
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- j. Paint defects which must be guarded against are:

Defect	Cause
Brown film	Insufficient paint film or unsuitable pigment in paint.
Matte surface	Dry spray; paint not suitable.
Curtains	Spray too wet giving an excessive paint film.
Small blisters (after final bake-out)	Viscosity of paint too high; unsuitable paint.

\*\*\*Baking in Freas oven deleted from notice.

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