

State of California  
AIR RESOURCES BOARD

Small Off-Road Engine Evaporative Emission System Components  
Executive Order Q-14-004

Solar Plastics, Inc.  
Innovative Products

WHEREAS, pursuant to California Health and Safety Code, Sections 39600, 39601, and 43013, the California Air Resources Board (ARB) has established a certification process for evaporative emission system components designed to control gasoline emissions from small off-road engines, as described in California Code of Regulations, Title 13, Section 2767.1;

WHEREAS, pursuant to California Health and Safety Code, Section 43013, ARB has established criteria and test procedures for determining the compliance of evaporative emission system components with the design requirements in Cal. Code Regs., Title 13, Section 2754;

WHEREAS, pursuant to Cal. Code Regs., Title 13, Section 2767.1, ARB Executive Officer may issue an executive order (EO) if he determines that the small off-road engine evaporative emission system component or innovative product conforms to the applicable performance requirements set forth in Cal. Code Regs., Title 13, Sections 2754 and 2755;

WHEREAS, pursuant to California Health and Safety Code, Sections 39515 and 39516, ARB Executive Officer issued EO G-05-008 delegating to the Chief of ARB Monitoring and Laboratory Division (MLD) the authority to certify small off-road engine evaporative system components and innovative products; and

WHEREAS, Solar Plastics, Inc. submitted an application for certification as an innovative product under Cal. Code Regs., Title 13, Section 2767(c) for model Solar MLGuard three layer material system rotational molded fuel tanks.

NOW, THEREFORE, I, Michael T. Benjamin, Chief of MLD, find that fuel tanks produced using Solar Plastics, Inc.'s model Solar MLGuard three layer material system, and following the process and material specifications set out in Attachment A, constitute innovative fuel tanks pursuant to Cal. Code Regs., Title 13, Section 2767(c). This finding is based on Solar Plastics, Inc.'s demonstration that such fuel tanks have a permeation rate less than 1.5 grams per square meter per day as set forth in Cal. Code Regs., Title 13, Section 2754, when tested at a constant temperature of 40 °C pursuant to ARB Test Procedure TP-901 using an approved CE10 certification fuel.

IT IS ORDERED AND RESOLVED that all fuel tanks made from Solar Plastics, Inc. model Solar MLGuard three layer material system, with minimum barrier and nominal wall thicknesses equal to or greater than the values listed in Table 1, are certified for use in small off-road engine equipment.

Table 1 Specifications for Solar Plastics, Inc. Model Solar MLGuard Three Layer Material System Rotational Molded Fuel Tanks	
Minimum barrier thickness (mm)	Nominal overall tank thickness (mm)
1.0	5.0

IT IS FURTHER ORDERED that Solar Plastics, Inc. shall provide a warranty to equipment manufacturers purchasing Solar Plastics, Inc. model Solar MLGuard three layer material system fuel tanks. The warranty must conform to the requirements of Cal. Code Regs., Title 13, Section 2760.

IT IS FURTHER ORDERED that the certified model Solar MLGuard three layer material system rotational molded fuel tanks shall be installed in accordance with the manufacturer's installation and use instructions for the tanks. A copy of this EO and installation and use instructions for the fuel tanks shall be provided to manufacturers purchasing Solar Plastics, Inc. model Solar MLGuard three layer material system rotational molded fuel tanks for installation on small off-road engines and equipment introduced into commerce in California.

IT IS FURTHER ORDERED that Solar Plastics, Inc. model Solar MLGuard three layer material system rotational molded fuel tanks shall be clearly identified by a permanent identification that allows ARB to identify the manufacturer's name, EO number, and model number.

IT IS FURTHER ORDERED that any modification of the Solar Plastics, Inc. approved process and material specifications for producing model Solar MLGuard three layer material system rotational molded fuel tanks is prohibited. Any alteration or modification of the process or material specifications set out in Attachment A of this EO will require the manufacturer to apply for a new EO.

IT IS FURTHER ORDERED that the Solar Plastics, Inc. model Solar MLGuard three layer material system rotational molded fuel tanks shall be compatible with fuels in common use in California at the time of certification and any modifications to comply with future California fuel requirements shall be approved in writing by the Executive Officer or the Executive Officer's delegate.

IT IS FURTHER ORDERED that the innovative product certification of the Solar Plastics, Inc. model Solar MLGuard three layer material system rotational molded fuel tanks can be referenced in certification applications for small off-road engines and equipment that use small off-road engines unless the Executive Officer finds that the

Solar Plastics, Inc. model MLGuard three layer material system rotational molded fuel tanks no longer meet the performance requirements set forth in Cal. Code Regs., Title 13, Section 2754, when tested pursuant to Cal. Code Regs., Title 13, Section 2765.

Executed at Sacramento, California, this 15<sup>th</sup> day of August 2014.



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Dr. Michael T. Benjamin, Chief  
Monitoring and Laboratory Division

**Executive Order Q-14-004**  
**Attachment A**

Solar Plastics, Inc. Solar MLGuard Three Layer Material System  
Process and Material Specifications

Model: Solar MLGuard

**1. Material Specifications: Solar MLGuard**

The components of the Solar MLGuard three layer material system are as follows:

- A. Outer Layer:  
Material composition: Cross linkable thermosetting polyethylene.  
Minimum average wall thickness: 2.0 mm.
  
- B. Barrier Layer:  
Material composition: Ethylene vinyl alcohol.  
Minimum average wall thickness: 1.0 mm.
  
- C. Inner Layer:  
Material composition: Adhesion enhanced cross linkable thermosetting polyethylene.  
Minimum average wall thickness: 2.0 mm.

**2. Process Parameters—Three-Layer Tank**

- A. Manufacturing Process:  
Bi-axial or rock and roll type rotational molding machine capable of multi-layer programming.
  
- B. Tooling:  
Molds of various configurations equipped to support multi-layer molding.
  
- C. Molding Process:  
Each layer in the molding process is heated and cooled in a temperature controlled environment to a specific target range providing optimal adhesion and physical properties.