**PPG Global Thin-mil Plastic Packaging Requirements**

See PPG Purchasing web: (www.ppg.com/corporate/purch/suppliernetwork/Pages/default.aspx)

**Anti-Static Packaging Policy Requirements for Packaging Used in Flammable Liquid Environments**

1. **Thin-mil plastic is not an acceptable packaging material for use in packaging raw materials for delivery to any PPG facilities that USE FLAMMABLE LIQUIDS OR HAS A FLAMMABLE LIQUIDS ATMOSPHERE PRESENT (defined as using any liquid with a flash point < 60.5oC / 141o F). A current list of PPG facilities where this is applicable can be found under “PPG Facilities that Consume Chemicals in Production” see PPG Purchasing Web:** (www.ppg.com/corporate/purch/suppliernetwork/Pages/default.aspx)

For these PPG facilities, raw materials only should be packaged in:

1. A metal pail or drum that can be grounded; or
2. A double walled paper bag with a thin-mil plastic liner sandwiched in between and bonded to one of the paper layers, ensuring that only paper is in contact with bag contents.
3. Coating lined fiber drums where phenolic or a similar coating is fused to the drum and in contact with metal chime where the drum can be grounded.  If the coating thickness is ≥ 2 mils, it must have an anti-static volume resistivity of 107 – 1011 Ω-m.  If a removable thin-mil plastic drum liner is required, it must meet the requirements addressed in Items 2.A.(iv) 1 thru 2.A.(iv) 4 below.
4. FIBC **(Super Sacks/Big Bags/Sling Bags) per section 3 below.**
5. The only exceptions to this Policy are:

A.  If a supplier’s only option for packaging from its production line is:

1. Thin-mil plastic package, or
2. Fiber drum, or cardboard box of any size with a thin-mil plastic liner in contact with the supplier’s raw material, or
3. A paper bag with a thin-mil plastic liner attached to one or more of the paper layers in contact with the supplier’s raw material.
4. If either A(i) thru A(iii) type packaging is used, the supplier must certify that the thin-mil plastic is “static dissipating” and meets the following requirements by providing PPG with a report from a nationally recognized testing laboratory (NRTL) that certifies:
   1. Anti-stat materials have been tested in accordance with ASTM D257 “Standard Test Methods for DC Resistance or Conductance of Insulating Materials” and ASTM D618 Standard Practice for Conditioning Plastics for Testing. In addition to testing in accordance with the ASTM D257 conditioning requirement of 23°C for 40-hours at 50% RH, thin mil plastics used in PPG facilities also must be tested at 23°C for 40-hours at 30% RH to better reflect conditions found in many PPG facilities.
   2. As defined by PPG, static dissipating means “having a surface resistivity of 1.0 x 106 to 1.0 × 1011 ohms per square. Thin mil plastic tested at 23°C for 40-hours at 50% RH shall have a surface resistivity of <1.0 x 109 ohms per square. Thin-mil plastic tested at 23°C for 40-hours at 30% RH shall have a surface resistivity of <1.0 x 1011 ohms per square, see note below. This requirement applies to all thin mill plastic used in PPG facilities including plastic bags and liners.
      1. [NOTE: Surface resistivity values found between 1x1011 to 1x1012 ohms per square, when tested at 30% RH are acceptable if testing has been done and documentation provided by a nationally accredited testing laboratory (e.g., Chilworth, SWISSI, ETS, etc.).]
   3. An alternative test that can be performed is MIL-STD-3010B “Department of Defense Test Method Standard Test Procedures For Packaging Materials.”  The applicable test to meet PPG’s requirement is found at Section 5.4.3 “Test Method 4046 – Electrostatic Properties.” As defined by PPG, static dissipating means applied charge must decay from 5 kV to 500 volts in less than 0.5 seconds.

4.   The certifying report from the NRTL is to be sent to the attention of the Quality Assurance Department of each PPG facility that consumes the material (i) prior to the first shipment of the material to the facility and (ii) prior to shipping any material where there has been any change in the anti-stat or packaging materials since the certifying report first was issued.

**3. FIBCs (Super Sacks/Big Bags/Sling Bags)**

1. All FIBCs used in PPG facilities must meet requirements of **CLC/TR 50404: 2003 and** IEC 61340-4-4: (ED. 2.0); NO EXCEPTIONS.
2. Thin-mil plastic vapor barriers must meet the following IEC 61340-4-4: (ED. 2.0) requirements:

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| **Type of Inner Liner** | **Requirements** | **Intended Use** |
| Type L1 | Inner liners made from materials  with surface resistivity on  at least one surface less than  or equal to 107 Ω  Breakdown voltage less than  4 kV | Type C FIBC |
| Type L2 | Inner liners made from materials  with surface resistivity on  at least one surface between  109 Ω and 1012 Ω  Breakdown voltage less than  4 kV | Type B, C or D FIBC |
| Type L3 | Inner liners made from materials  with surface resistivity of  greater than 1012 Ω  Breakdown voltage less than  4 kV | Type B FIBC |
| Note: This table only summarizes the requirements for inner liners.  Further details of the requirements for inner liners that a | | |

**Summary of IEC 61340-4-4 (Ed. 2.0) Classification and**

**Requirements for Liners**

1. There are currently five different types of FIBC commercially available, but only two are Approved for use in all PPG facilities:
   1. **Type D FIBCs are preferred and can be used in any PPG facility** - This type of FIBC, also referred to as a “Dissipating” type of FIBC, is constructed with isolated conductive elements woven into the fabric of the bag and will dissipate a static charge that has accumulated during an operation where the FIBC has been filled or emptied. This type of FIBC is not conductive but it is suitable for use in most locations where flammable vapor/air mixtures are normally present, i.e. Class I, Div. I areas.

*The inherent safety of a Type D bag will be compromised if the bag is damp or contaminated with a foreign substance such as oil. Type D bags can be used in all PPG facilities.*

* 1. **Type C FIBCs can be used where there is no objection by the receiving PPG facility.** - This type of FIBC is conductive. Type C FIBCs typically are made using either a conductive cloth or a material having conductive elements woven in to it. Regardless of how the FIBC is made, it must have a resistance to ground from any point on the bag to the designated grounding location of less than 1 x 107 ohms, using a 50 mm diameter electrode (equivalent to maximum safe charging current of 30 μA).
  2. Both Type C & D FIBCs must have a label attached that ensures the Type is immediately obvious and the intended use expressed in a way that is familiar to safety personnel, please see example below. Note the use of any other designations (e.g. D+, D plus, C/D etc.) will not be permitted on safety labels for FIBCs in compliance with IEC 61340-4-4 (Ed. 2.0).

