

Color-Safe[®] is a Methyl Methacrylate (MMA) resin system used for pavement area markings and anti-skid surfacing. It is a plural component, liquid applied MMA and catalyst, capable of full cure in a wide range of temperatures without requiring external heat sources. Color-Safe[®] is typically used for demarcation of crosswalks, bicycle paths, bus lanes and other specially designated areas. It can also be used as a surface to enhance skid resistance on hazardous turns and other areas prone to accidents. It can be applied to either concrete or asphalt manually or using automated spray equipment. Resin formulations are available in 98:2 and 1:1 ratios to accommodate different types of application equipment. If using glass beads, they must be coated for use with MMA materials.

Application Procedure

Surface Preparation: All surfaces that are to receive Color-Safe[®] must be thoroughly clean, dry, and free of all dirt, grease, and other contaminants that might interfere with proper adhesion. Clean the pavement surface using sand-blasting or shot-blasting. All damaged or deteriorated surfaces must be repaired before applying Color-Safe[®]. The surface should be visibly dry and the moisture content should be tested according to ASTM D4263 (modified to two hours). New asphalt shall have been placed for a minimum of 30 days prior to installation of Color-Safe[®] and surface oils should not be present. The ambient temperature should be between 40°F-100°F and 5°F above the Dew Point temperature. Relative humidity should be 75% RH maximum. For colder or warmer application temperatures contact a Transpo representative for adjusted mix ratios.

Mixed Resin and Aggregate Application Method

Mixing and Application

Priming: Priming is recommended when a substrate’s integrity is in question. Please contact a Transpo representative for further information.

Mixing: Transpo Color-Safe[®] resin comes in three components (pigmented resin, powder hardener, and aggregate). Thorough and complete mixing of these components with a drill mounted paddle mixer is vital for uniform curing and performance. Ambient temperature determines the amount of hardener used; refer to Table 1 for the appropriate amount of hardener to be added to the resin. Using clean, dry plastic buckets, add hardener to the resin and mix until dissolved (approximately 30 seconds) and then add and thoroughly mix the aggregate. After mixing, the Color-Safe[®] must be applied to the pavement immediately.

Table 1: Hardener per Two Gallons of Color-Safe[®] Resin

Temp °F(°C)	Weight %	Grams	Packets (120 g each)
40-59 (0-15)	3	360	3
60-89 (15-32)	2	240	2
90-100 (32-38)	1.5	180	1.5

Resin/Aggregate Application: Before mixing and applying Color-Safe[®] apply masking to the area to be coated. Pour the mixed material onto the pavement surface and spread evenly with 3/16” notched squeegees at a rate of approximately 24 square feet per gallon. The surface should be back rolled with 1/4” framed nap rollers to give a uniform even finish and enhance skid resistance. After the application and before the material cures, remove masking. At the onset of rain, installation shall cease until the substrate is sufficiently dry to the satisfaction of the engineer. Application of markings** must be completed before contamination of the substrate occurs.

****Before applying any line striping or symbols: confirm compatibility of materials with manufacturer****
Color-Safe[®] may be used for application of line striping and symbols

Spray/Broadcast Aggregate Application Method

Mixing and Application

It is important to use the resin formulation that matches the mixing ratio of the equipment that will be used for the application.

Spray applications using a 98:2 formulation with equipment that does not automatically proportion the hardener requires the resin and hardener to be premixed. It is very important that small quantities be mixed as the time available to spray the material is limited and further reduced by high ambient temperatures. The Color-Safe® resin and the powder hardener should be mixed for 30 seconds before adding to the spray equipment. Refer to Table 2 for hardener mixing ratios. If there is an interruption in the spray application the equipment should be cleaned with solvent to prevent material from curing and creating clogging.

Spray applications using a 98:2 formulation with equipment that automatically adds proportioned hardener does not require premixing. The Color-Safe® resin is the same for all 98:2 applications however for this type of equipment the hardener will be a liquid. Random checks should be performed to make sure the hardener ratio is consistent. Application interruptions do not require the equipment to be cleaned prior to the resumption of application.

Priming: Priming is recommended when a substrate's integrity is in question. Please contact a Transpo representative for further information.

First Coat/Aggregate Application:

All areas to be coated with Color-Safe® should be masked prior to application. Note that the Color-Safe® resin and hardener are identical for both first coat and second coat applications. Refer to **Table 2** for the appropriate hardener/resin mixing ratios. Base coat application rate should be approximately 60 square feet per gallon however coverage on rough or porous surfaces will be less. Open grade asphalt will absorb the base coat and coverage could be 40 square feet per gallon or less. Immediately after base coat application, broadcast the supplied aggregate onto the surface at a rate of ½ pound per square foot, ensuring all coated areas are covered with aggregate. After the Base Coat/Aggregate is applied and before it cures remove all masking.

Second Coat Application:

Before applying the second coat remove all loose aggregate from the surface using brooms or dry compressed air. Reapply the masking in the area to be coated. Ensure all broadcast aggregate is covered with Color-Safe® resin; application rate should be approximately 40 square feet per gallon. The surface should be back rolled with ¼" framed nap rollers to give a uniform even finish and enhance skid resistance. After the Color-Safe® is applied and before it cures, remove all masking. At the onset of rain, installation shall cease until the substrate is sufficiently dry to the satisfaction of the engineer. Application of markings** must be completed before contamination of the substrate occurs.

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**Table 2: Hardener per Gallon of Color-Safe® Resin
(98:2 spray equipment without automatic proportioning)**

Temp °F(°C)	Weight %	mL
40-59 (4-15)	3.5	210
60-89 (15-32)	2.5	90
90-100 (32-38)	1.5	45

Table 3: Physical Properties* of Color-Safe®

Property	Unit of Measure	Test
Resin		
Elongation	30% min	ASTM D638 Type I
Hardness	55-60 Shore D	ASTM D2240
Water Absorption	0.25% max	ASTM D570
Pot Life	15 minutes @ 72°F (22°C)	AASHTO T237
Solids Content	99%	ASTM D1644

*To be used as general guidelines only

Table 4: Physical Properties* of Color-Safe® Aggregate

Aggregate Type	Specific Gravity (ASTM C128)	Hardness (Mohs Scale)
No. 1 Silica	2.65	7.0
Phonolite	2.46	8.0
Bauxite	3.2	8.0

*To be used as general guidelines only

Storage

Materials shall be kept in dry protected areas between 40°F – 80°F out of direct sunlight, protected from open flame. Hardener component shall be stored separately from other materials. Manufacturer's specific label instructions and prudent safety practices for storage and handling shall be followed at all times. Materials shall be suitable for use for twelve months after the date of manufacture when stored in accordance with the manufacturer's instructions.

Caution

The binder shall be 100% reactive, solvent-free, acrylic vehicle. Blends with other resins or liquid vehicles shall not be permitted. Coarse aggregate shall be part of the formulation to provide for skid resistance. As with all chemicals, read SDS prior to use.

Warranty

The following warranty is made in lieu of all other warranties, either expressed or implied. This product is manufactured of select raw materials by skilled technicians. Neither seller nor manufacturer has any knowledge or control concerning the purchaser's use of the product and no warranty is made as to the result of any use. The only obligation of either seller or manufacturer shall be to replace any quantity of this product that proves to be defective. Neither seller nor manufacturer assumes any liability for injury, loss, or damage resulting from use of this product.

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