

**"Diffusion material in film & video applications"**

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## DIFFUSION MATERIAL

When light from a point source shines on a three dimensional object, shadows are created. Of course, these shadows are the areas where the light does not fall. In nature, the sun on a bright cloudless day is a good example of light from a single point source.

This same basic principle applies to most of the lighting equipment used in film and video production. The reflectors in such fixtures gather the light into a point source and then focus it, usually through a lens. The resulting beam of light is directional, offering a high level of intensity or "punchy" but it can also present a number of drawbacks:

- The beam field may be uneven in intensity
- The beam edge may be too harsh
- The hard shadows created by the point source nature of the fixture may be objectionable or unflattering to the subject. This is most notable when the subject is a person—facial features, age lines and wrinkles become more prominent.

## WHAT DIFFUSION DOES

On an overcast day, water vapor in the cloud cover alters the harsh directional quality of sunlight by causing it to be spread out or dispersed. The resulting light seems to be coming from the entire sky, producing an illumination that is softly diffuse. Shadows are faint or undefined. Contrast is lowered.

Rosco diffusion material acts in a similar fashion. When placed in the beam path of a lighting fixture, diffusion material modifies the harsh quality of the light by spreading or dispersing the beam. This softens the quality of the illumination by increasing the apparent beam size and thereby altering the beam's "shadow casting properties".

The most important difference between atmospheric diffusion and Rosco's version is that the Rosco diffusion materials can be utilized to produce controllable and predictable results at any time.

## USE AND PLACEMENT OF DIFFUSION MATERIAL

Diffusion material can be placed at the source in a gel holder, clipped to barn doors or positioned in front of a fixture in a frame. Each position produces a slightly different effect.

Large diffusion panels can turn multiple lighting fixtures into a single source of soft, low contrast illumination. As overheads, diffusion can be placed above sets to deliver a soft, overcast look or used outdoors to diffuse harsh sunlight. Sets can even be "tented" or completely surrounded with diffusion to produce an extremely soft, shadowless quality that is particularly useful for product photography of specular objects like glassware, jewelry and automobiles.

## TYPES OF DIFFUSION

Rosco Cinegel includes a broad variety of diffusion materials grouped according to their affect on beam spread. Each group has specific properties and distinct gradations, so that a wide range of effects is possible-from the slightest feathering" of a beam edge, to the creation of a broad shadowless expanse.

### **Diffusion Types - "Tough"**

The following diffusion groups are designated "Tough". This indicates that the base material is a heat stable polyester that can be used with most high-temperature lighting fixtures.

#### TOUGH SPUN

Feathers the beam edge and softens the overall field, yet beam shape is maintained. Minimal beam spread.

Tough Spun #3006  
Light Tough Spun #3007  
Quarter Tough Spun #3022

#### TOUGH FROST

A general purpose group that offers slight to medium diffusion properties. Moderate beam spread, yet still maintains a discernible beam center.

Tough Frost #3008  
Light Tough Frost #3009  
Opal Tough Frost #3010  
Powder Frost #3040  
Light Opal Tough Frost #3020

#### TOUGH WHITE DIFFUSION

A general purpose group that offers medium to dense diffusion properties. Wide beam spread creates an even field of soft, shadowless light that is quite pleasing.

Tough White Diffusion #3026  
Tough Half White #3027  
Tough Quarter White #3028

#### TOUGH ROLUX

The original dense diffuser. Wide beam spread creates an even field of soft, shadowless light.

Light Tough Rolux #3001  
Tough Rolux #3000

#### GRID CLOTH

A group of reinforced woven materials that offer medium to very dense diffusion properties. Very wide beam spread creates a very soft shadowless quality. Ideal for tenting, overheads, and large area diffusion. Can be sewn or grommetted to fit butterfly and overhead frames.

Grid Cloth #3030  
Light Grid Cloth #3032  
Quarter Grid Cloth #3034

#### TOUGH SILK

A unique diffuser with directional properties. Spreads the beam in one direction-horizontally, vertically or diagonally-to create a slash of light. Also useful for spreading out an unwanted beam scallop caused by tight spaces and extreme lighting angles. Good transmission.

Tough Silk #3011  
Light Tough Silk #3015

### **Diffusion Types - "Soft"**

Soft diffusion materials are quiet when used outdoors in windy conditions. They can also be heat-welded to produce large panels for overhead tenting and large area diffusion. However, these materials are only moderately heat resistant and should not be used directly on high temperature lights.

Soft Frost #3002  
Wide Soft Frost #3023  
Half Density Soft Frost #3004  
Hilite #3014  
Silent Frost #30129

If you have a question about Rosco Color Filters (Roscolux, Permacolor), please email [colorfilters@rosco.com](mailto:colorfilters@rosco.com)