Gloss

Shiny Appearance of Films and Surfaces

Gloss is one of the important optical properties associated with plastics surface especially in industries such as automotive, packaging films, etc. The Gloss is defined as the capacity of the polymer surface to reflect light in a given direction.

Gloss characterizes how reflective or "**shiny**" a plastic material is, i.e. how much of a light beam touching the material with a define incident angle is reflected vs. a standard material (a black specimen with a defined refractive index = 100). This property is strongly dependent on the surface aspect of the tested specimen.

A high gloss will produce a sharp image of any light source and thus will give rise to a pleasing sparkle on the surface.

Materials having a high Gloss are very smooth and highly reflective

Gloss has no specific unit. It is expressed in %.

It is determined by a device that measures the percentage of light, incident at an angle (usually 45°) to the surface of the film, that is reflected at the same angle.

- Gloss can be inherent in the material
- It can also be a result of the molding process or surface texture

Gloss can also be affected by environmental factors such as weathering or surface abrasion. Thus, gloss can be useful in product development, process development, and end-use performance testing.

View All Polymer Grades with High Gloss Available in Omnexus Plastics Database

Check out more on Gloss:

» Gloss Percentage Values of Several Plastics
» How to Measure Gloss of a Material

What are Standards to Determine Gloss?

A **glossmeter** (also gloss meter) is an instrument which is used to measure the specular reflection (gloss) of a surface. It is an instrument having an incandescent light source and a photosensitive receptor that responds to visible light. However, the instrument is not sensitive to other common effects which reduce appearance quality such as **haze** and orange peel.

Many international technical standards are available that define the method of use and specifications for different types of glossmeter used on various types of materials.

The common standard methods to measure the gloss of plastic materials are **ASTM D523** and **ASTM D2457**.

ASTM D523 - Standard Test Method for Specular Gloss

Measurements by this test method correlate with visual observations of surface shininess made at roughly the corresponding angles.

Measured gloss ratings by this test method are obtained by comparing the specular reflectance from the specimen to that from a black glass standard. Since specular reflectance depends also on the surface refractive index of the specimen, the measured gloss ratings change as the surface refractive index changes.

ASTM D2457 - Standard Test Method for Specular Gloss of Plastic Films and Solid Plastics

This test method describes procedures for the measurement of gloss of plastic films and solid plastics, both opaque and transparent. It contains separate gloss angles:

- 60°, recommended for intermediate-gloss films
- 20°, recommended for high-gloss films
- 45°, recommended for intermediate and low-gloss films
- 85°, recommended for intermediate and low gloss films
- 75°, recommended for plastic siding and soffit

Gloss is a complex attribute of a surface which cannot be completely measured by any single number

Gloss Percentage Values of Several Plastics

Polymer Name	Min Value (%)	Max Value (%)
ABS - Acrylonitrile Butadiene Styrene	40.00	96.0
ABS Flame Retardant	55.0	55.0
ABS High Heat	40.0	95.0
ABS High Impact	87.0	92.0
ECTFE - Ethylene Tetrafluoroethylene	90.0	90.0
EVA - Ethylene Vinyl Acetate	17.0	123.0
EVOH - Ethylene Vinyl Alcohol	85.0	95.0
HDPE - High Density Polyethylene	5.0	120.0
HIPS - High Impact Polystyrene	15.0	96.0
Ionomer (Ethylene-Methyl Acrylate Copolymer)	20.0	104.0
LDPE - Low Density Polyethylene	35.0	97.0
LLDPE - Linear Low Density Polyethylene	32.0	85.0
PA 6 - Polyamide 6	130.0	145.0
PA 66 - Polyamide 6-6	65.0	150.0
PET - Polyethylene Terephthalate	105.0	200.0
PETG - Polyethylene Terephthalate Glycol	171.0	171.0
PLA - Polylactide, Heat Seal Layer	89.0	91.0
PLA, High Heat Films	89.0	91.0
PMMA (Acrylic) Impact Modified	125.0	125.0
PP, 10-40% Mineral Filled	70.0	72.0
PP (Polypropylene) Copolymer	80.0	80.0

PP (Polypropylene) Homopolymer	75.0	90.0