

encapsulated type sheeting. FRA intends to exclude all engineering grade and glass bead encapsulated type retroreflective sheeting because such sheeting does not meet the minimum photometric performance requirements of § 224.103. Accordingly, freight cars already equipped with engineering grade, super engineering grade, or glass bead encapsulated type retroreflective sheeting, or any other reflective material that is not retroreflective, must be brought into compliance with this part in accordance with § 224.107(a)(2). FRA proposes a minimum requirement of one square foot of retroreflective sheeting per car side under this section because based on the information provided to FRA to date, it appears that one square foot per side is the minimum amount currently utilized in existing voluntary reflectorization programs.

In order for previously equipped cars to be considered in compliance pursuant to this section, a car owner must, within 60 days of the effective date of the final rule, file a Fleet Reflectorization Implementation Plan with FRA identifying by car numbers the freight cars in the fleet already equipped with complying retroreflective sheeting and providing a description of the technical specifications of the retroreflective material already applied (e.g., color of material, type of material, amount and placement pattern of material on each side of car). *See* Appendix B.

Locomotives

Newly constructed locomotives: Paragraph (b)(1) requires that

retroreflective sheeting conforming to the rule be applied to locomotives manufactured after the effective date of the final rule at the time of construction.

Existing locomotives without retroreflective sheeting: As applied to locomotives that, as of the date of publication of the final rule, are not equipped with at least one square foot of retroreflective sheeting on each side, paragraph (b)(2) generally requires the application of retroreflective sheeting to the locomotives not later than the first biennial inspection performed pursuant to 49 CFR 229.29 occurring after the effective date of the final rule. Again, FRA's proposal to install the retroreflective sheeting on a locomotive while the locomotive is already out of service for the required biennial inspection ensures that reflectorization of the entire locomotive fleet can be completed well within the 5 years contemplated by this proposal without incurring any additional out of service time for the locomotives.

Existing locomotives already equipped with retroreflective sheeting as of publication date of final rule: Again, recognizing the voluntary reflectorization efforts already underway by many freight rolling stock owners, paragraph (b)(3) addresses existing locomotives that, as of the publication date of the final rule, are already equipped with retroreflective material. Specifically, paragraph (b)(3) provides that locomotives equipped with at least one square foot of retroreflective sheeting, uniformly distributed over the length of each side, will be considered in compliance with

this part for a period of 5 years from the effective date of the final rule, provided that the sheeting is not engineering grade, super engineering grade (enclosed lens), or glass bead encapsulated type sheeting. Again, FRA proposes to exclude all engineering grade and glass bead encapsulated type retroreflective sheeting because such materials do not meet the minimum photometric requirements of the rule. Locomotives already equipped with engineering grade, super engineering grade, or glass bead encapsulated type retroreflective sheeting, or any other reflective material that is not retroreflective, must be brought into compliance with this part in accordance with § 224.107(b)(2). Similar to § 224.107(a)(3) addressing freight cars, in order for previously equipped locomotives to be considered in compliance pursuant to this part, the locomotive owner must, within 60 days of the effective date of the final rule, file with FRA a Fleet Reflectorization Implementation Plan identifying by locomotive reporting marks the locomotives in the fleet already equipped with complying retroreflective sheeting and providing a description of the technical specifications of the retroreflective material already applied (e.g., color of material, type of material, amount and placement pattern of material on each side of locomotives). *See* Appendix B.

For ease in understanding the requirements of this section, the following table summarizes the schedules of application proposed in this section.

New	Freight Cars: At time of construction	Locomotives: At time of construction
Existing stock without retroreflective sheeting.	Earliest of: (a) when car is repainted, or rebuilt, or (b) when car first undergoes single car air brake test under 49 CFR 232.305, OR In accordance with Individual Reflectorization Plan filed with FRA per § 224.107(a)(2)(ii). 10 years from date of final rule's publication.	No later than first biennial inspection performed per 49 CFR 229.29.
Existing stock with retroreflective sheeting (not ASTM D 4956-01 Types I, II, or III).		5 years from date of final rule's publication.

Section 224.109 Inspection and Replacement

This section sets forth the proposed requirements for the periodic inspection and replacement of damaged retroreflective material on freight rolling stock. Although FRA is not proposing any specific maintenance requirements, paragraph (a) requires that retroreflective sheeting on freight cars subject to this part be visually inspected for presence and condition whenever a car undergoes a single car air brake test

required under 49 CFR 232.305. Likewise, paragraph (b) requires that retroreflective sheeting on locomotives subject to this part be visually inspected for presence and condition whenever the locomotive receives the annual inspection required under 49 CFR 229.27. Upon inspection, if more than 20 percent of the amount of sheeting required on either side of the car or locomotive under § 224.105 is damaged, obscured, or missing, that damaged, obscured, or missing sheeting must be replaced. In other words, if a 4x36 inch

end strip (or two 4x18 inch strips) of retroreflective sheeting is missing from one side of a typical 50 or 60 foot freight car, that sheeting must be replaced.

Section 224.111 Renewal

This section proposes to require that all retroreflective sheeting required under this part be replaced with new conforming sheeting, regardless of its condition, no later than ten years after the date of initial installation. This section is based on the manufacturers' stated useful life of retroreflective