

1. Scope

This specification applies to flat-surfaced, pressure-sensitive, adhesive-backed decal manufacturing materials designed for permanent outdoor application on smooth, clean, painted surfaces. Materials shall not be removable without defacing, covering, or destroying the decal.

2. Reference Standards

Where applicable and unless otherwise stated, decals shall comply with the latest revisions of the following industry standards:

ANSI Z535.1 *Safety Color Code*

ANSI Z535.2 *Environmental and Facility Safety Signs*

ANSI Z535.3 *Criteria for Safety Symbols*

ANSI Z535.5 *Safety Color Code for Marking Physical Hazards*

ANSI C2 *NESCA Handbook, Appendix B—Safety Signs*

ASTM D4956 *Standard Specification for Retroreflective Sheeting for Traffic Control; Type I*

3. Font

Font shall be Helvetica-Narrow Bold, or District approved equivalent.

4. Material

Decal printing material shall be 3M 3200 Series Engineer Grade Reflective Sheeting conforming to the latest revision of ASTM D4956 for Type I materials. The District shall specify either 3290 White or 3271 Yellow material.

5. Adhesive

Adhesive shall be pressure sensitive. Adhesive shall be clear, with silver underneath.

6. Liner

Finished decals shall include a paper liner, which shall be back scored for easy removal.

7. Adhesion

Finished decals shall include a precoated pressure sensitive adhesive backing. Decals must be suitable for application without the necessity of additional adhesive coats on the label or application surface and without the use of water, solvents, or heat.

The protective liner attached to the adhesive shall be an easy release type. It shall be removable by peeling without soaking in water or other solvents. The protective liner shall be easily removed after accelerated storage of the decal for four hours at

180°F. Removal shall require a maximum pull of 0.25 pounds per lineal inch of width.

The precoated pressure sensitive adhesive shall adhere by pressing it in contact with a clean, dry surface. It shall form a durable bond to clean, well painted surfaces or unpainted corrosion-proof metals. The adhesion after 24 hours shall be a minimum of 5.0 lb/inch. The precoated adhesive, after 48 hours of aging at 75°F, shall have no appreciable effect on the decal material. The precoated adhesive shall have no staining effect on the decal material. The adhesive shall be mildew resistant.

8. Minimum Application Temperature of Decal

The material shall have a minimum application temperature of 65°F unless otherwise specified by the District.

9. Applied Performance Range

Materials shall have a performance range of -30°F to +200°F unless otherwise specified by the District.

10. Outdoor Durability

Material shall have an outdoor life of 6 years minimum, with vertical exterior exposure.

11. Humidity Resistance

Materials shall be resistant to 500 hours at 90% relative humidity.

12. Chemical Resistance

Material shall be resistant to degradation by petroleum solvents and greases. Material shall have excellent water resistance.

13. Film Flammability

Material shall be self-extinguishing.

14. Shelf Life

Material shall have a minimum processed shelf life of 1 year in a clean area, free from excessive moisture and direct sunlight with ambient temperatures of 100°F or less.

15. Packaging

Finished decals shall be packaged to protect them from moisture and dirt in Zip-Lock type resealable, clear polyethylene bags (25 decals per bag). Each bag shall be marked with the date of production and the manufacturer's name or logo.

16. Proof Drawing

When requested, the supplier of the decal shall provide a proof drawing for approval by the District's Standards Group before proceeding to produce the first order.