



TECHNICAL SUPPORT DOCUMENT

Amendments to — COMAR 26.11.19.07 and New Regulation COMAR 26.11.19.07-2 Plastic Parts and Business Machines Coating

Purpose of Regulation

The purpose of this action is to adopt the requirements of the EPA's Control Techniques Guidelines (CTG) for miscellaneous metal and plastic parts coating. Existing standards for plastic parts and vinyl in COMAR 26.11.19.07 are being moved to COMAR 26.11.19.07-2. EPA develops CTGs as guidance on control requirements for source categories. States can follow the CTGs or adopt more restrictive standards. MDE proposes to adopt new standards that will be set for business machines and plastic parts that are equivalent to the VOC content limits in the CTG. Application method and work practice requirements will also be adopted. These amendments affect coaters of business machines and plastic parts and products.

Background

EPA developed the CTG after reviewing the 1978 CTG, the 1988 NSPS for Surface Coating of Plastic Parts for Business Machines (40 CFR 60 Subpart TTT), the 1994 ACT for Surface Coating of Automotive/Transportation and Business Machine Plastic Parts, National Emission Standards for Hazardous Air Pollutants for Miscellaneous Metal Parts and Products 40 CFR 63 Subpart MMMM, and existing State and local VOC emission reduction approaches. The 1994 ACT provided analysis and options for alternative control technologies available for VOC emissions from the surface coating of plastic parts in the automotive and other transportation equipment and business machine industries without any recommendations for standards. The plastic parts and products category includes components that are used in fabricated metal products, small and large farm machinery, commercial and industrial machinery and equipment, automotive or transportation equipment, interior or exterior automotive parts, construction equipment, motor vehicle accessories, bicycles and sporting goods, toys, recreational vehicles, pleasure craft (recreational boats), extruded aluminum components, railroad cars, heavier vehicles, lawn and garden equipment, business machines, laboratory and medical equipment, electronic equipment, and other industrial and household products.

The plastic parts and products and business machines coating categories do not include coatings that are a part of other product categories listed under Section 183(e) of the Act for which CTGs have been published or included in other CTGs.

California has implemented standards for plastic parts and products and business machines for several categories of coatings. The standards have undergone revisions

based on reviews of industry practices and capabilities and have been reviewed by EPA as part of the basis for establishing the CTG.

Several different types of application technologies are used to apply liquid coatings, and the selection of the application technology can have a significant effect on the amount of coating used and the resulting VOC emissions from the operation. The CTG requires that coatings can only be applied by coating applicators such as: air atomized spray coating, electrostatic spray coating, high volume/low pressure (HVLP) spray coating, dip coating, flow coating, roll coating, electrocoating, and autophoretic coating. Powder coatings can be applied through electrostatic spraying or dipping.

Cleaning activities other than surface preparation also occur at plastic parts and business machines and components coating facilities. Additional requirements for cleaning materials and activities are covered under COMAR 26.11.19.02(I). Cleaning materials are used during these activities to remove coating residue or other unwanted materials from equipment related to coating operations, as well as the cleaning of spray guns, transfer lines (e.g., tubing or piping), tanks, and the interior of spray booths. These cleaning materials are typically mixtures of VOC containing solvents.

Regulation Amendments

COMAR 26.11.19.07-2 is proposed to set VOC coating standards for a variety of plastic parts coating and business machine coating applications and includes plastic parts and vinyl coating standards and printing standards from the existing COMAR 26.11.19.07.

Application methods for coatings are limited to:

- (1) Electrostatic application;
- (2) HVLP spray;
- (3) Flow coat;
- (4) Roller coat;
- (5) Dip coat including electrodeposition;
- (6) Brush coat; or
- (7) A coating application method capable of achieving a transfer efficiency equivalent to or better than the efficiency achieved by HVLP spraying.

Sources Affected

These proposed amendments affect coaters of plastic parts and products used in farm machinery, industrial machinery, automotive or transportation equipment, structural components, laboratory, medical and electronic equipment, motor vehicle accessories, bicycles and sporting goods, toys, recreational vehicles, pleasure craft (recreational boats), railroad cars, heavier vehicles, lawn and garden equipment and business machines.

Technology and Standards

Development and application of lower VOC content coatings, powder coatings, higher solids coatings and waterborne coatings have reduced the organic solvent content of the coatings for plastic parts and business machine components. Work practice standards and procedures control fugitive VOC emissions. Higher transfer efficiency also reduces VOC emissions.

Availability of powder coatings, waterborne coatings, higher solids coatings, UV coatings, electrocoatings, and autophoretic coatings has played a significant role in the establishment of standards and requirements. For certain performance requirements, conventional coatings or coatings with higher VOC content may be needed. With continued research and development new materials are undergoing tests to match the performance characteristics of conventional coatings.

Work practice procedures are inherently specific to the industry, and can vary significantly in terms of requirements. COMAR 26.11.19.02 includes elements of work practice requirements suitable for plastic parts and business machine components.

High atomizing air pressure method of application has transfer efficiency of 25 to 40 percent. High volume low pressure atomization can achieve transfer efficiency of 65 percent depending on shape, size and substrate. Electrostatic spraying achieves transfer efficiency of 90 percent or more.

VOC emissions from plastic parts and business machines component surface coating operations can be reduced by the use of capture and control systems. These systems are rarely used as most operations are conducted in the spray booths that significantly dilute air for safety standards to reduce the flammability of the mixture. The low VOC concentration makes the control systems not cost effective. An effective system captures emissions and minimizes the capture of dilution air.

Plastic parts and products and business machines coating operations use combustion, catalytic oxidation, adsorption and absorption devices. Combustion and catalytic oxidation systems are capable of achieving 95% control efficiency. Catalytic oxidation systems are capable of operating at lower temperatures. Energy consumption can be reduced by preheating the air with the help of regenerative or recuperative systems and primary and secondary heat recovery to reduce energy consumption.

Commonly used adsorption systems are based on activated carbon with regenerable fixed beds. Such systems use imbalances of molecular forces on the surface of solids to adsorb VOCs and may use not only activated carbon but also organic resin polymer, and inorganic materials.

Control efficiencies of adsorption systems are greater than 95 percent. Regeneration of carbon is done with the help of steam and is particularly effective for immiscible solvents.

Absorption systems use liquid to dissolve and control the VOCs from the effluent. Such systems are rarely used for coating operations.

Expected Emissions Reductions

The proposed amendments set standards for coatings, application methods and work practices. Emissions of VOCs from plastic parts and products and business machines coating are expected to be reduced by 35 percent (nationally a reduction of 7,034 Mg/yr (7,738 tpy) of VOC) from the nonattainment area facilities above the recommended 6.8 kg/day (15 lb/day) threshold). The maximum benefit will be provided during the ozone season when VOCs readily combine with NO_x to form the pollutant ground level ozone.

Health Effects and Ground-Level Ozone

The maximum benefit from these amendments will be provided during the ozone season when VOCs readily combine with NO_x to form the pollutant ground level ozone.

Economic Impact

The proposed new regulation adopts the requirements of the CTG for plastic parts and products and business machines. EPA estimated the economic impact of this regulation on a national level. Cost effectiveness is approximately \$1,800/ton of VOC controlled.

Revision to Maryland's SIP

This action will be submitted to the U.S. EPA for approval as a revision to Maryland's State Implementation Plan.

Other State or Federal Requirements

There are no other state or federal reasonably available control technology standards for this category. Multiple facilities are covered under this CTG and each may be subject to additional federal requirements.

Comparison to Federal Standards

There is a corresponding federal standard to this proposed action, but the proposed action is not more restrictive or stringent.

References

Control Techniques Guidelines: Miscellaneous Metal and Plastic Parts Coatings EPA-453/R-08-003 September 2008