

Appendix D

Categories that are not in the SCM

The following district and U.S. EPA national rule categories have been reclassified into one or more of the categories included in the proposed SCM (see Table IV-1).

Multi-Stage Topcoat System

The proposed SCM restructures the current district rules and establishes individual limits for the color and clear coatings. This restructuring is designed to enhance enforcement of district rules. Currently, most multi-stage systems consist of two stages, a color coating and a clear coating. The first stage of the finish, the basecoat or color coating, contains the pigments that give the finish the desired color. In the case of metallic finishes, the basecoat also contains the “metallic” flakes. The second stage of the finish is the clear coating, a durable finish that protects the basecoat.

The purpose of the basecoat is to achieve the desired color tint and metallic appearance. Color coatings do not contain the additives needed to withstand chemical and ultraviolet deterioration, or the chemicals necessary to achieve a high gloss surface. Basecoats typically contain acrylic enamel, polyester, or urethane resins, and are designed to be easy spraying and quick drying to keep the base free of dirt and other contaminants. The quick-drying effect also locks the metallic flakes in position to achieve a mottle-free finish.

To protect the basecoat, a durable clear coating is applied. This clear coating can often be applied over the color coating after only 15 to 30 minutes of cure time. Clear coatings typically contain acrylic urethane or polyurethane resins, although acrylic enamel and lacquer clears are also available. Clear coatings are designed to flow upon application, resulting in a smooth, glass-like finish in as few as two coats.

Most districts allow for two- and three-stage systems, with some having a four-stage system as well. A two-stage system consists of a basecoat and a clear coating. Three-stage systems are a two-stage system with either a midcoat or groundcoat. Four stage systems are two stage systems with both a midcoat and a groundcoat.

The basecoat is the main color coating. The clear coating provides gloss and durability. Groundcoats are typically tinted primers, however district definitions vary. Midcoats can be translucent color coatings (achieved by adding filler to a color coating to reduce the pigment density) or tinted clear coatings.

ARB staff’s evaluation of the multi-stage topcoat system indicates that up to three of the four stages in a four-stage system may be color coatings. Alternatively, two stages of a three-stage system may consist of a clear coating and a modified clear coating.

The composite VOC system was created to provide manufacturers flexibility in complying with lower VOC limits. To comply with the lower VOC limits, manufacturers have formulated lower VOC clear coatings and retained high VOC color coatings.

The methodology for calculating the composite VOC limit for multi-stage systems assumes that the volume of clear coating applied is twice the volume of the color coating. The 2002 Survey data indicate this is not the case. The volume of color coating sold was about 2.5 times the volume of clear coating sold. Consequently, in consultation with the districts, ARB staff split the multi-stage system into two categories for analysis – color coatings and clear coatings.

Most district rules currently specify a multi-stage system limit of 420 or 540 g/l. Because the composite VOC calculation method assumes two gallons of clear coating are applied for every gallon of color coating, manufacturers have focused on lowering the VOC content of the clear coatings. This compliance approach has enabled color coatings to retain a VOC content ranging from 600 to 800 g/l. The proposed SCM sets separate VOC limits for color coatings and clear coatings.

Metallic/Iridescent

Metallic/Iridescent coatings are either a single-stage or multi-stage coating that contains more than 0.042 pounds per gallon (5 g/l) of metal or iridescent particles as applied, where such particles are visible in the dried film.

Metallic colors contain various sizes of aluminum flakes. These flakes have reflective properties and when used in various combinations and/or amounts, modify the optical characteristics of the color. Metallic pigment consists of thin opaque aluminum flakes (made by ball milling either a disintegrated aluminum foil or a rough metal powder and then polishing to obtain a flat, brilliant surface on each particle) or copper alloy flakes (known as bronze pigments). These coatings produce silvery and other metal-like effects. Iridescent coatings contain mica in various sizes to create what is called a pearlescent effect.

Either a metallic or iridescent pigment is mixed with a base color to create the metallic or pearl color. There is no difference between the base color for a solid color and a metallic/iridescent color. They are mixed from the same tint bank at the auto body shop. Thus, metallic/iridescent coatings are included in the color and single-stage coating analyses above.

Primer Sealer

Primer sealers are applied prior to the topcoat, if necessary. Sealers provide adhesion between the topcoat and the surface, provide a neutral colored base for easy coverage, seal sanded surfaces to prevent solvent penetration, and fill minor surface imperfections. Sealer types include lacquer sealers, enamel sealers, and urethane sealers. These sealers are intended to be coated by lacquer, enamel, and urethane topcoats, respectively, and generally require only one coat prior to application of the topcoat. In addition to general sealers, there are specialty sealers available for use on specific problem surfaces.

Some sealers reported in the 2002 Survey comply with the proposed VOC limit. However, some manufacturers have stated that the 250 g/l sealers are intended for the fleet vehicle market and are not suitable for the collision repair industry. Other manufacturers have stated that they can formulate sealers for the collision repair industry that comply with the proposed limit of 250 g/l. One manufacturer has marketed a compliant sealer to the collision repair industry for almost a year. Primer sealers are included in the primer category. We believe that primer sealers can be formulated to be in compliance with the proposed primer limit. We have included primer sealer in the primer analysis above.

Primer Surfacer

Primer surfacers are typically high-solids automotive coatings applied over prep coats, such as pretreatment coatings, precoat, or adhesion promoters. Primer surfacers function to provide adhesion between the prep coat and the material to be applied over the primer surfacers. They provide corrosion protection, act as a filling material to cover minor surface flaws, and provide a surface that can be easily sanded to a smooth surface. District rules currently establish the same VOC limit for primer surfacers and primers. We propose to continue this in the proposed SCM. We have included primer surfacers in the primer category.

Precoat

Precoats are coatings that are applied directly to bare metal primarily to deactivate the metal surface prior to application of a subsequent coating. Precoats commonly dry by oxidation or chemical polymerization. The SCAQMD treats these coatings as primers. Most other district rules allow for precoat usage at a higher VOC content than primers, but limit the amount of precoat that can be used.

Approximately 65 percent of the coatings reported in the survey as precoats were also listed as plastic primers, which is in conflict with its defined purpose. Another nine percent were listed as surfacers and three percent were listed as ground coats.

Based on this information, the precoat category is included in the primer category. The precoat was included in the primer analysis above.

Camouflage

Camouflage is a pigmented coating used primarily by the military to make it more difficult for vehicles and equipment to be visually located by enemy forces. Camouflage coating can also be applied to hide vehicles and equipment from game by hunters. Camouflage is applied in patterns with different shades of a color.

One district lists camouflage as a specialty coating. Some districts list camouflage as a distinct coating category. The districts that list it as a distinct category only do so for mobile equipment and not for motor vehicles, which are also painted by the military with camouflage. The districts that have this category give it the same VOC limit as their general topcoat limit. For motor vehicles they treat camouflage as any other topcoat. There is nothing in these districts' definitions regarding any special physical properties for camouflage as opposed to any other color coating. Thus, camouflage coatings are included in the color coat analysis above.

Extreme Performance Coatings

Eight districts list extreme performance coatings as a distinct coating category. These districts allow a VOC content of either 420 g/l or 750 g/l. There are four different definitions used in these eight districts. Five districts define extreme performance coatings as coatings which are exposed to extreme environmental conditions such as high temperatures, corrosive or erosional environments, during principal use. One district defines extreme performance coatings as coatings that are intended, during use, to be exposed to: 1) industrial grade detergents, cleaners, or abrasive scouring agents; 2) unprotected shipboard conditions; or 3) corrosive environmental conditions. Another district defines these products as coatings which during intended use are exposed to any of the following conditions: a) industrial grade detergents, cleaners, or abrasive scouring agents; b) extreme environmental conditions as determined by the Air Pollution Control Officer during the vehicle's principal use; c) chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes, chemical mixtures or solution; d) repeated exposure to temperatures in excess of 250 degrees Fahrenheit; or e) repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial grade solvents, cleaners, or scouring agents. The last district defines these coatings as coatings which during intended use are exposed to any of the following conditions: a) chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes, chemical mixtures or solutions; b) repeated exposure to temperatures in excess of 250 degrees Fahrenheit; c) repeated heavy abrasion, including mechanical wear and

repeated scrubbing with industrial grade solvents, cleansers, or scouring agents; or d) exterior exposure of steel and non-ferrous metal structures.

Only one district lists this type of coating as a specialty coating. This district defines extreme performance coatings as coatings that encounter acute or chronic exposure to salt water, corrosives, caustics, acids, oxidizing agents, wind- or ocean-driven debris, or electromagnetic pulses.

No coatings in this category were reported as being sold in California in 2001. We have no knowledge of anyone applying these coatings to vehicles in California.

Specialty Coating

Specialty coatings are high VOC coatings (up to 840 g/l) that have historically been necessary due to unusual job performance requirements. Specialty coatings include, but are not limited to, truck bed liner coating, adhesion promoter, elastomeric materials, anti-glare/safety coatings, impact resistant coatings, rubberized asphaltic underbody, water hold-out coatings, weld-thru coatings, bright metal trim repair, camouflage, and extreme performance coatings. The U.S. EPA automotive coatings rule defines specialty coatings to include only adhesion promoters, low-gloss coatings, bright metal trim repair coatings, jambing (cut-in) clear coats, elastomeric coatings, impact resistant coatings, underbody coatings, uniform finish blenders, and weld-through primers.

Three districts' (SCAQMD, Antelope Valley AQMD, and Sacramento Metropolitan AQMD) definitions of specialty coating do not contain the "but not limited to" clause or an equivalent phrase. For these districts, only the listed coatings can be used as specialty coatings. One district, Sacramento Metropolitan AQMD, requires manufacturers to specifically designate their specialty coatings as such. For all other districts the definition is not specific.

Specialty coating usage at body shops is limited to either five to ten percent of total coating usage depending upon the district. Some districts have a volume usage as an alternative to the percentage usage. These districts allow one gallon per day or three gallons per month of specialty coating use per facility.

Because of the variability in district requirements, we evaluated each category listed in district rules as a specialty coating individually. ARB staff evaluated what special attributes or function each coating type provides, and what VOC content was necessary to provide said attributes or function. ARB staff then set individual category definitions and higher VOC content limits for categories as necessary.

Elastomeric Material

Elastomeric materials are coatings that are formulated for application over flexible substrates such as plastic parts, elastomeric bumpers, and spoilers. All districts, except for one, and the national rule identify elastomeric materials as specialty coatings. However, only five districts and the national rule have a definition for “elastomeric materials.” Two types of products were listed in the 2002 Survey as elastomeric materials. They are elastomeric primers and elastomeric clears. The elastomeric primer mixtures reported in the survey had a slightly higher VOC content than the 250 g/l VOC limit proposed for primers in the SCM. The elastomeric clear mixtures reported in the survey had a VOC content ranging from about 480 to 550 g/l.

Many elastomeric materials are created by using plasticizing additives mixed with another mixture, as opposed to using an elastomeric base component. This allows for a wide variety of elastomeric materials while keeping the number of components to a minimum.

Based on discussions with manufacturers, ARB staff determined that elastomeric additives have a VOC content less than 250 g/l. Therefore, addition of these additives to clear coatings or primers will not result in exceedances of the 250 g/l VOC limits proposed for these categories. Elastomeric clears are included in the clear coating category and elastomeric primers are included in the primer category.

Anti-Glare Safety Coating

Anti-glare safety coatings are coatings that minimize light reflection for safety purposes. The commonly used standard is a reflectance of 25 or less on a 60 degree gloss meter. Some districts restrict usage to the interior of a vehicle. All districts except one identify this as a specialty coating, however the district definitions vary regarding reflection allowed and vehicle application.

No coatings in this category were reported as being sold in California in 2001. We have no knowledge of these coatings being used in California. If these coatings are used in the future, they will be included in the clear coating, color coating, or single-stage coating category, as is appropriate, based on usage.

Impact Resistant Coating

Impact resistant coatings are coatings designed to resist chipping caused by road debris. Typical usage for impact resistant coatings would be on rocker panels. While all districts except one identify this as a specialty coating, only four districts and the U.S. EPA national rule define these coatings.

No coatings in this category were reported as being sold in California in 2001. We have no knowledge of these coatings being used in California. If these coatings are used in the future, they will be included in the clear coating or single-stage coating category, as is appropriate, based on usage.

Water Hold-Out Coating

Water hold-out coating is a coating applied to the interior cavity of doors, quarter panels, and rocker panels for the purpose of corrosion resistance to prolonged water exposure. While all districts and the U.S. EPA national rule include this as a specialty coating, only three districts and the U.S. EPA national rule define the coating. This definition meets the existing district definition of a primer. Therefore, water hold-out coatings are included in the primer category.

No coatings in this category were reported as being sold in California in 2001. We have no knowledge of anyone applying these coatings to vehicles in California.

Weld-Thru Coating

Weld-thru coatings are primers applied to metal immediately prior to welding to provide corrosion resistance. While all districts allow this as a specialty coating, only ten districts and the U.S. EPA national rule define these coatings. This definition meets existing districts' definitions of a primer. Therefore, weld-thru coatings are included in the primer category.

No coatings in this category were reported as being sold in California in 2001. We have no knowledge of anyone applying these coatings to vehicles in California.

Bright Metal Trim Repair

Bright metal trim repair is a coating applied directly to a metal-plated surface to restore the luster and texture of the plated surface. While districts include these products in the specialty coating category, only five districts have a definition for these coatings. The U.S. EPA national rule does not define this type of coating. Four of the five districts with definitions restrict the usage to chrome-plated metal surfaces.

No products were reported in the 2002 Survey as bright metal trim repair. We have no knowledge of anyone applying these coatings to vehicles in California.

Gloss Flattener

Low-gloss coatings, also called gloss flatteners, are coatings that exhibit a gloss reading less than or equal to 25 on a 60 degree gloss meter. The U.S. EPA national rule and 15 district rules include these products in the specialty coating category. However, only the U.S. EPA national rule defines these coatings.

No coatings in this specific category were reported as being sold in California in 2001. As discussed in the clear coating category section above, these coatings can comply with the clear coating VOC limit and do not need a higher VOC limit.

Heat Resistant

Heat resistant coatings are coatings which, during normal use, must withstand temperatures of at least 400 degrees Fahrenheit. Only one district lists this type of coating as a specialty coating.

No coatings in this category were reported as being sold in California in 2001. We have no knowledge of anyone applying these coatings to vehicles in California.

Jambing (Cut-In) Clear Coat

Jambing, or cut-in, clear coats are fast-drying, clear coatings applied to surfaces such as door jambs and trunk and hood edges to allow for quick closure. This coating is only referenced in the U.S. EPA national rule. No districts list this type of coating in their specialty coating definitions.

No coatings in this category were reported as being sold in California in 2001. We have no knowledge of anyone applying these coatings to vehicles in California.