State of California
AIR RESOURCES BOARD

Small Off-Road Engine Evaporative Emission System Components
Executive Order Q-13-002

Flambeau Incorporated
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, section 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, On December 7, 2012, Flambeau Incorporated submitted an application for certification as innovative products under Cal. Code Regs., title 13, section 2767(c) for model IP1105 Natural resin material for extrusion blow molded fuel tanks.

NOW, THEREFORE, I, Manjit Ahuja, Acting Chief of MLD, find that fuel tanks produced using Flambeau Incorporated model IP1105 Natural resin material 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). Fuel tanks produced following Flambeau Incorporated process and material specifications are hereby deemed equivalent to those tanks listed in Cal. Code Regs., title 13, section 2752(a)(5). This finding is based on Flambeau Incorporated demonstration that such fuel tanks have a permeation rate substantially lower than 1.5 grams per square meter per day set forth in Cal. Code Regs., title 13, section 2754, when tested at a constant temperature of 40° C pursuant to alternative test procedure ATP-13-001 using an approved test fuel of Phase II California Reformulated Certification Fuel.

IT IS ORDERED AND RESOLVED that no tank permeation data is required to be submitted in the certification process for equipment using the Flambeau Incorporated model IP1105 Natural resin material extrusion blow molded fuel tanks.

IT IS ORDERED AND RESOLVED that all fuel tanks made from Flambeau Incorporated model IP1105 Natural resin material with minimum barrier and nominal wall thicknesses equal to or greater than the value listed in Table 1 incorporated herein, are certified for use in small off-road equipment.

Table 1
Specifications for Flambeau Incorporated Model IP1105
Natural Resin Material Fuel Tanks

Minimum barrier thickness (inch)	Nominal overall tank thickness (inch)
0.040	0.070 ± 0.010

IT IS FURTHER ORDERED that Flambeau Incorporated shall provide a warranty to equipment manufacturers purchasing their model IP1105 Natural resin material extrusion blow molded 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 IP1105 Natural resin material extrusion blow 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 the fuel tanks' installation and use instructions shall be provided to manufacturers purchasing Flambeau Incorporated model IP1105 Natural resin material extrusion blow molded fuel tanks for installation on small off-road engines and equipment introduced into commerce in California.

IT IS FURTHER ORDERED that Flambeau Incorporated model IP1105 Natural resin material extrusion blow 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 Flambeau Incorporated approved process and material specifications for producing model IP1105 Natural resin material extrusion blow 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 Flambeau Incorporated model IP1105 Natural resin material extrusion blow 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 Executive Officer's delegate.

IT IS FURTHER ORDERED that the innovative product certification of the Flambeau Incorporated model IP1105 Natural resin material extrusion blow 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 Flambeau Incorporated model IP1105 Natural resin material extrusion blow 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 22 day of January 2013.

Manjit Ahuja

Manjit Ahuja, Acting Chief
Monitoring and Laboratory Division

CARB Executive Order – Q-13-002

Flambeau Inc. Hyperier IP1105 Natural Resin Material - Process and Material Specifications

Model: IP1105 Natural

1. Material specifications – Hyperier IP1105 Natural Resin Material

   Components of Hyperier IP1105 Natural Resin Material.

   A. Hyperier IP1105 Pellets [24% ± 4% by weight]
      Material Manufacturer: LG Chem
      Material Distributor: LG Chem America/Entec
      Material Composition: Hyperier IP1105 consists of a nylon nanocomposite and a compatilizer additive.

   B. UV Additive SCC-2686 pellets or equivalent [3% by weight]
      Material Manufacturer: Standridge Color Corp
      Material Distributor: Standridge Color Corp
      Material Composition: UV Inhibitor Hexanediamine based Polymer

   C. HDPE LP500200 Pellets or equivalent [73% ± 4% by weight]
      Material Manufacturer: Lyondell Equistar
      Material Distributor: Equistar Chemicals LP
      Material Composition: High Density Polyethylene, Blow Mold Grade

   Barrier: Hyperier IP1105 provides the permeation barrier when blended with UV additive and HDPE resin as listed above.

   Blend Ratio: 24% ± 4% Hyperier IP1105 + HDPE 73% ±4% + 3% UV by weight.

   Color: Natural

   Barrier Detection: Non-destructive (ultrasonics) or destructive (microscope) or equivalent test methods are used.

2. Part design

   Minimum Wall Thickness: .040"

   Nominal wall thickness: ≥ .070" ±.010"

   •Barrier is confirmed using untrasonics or microscope or equivalent.

3. Process Parameters

Manufacturing Process:	Extrusion Blow Mold
Processor:	Flambeau Inc.
Material Blend Process:	Hyperier IP1105 Pellets, UV Additive SCC-2686 pellets and HDPE LP500200 Pellets are fed into weigh blending equipment and blended in the ratios shown in section 1 to form Hyperier IP1105 Natural Resin Material. The Hyperier IP1105 Natural Resin Material is then fed into the blow molding machine as a monolayer material and extruded to form fuel tanks.

Target melt temp of parison: Maintained by Flambeau and is confidential.

Recommended Machine Temperature Set Points: Maintained by Flambeau and is confidential.