

Metal Decoration Resource

1. **Background:** Purpose of this document is to expand the understanding and scope of metallized decoration sortation in the PET, HDPE and PP rigid recycling streams. In this current revision, this focuses on metallized films, metallic inks and metallized transfer products. Rigid metal components and solid foil design features would still be considered detrimental if >2 mm spherical equivalencies.

2. **Definition of Decoration Technologies**
 - **Solid foils** are still non-recyclable (typically found in durable applications and/or flexible packaging - Barrier foils)

 - **Metallized Transfer Product** – Cold transfer and hot stamping in a spot metallization process - Thin vacuum metal layer used to transfer aluminum to substrate via transfer or stamping process. (15-30 nm Al thickness)
 - **Holographic** - These fall under metallized transfer products as the amount of vacuum deposited aluminum is same, the difference is in the embossing of the metal as it is deposited

 - **Filmic Metalized Label** – Vacuum deposited aluminum layer that is angstrom thick coated to a polymeric filmic face stock. (40-60 nm Al thickness)

 - **Metallic Ink** – Typically print technologies such as UV flexographic, UV screen and solvent gravure with milled aluminum flake and varnish finish.

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SPHERICAL EQUIVALENT (B)					
PET Rigid Article					Applicable APR Recyclability Category for "NIR Sorting Potential" (see category definitions In APR Design Guide for Plastics Recyclability Home Page)
Rigid metal or Attachment	Solid Foils	Metallized Transfer Product	Filmic Metalized Label	Metallic Ink	
0 - 2 mm		0 - 8 mm	0 - 8 mm	0 - 8 mm	APR Design Guide Preferred
> 2 - < 16 mm		8.1 - 15.9 mm	8.1 - 15.9 mm	8.1 - 15.9 mm	Detrimental to Recycling
≥ 16 mm	All	≥ 16 mm	≥ 16 mm	≥ 16 mm	Renders Package non-Recyclable per APR Definition
SPHERICAL EQUIVALENT (B)					
HDPE and PP Rigid Article					Applicable APR Recyclability Category for "NIR Sorting Potential" (see category definitions In APR Design Guide for Plastics Recyclability Home Page)
Rigid metal or Attachment	Solid Foils	Metallized Transfer Product	Filmic Metalized Label	Metallic Ink	
0 - 2 mm		0 - 12 mm	0 - 12 mm	0 - 12 mm	APR Design Guide Preferred
> 2 - < 12 mm					Detrimental to Recycling
≥ 12 mm	All	≥ 12 mm	≥ 12 mm	≥ 12 mm	Renders Package non-Recyclable per APR Definition
SPHERICAL EQUIVALENT (B)					
Film/Flexible Article					Applicable APR Recyclability Category for "NIR Sorting Potential" (see category definitions In APR Design Guide for Plastics Recyclability Home Page)
Rigid metal or Attachment	Solid Foils	Metallized Transfer Product	Filmic Metalized Label	Metallic Ink	
0 - 2 mm		0 - 12 mm	0 - 12 mm	0 - 12 mm	APR Design Guide Preferred
> 2 - < 12 mm					Detrimental to Recycling
≥ 12 mm	All	≥ 12 mm	≥ 12 mm	≥ 12 mm	Renders Package non-Recyclable per APR Definition

Table 1: Breakdown of spherical equivalencies by decoration technology for each recycling stream

Clarifications:

- For films and flexible articles, the applicable recyclability categories apply to mono-layer, mono-material PE films only. Any structure that is laminated, and incorporates laminating adhesives and/or a print web, even if comprised of 100% PE, or any additional polymers, must undergo further testing to determine the impacts of these additional design features.
- This verifies metallized sorting potential ONLY - Additional testing may be required for full recycling Preferred status

PET Rigid Article				
	Solid Foils	Metallized Transfer Product	Filmic Metalized Label	Metallic Ink
Preferred Surface Area	N/A	310 cm ² (48 in ²)	194 cm ² (30 in ²)	310 cm ² (48 in ²)
HDPE and PP Rigid Article				
	Solid Foils	Metallized Transfer Product	Filmic Metalized Label	Metallic Ink
Preferred Surface Area	N/A	310 cm ² (48 in ²)	194 cm ² (30 in ²)	310 cm ² (48 in ²)
Film/Flexible Article				
	Solid Foils	Metallized Transfer Product	Filmic Metalized Label	Metallic Ink
Preferred Surface Area	N/A	310 cm ² (48 in ²)	194 cm ² (30 in ²)	310 cm ² (48 in ²)

Table 2: Starting point of Preferred surface area coverage by decoration technology, for each recycling stream.

Note: The above table is the “starting point” of sortation testing potential, anything below the above surface coverages would be considered to be Preferred (for metal sortation). Any packages that have surface areas above these starting points would need to be tested using SORT-B-03 to verify they are below the spherical equivalent thresholds.

DOCUMENT VERSION HISTORY

Version	Publication Date
1	05-22-2023