

## General Materials and Shaders

### Top Level Shaders:

#### Lambert:

Matte Surfaces - Tiny Surface Variations (Rough) - Anything with a strong sense of color.

Examples: Low Diffuse - Coal, Velvet  
High Diffuse - Colored Chalk

#### Phong E:

Smooth Surfaces - Low Diffuse - Accurate model based on viewing angle.

Controlled by specular roll-off value. Specular color used for primary color.

Examples: Mirrors, Chrome, Glass

#### Anisotropic:

Simulates surfaces with microscopic grooves.

Examples: Compact Discs, Satin, Brushed Metals

### Materials & Settings:

#### Plastic:

Phong E - Color from Diffuse - White Highlight

#### Metals:

Phong E - Very low diffuse - 99% of color obtained from highlight

Highlight and diffuse are the same hue

#### Glass:

Diffuse + Transparency + (Specular Color x Reflectivity)  $\leq 1.0$

Refraction of 1.52-1.66 - Higher refraction for higher lead content.

Colored / Tinted glass requires a higher diffuse due to pigment content.

#### Chrome:

High Reflectivity - Diffuse close to 0.0 - Specular Roll-off  $> 1.0$

#### Silver:

Identical to Chrome with a higher eccentricity (0.3-0.5)

Yellow highlights - More Yellow for older, more oxidized metal

### Shader Usage & Notes:

#### Diffuse:

Diffuse is the scattered light reflected off an object from a light-source.

#### Reflectivity:

Reflectivity is the focused light reflected off an object from another object.

#### Specularity:

Specularity is the focused light reflected off an object from a light-source.

Specular Highlights are 'faked' light-source reflections.

Soft / Blurry Highlights mean Soft / Blurry Reflections

#### Layered Shader:

Use Multiply blend mode for the simulation of surface scratches.

#### Wet Surfaces:

Specular Roll-off of 0.3 -

Specular Roll-off creates wider central reflections with higher values.

#### Polished Surfaces:

High Roll-off - Low Eccentricity - White Highlight

#### Brushed Metals:

For rough brush effects use a bump or displacement map.

For finer brush effects use a specular map.

#### Translucence:

Higher Translucence = Lower Diffuse

Examples: Marble, Jade, Wax, Paper, Leaves

#### Translucence Focus:

High Focus - 0.9                      Low Focus - 0.1

High Values for thin objects - Paper, Steam

Mid Range Values for thicker objects - Leaves

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