



Polyolefin Technology

What Is Product Responsibility?

The goal of product responsibility at 3M is to address expectations that society, our customers and we have for products that can be manufactured, distributed, used and disposed of safely. We want to make sure product responsibility extends throughout the entire life of a product. Life Cycle Management (LCM) is one process used at 3M to help understand and manage the environmental, health and safety (EHS) impacts. LCM stresses the efficient and safe use of resources in 3M products throughout their life cycle to guide responsible design, development, manufacturing, use and disposal.

Product Description

3M™ Controltac™ Plus Removable Graphic Film with Comply™ Adhesive 3545C was developed with polyolefin based technology and is constructed of a flexible, printable plastic film that provide an alternative to traditional vinyl films. This film helps meet the LCM goals by incorporating improvements that are representative of 3M's commitment to making the graphics business an industry with less health and environmental impact on future generations.

Note: All information in this bulletin which refers to film 3545C also applies to film RG3545C, which is identical except it is reverse wound on the core.

Manufacturing

3M's philosophy is that it is better to prevent pollution at the source. Polyolefin technology has allowed us to improve several processes that help us meet this goal.

Solvent-free film manufacturing

Film 3545C with polyolefin technology (film plus adhesive and liner) does use some solvent. However, the manufacturing of the base for this film is entirely solvent-free, so the complete product uses substantially less solvent than more traditional manufacturing processes.

In contrast, many graphic films are manufactured by a casting process that requires large amounts of solvent. Solvents generally require more extensive worker safety handling procedures. In addition, solvents can result in factory air emissions of "volatile organic compounds" or VOC's. Such volatile compounds react in our atmosphere with sunlight and oxides of nitrogen to produce smog. While pollution control equipment can reduce the amount of smog that is produced from solvent emissions, using thermal oxidizers generates carbon dioxide. Increasing levels of carbon dioxide have been associated with global warming

3M has active programs to continue to reduce solvent use throughout all of our manufacturing processes.

Reduced solid waste

3M strives to use manufacturing technologies that reduce solid waste. The new processes for film 3545C with polyolefin technology reduce solid waste in two ways.

First, because film 3545C with polyolefin technology is not cast, there is no need to use an in-process casting liner that must later be discarded. The casting liner is the single largest contributor to solid waste during traditional cast film manufacturing. This new process decreases the amount of waste that is disposed of in landfills are by other methods.

Secondly, the film edge trimmed from white film with polyolefin technology can be directly returned to the manufacturing process as raw material. This results in a reduced waste manufacturing process.

Use and Disposal

Film 3545C with polyolefin technology is made from a unique engineered hydrocarbon, custom built to meet the needs of the graphics market. It is a multi-layer, specially engineered polymer film made from non-chlorine chemistry, which offers advantages to both the graphics manufacturer and end user regarding use and disposal.

The film requires no special handling or extra costs associated with disposal. Based on composition, it may be incinerated or may also be safely disposed of in a landfill per US Environmental Protection Agency guidelines.

Meets Restrictive Film Specifications

A very limited number of customers and governmental authorities have placed restrictions on the composition of films to be used in the graphics industry. To our knowledge, film 3545C with polyolefin technology meets any such restrictive film specifications regarding composition (e.g. some transit authorities). It expands our customers' freedom of choice based on their preferences and concerns.

To the best of 3M's knowledge, based in part on information from suppliers to 3M, film 3545C does not contain any intentionally-added lead (Pb), cadmium (Cd), Hexavalent chromium (Cr6+), mercury (Hg), or polybrominated diphenyl ether compounds (PBDE).

Flammability Testing

The data given below is typical for film 3545C and is not for use in specifications. For a custom specification, submit a request to your 3M sales representative. The data given below are for film purchased from 3M.

Transit Applications

Film 3545C and overlaminate 8908 meet the requirements of the Federal Railroad Administration's and the Federal Transit Administration's guidelines for flammability and smoke emission characteristics for interior wall/ceiling applications for rail cars, buses and vans. These films were also tested in accordance with NFPA 259 to determine heat potential.

| Test Method | Results |
|---------------------|---|
| ASTM E162 | |
| 3545C | Radiant Panel Index, I _s = 0 |
| 3545C/8908 | Radiant Panel Index, I _s = 5 |
| ASTM E662 | |
| | Specific Optical Density (Ds) |
| | Minutes: 1.5 4 |
| 3545C | Flaming: 7 13 |
| | Non-flaming: 5 18 |
| 3545C/8908 | Flaming: 7 11 |
| | Non-flaming: 8 16 |
| BSS 7239 | |
| 3545C 3545C/8908 | Detected levels of the six gases for the both 3545C and 3545C/8908 were less than the required limit or less than detectable. |
| NFPA 259 | |
| 3545C | Potential Heat = 15,857 Btu/lb (36,874 kJ/kg) |
| 3545C/8908 | Potential Heat = 16,286 Btu/lb (37,996 kJ/kg) |

Building Interior Wall/Ceiling Applications

Film 3545C and overlaminate 8908 meet the requirements of the National Fire Protection Association Class A (most fire resistant class), as defined in NFPA 101, "Life Safety Code."

| ASTM E84 | |
|------------|--|
| 3545C | Flame Spread Index = 15 Smoked Developed Index = 10 |
| 3545C/8908 | Flame Spread Index = 20 Smoked Developed Index = 15 |

Summary

Film 3545C with polyolefin technology continues 3M's commitment to products that are both innovative and responsible from an environmental, health and safety perspective. For additional information about polyolefin or any other products or services: Visit 3M's web sites at: www.3M.com (3M's worldwide site), www.scotchprint.com (Commercial Graphics site) or call 1-800-328-3908.



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