

**SECTION 3**  
**TECHNICAL SPECIFICATIONS**  
**TIRE RETREADING SERVICES**  
**Attachment A**



Proposed RP 240A(T)

VMRS 018-003-000

## STEEL WHEEL AND RIM REFINISHING GUIDELINES

### PREFACE

The following Recommended Practice is subject to the Disclaimer at the front of TMC's *Recommended Maintenance Practices Manual*. Users are urged to read the Disclaimer before considering adoption of any portion of this Recommended Practice.

### PURPOSE AND SCOPE

This Recommended Practice (RP) provides guidelines and inspection criteria for steel wheel and rim refinishing and for evaluating refinishing suppliers. This RP describes various types and processes of steel wheel and rim refinishing systems used today for commercial vehicle applications. It also describes various steps in the process, and provides a checklist for inspecting a steel wheel refinishing facility.

### COATING SYSTEMS OVERVIEW

The following represents an overview of the three primary coating system components: primer, powder coat, and paint.

- **Primer**—The primer is usually a base coat applied to the bare metal to improve adhesion and corrosion resistance. It should also provide good inter-coat adhesion (transition) for the topcoat/powder coat. Some primer coats are UV resistant and may be used as a finish coating, usually on new products.
- **Powder Coat**—This powder coat system involves the application of an electrostatically charged powder paint that is cured in an oven and is cooled. Once the wheel or rim emerges from the oven and is cool, it can be returned to service in a relatively short period of time.
- **Solvent or Water-Based Paints**—This system involves the application of a solvent or water-based paint. After applying the paint, the wheels or rims are dried at room temperatures or are cured in an oven.

### PROCESS GUIDELINES

#### 1. Initial Inspection

Prior to the refinishing process, the wheel or rim should be thoroughly inspected for any damage or

out-of-service conditions. Technicians should refer to TMC RP 222C, *User's Guide to Wheels and Rims*, for a comprehensive listing of conditions. (RP 222C is also available as a stand-alone TMC publication entitled, *User's Guide to Wheels and Rims*.) Any rejected wheels or rims should be marked and tagged unserviceable and returned to the fleet if applicable.

#### 2. Pre-Wash

Any existing dirt, grease or debris should be removed prior to cleaning and the paint removal process. Failure to perform this cleaning step may have a negative effect on the coating performance.

#### 3. Coating Removal

The primary objective in this step is to remove all of the previous coating without damaging the wheel or rim surfaces. If the date code or part number stampings are not easily legible or the surface is severely pitted after the coating is removed, then the blasting method/media may be too aggressive or the rim/wheel could be worn out. If the DOT stamp or manufacturer's identifying marks are not legible for any reason, the rim/wheel must be removed from service and scrapped.

Most coating removal processes use a blasting cabinet that employs a variety of media ranging from metal shot, to glass beads, to other material. Blasting using grit alone is not recommended as it tends to reduce wheel or rim durability. Smaller, less aggressive steel shot size is recommended, typically less than S330 (see ASTM E11-09e1, "Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves"). Blasting cabinet manufacturers recommend the most effective shot size to be used with their equipment. Machines designed to remove only solvent or water-based coatings may not effectively remove powder coat finishes without causing excessive surface damage. A blend of grit and steel beads is most effective; however, the grit content should not exceed 25 percent of the media used. Whatever the media, it is absolutely imperative that the coating removal system results in clean, bare

**SECTION 3**  
**TECHNICAL SPECIFICATIONS**  
**TIRE RETREADING SERVICES**

**Attachment A**

metal on the mounting surfaces and bead seats. Some wheel refinishers have been found to use burn-off ovens to remove paint. However, burn-off ovens are generally not recommended to perform this work as the high temperatures may weaken the wheels. Complete removal of the old coating, debris, and corrosion is necessary for proper refinishing and to facilitate inspection.

**4. Inspection Following Coating Removal**

After the coating has been removed, the rim/wheel should be inspected for any cracks or out of service conditions (see RP 222C). If the DOT stamp or manufacturers identifying marks are not legible, remove the wheel from service.

**5. Cleaning/Pretreatment**

After the coating removal process, some steel wheel or rim refinishing systems use solvent/alkaline cleaning solutions or other methods to prepare the bare metal surfaces for coating. Consult the coating manufacturer for recommended cleaning and pretreatment guidelines. This step in the process has a positive effect on coating performance. To maintain consistently clean surfaces, TMC recommends that the cleaning agent be periodically replaced.

**6. Bare Wheel Handling/Storage**

Technicians should only handle bare wheels with clean, lint-free, dry gloves. Bare wheels should not come in contact with the floor or anything that may contaminate the freshly cleaned wheel/rim surfaces. Since bare wheels have no protection from moisture and other contaminants, the surface should be coated promptly to prevent flash rusting.

**7. Primer Application**

Aftermarket processes that include a primer or base coat will improve finish performance and durability. Check with the coating manufacturer for recommendations on the use of primers or base coats.

**8. Finish Application**

Regardless of the type of finish being applied to the wheel or rim, it should be no more than 3.5 mils total thickness on the mounting surfaces. Coating thickness should be measured mid-way between the bolt holes in a minimum of five locations on both sides of the wheel. It is extremely important to avoid any runs or excessive coating thickness, especially around the bolt circle, wheel/rim mounting, or bead seating surfaces. Excessive coating thickness can lead to loose fasteners, premature wear or wheel loss as the result of the joint settling in.

**9. Curing**

All powder coat steel wheel refinishing systems use an oven or other heat source to cure the coating. For air-dry coatings, the typical time required to ensure complete curing of the coating may be as much as three days. Baking the painted wheel/rim will speed curing time. Consult the coating manufacturer for curing specifications. Undercured coating will have the same effect as excessive coating thickness since the soft coating will be squeezed from the mounting surfaces and from under wheel fasteners when they are tightened.

**10. Post Finish Inspection**

After the finish has been cured according to manufacturers recommendations, the rim/wheel should be inspected for any runs or excessive coating thickness. If the DOT stamp or manufacturers identifying marks are not legible, remove the wheel from service.

**PROSPECTIVE SUPPLIER CHECKLIST**

The following checklist of questions may be used to help evaluate refinishing suppliers:

- Is each wheel or rim thoroughly inspected in a well-lit area by a trained technician prior to refinishing?
- Does the inspector have access to RP 222C as a reference for potential out-of-service conditions?
- Does the coating removal process use the correct size media and is it replaced on a regular basis?
- Does the coating removal process result in completely bare metal mounting and bead seating surfaces?
- Are the wheels cleaned prior to coating application?
- Are bare wheels promptly processed to prevent flash rusting?
- Are there quality controls in place to ensure that worn or damaged wheels are identified prior to the finish application process and removed from service?
- Does the coating application process ensure that the total thickness does not exceed 3.5 mils on the wheel/rim mounting surfaces?
- Are there quality controls in place to ensure that the proper thickness of the coating is applied to the rim or wheel?
- Can the original rim/wheel manufacturers stamps and identifying marks be read after refinishing?
- Is waste disposal conducted in accordance with all federal, state, and local laws and regulations?