

## NAME

**glFogf**, **glFogi**, **glFogfv**, **glFogiv** – specify fog parameters

## C SPECIFICATION

```
void glFogf( GLenum pname,
             GLfloat param )
void glFogi( GLenum pname,
             GLint param )
```

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## PARAMETERS

*pname* Specifies a single-valued fog parameter. **GL\_FOG\_MODE**, **GL\_FOG\_DENSITY**, **GL\_FOG\_START**, **GL\_FOG\_END**, and **GL\_FOG\_INDEX** are accepted.

*param* Specifies the value that *pname* will be set to.

## C SPECIFICATION

```
void glFogfv( GLenum pname,
              const GLfloat *params )
void glFogiv( GLenum pname,
              const GLint *params )
```

## PARAMETERS

*pname* Specifies a fog parameter. **GL\_FOG\_MODE**, **GL\_FOG\_DENSITY**, **GL\_FOG\_START**, **GL\_FOG\_END**, **GL\_FOG\_INDEX**, and **GL\_FOG\_COLOR** are accepted.

*params* Specifies the value or values to be assigned to *pname*. **GL\_FOG\_COLOR** requires an array of four values. All other parameters accept an array containing only a single value.

## DESCRIPTION

Fog is initially disabled. While enabled, fog affects rasterized geometry, bitmaps, and pixel blocks, but not buffer clear operations. To enable and disable fog, call **glEnable** and **glDisable** with argument **GL\_FOG**.

**glFog** assigns the value or values in *params* to the fog parameter specified by *pname*. The following values are accepted for *pname*:

**GL\_FOG\_MODE** *params* is a single integer or floating-point value that specifies the equation to be used to compute the fog blend factor, \$f\$. Three symbolic constants are accepted: **GL\_LINEAR**, **GL\_EXP**, and **GL\_EXP2**. The equations corresponding to these symbolic constants are defined below. The initial fog mode is **GL\_EXP**.

**GL\_FOG\_DENSITY** *params* is a single integer or floating-point value that specifies \$density\$, the fog density used in both exponential fog equations. Only nonnegative densities are accepted. The initial fog density is 1.

**GL\_FOG\_START** *params* is a single integer or floating-point value that specifies \$start\$, the near distance used in the linear fog equation. The initial near distance is 0.

**GL\_FOG\_END** *params* is a single integer or floating-point value that specifies \$end\$, the far distance used in the linear fog equation. The initial far distance is 1.

**GL\_FOG\_INDEX** *params* is a single integer or floating-point value that specifies \$i sub f\$, the fog color index. The initial fog index is 0.

**GL\_FOG\_COLOR** *params* contains four integer or floating-point values that specify \$C sub f\$, the fog color. Integer values are mapped linearly such that the most positive representable value maps to 1.0, and the most negative representable value maps to -1.0. Floating-point values are mapped directly. After conversion, all color

components are clamped to the range [0,1]. The initial fog color is (0, 0, 0, 0).

Fog blends a fog color with each rasterized pixel fragment's posttexturing color using a blending factor  $f$ . Factor  $f$  is computed in one of three ways, depending on the fog mode. Let  $z$  be the distance in eye coordinates from the origin to the fragment being fogged. The equation for **GL\_LINEAR** fog is

$$f = \frac{\text{end} - z}{\text{end} - \text{start}}$$

The equation for **GL\_EXP** fog is

$$f = e^{-(\text{density} \cdot z)}$$

The equation for **GL\_EXP2** fog is

$$f = e^{-(\text{density} \cdot z)^2}$$

Regardless of the fog mode,  $f$  is clamped to the range [0,1] after it is computed. Then, if the GL is in RGBA color mode, the fragment's color  $C_r$  is replaced by

$$C_r' = f C_r + (1 - f) C_f$$

In color index mode, the fragment's color index  $i_r$  is replaced by

$$i_r' = f i_r + (1 - f) i_f$$

#### ERRORS

**GL\_INVALID\_ENUM** is generated if *pname* is not an accepted value, or if *pname* is **GL\_FOG\_MODE** and *params* is not an accepted value.

**GL\_INVALID\_VALUE** is generated if *pname* is **GL\_FOG\_DENSITY**, and *params* is negative.

**GL\_INVALID\_OPERATION** is generated if **glFog** is executed between the execution of **glBegin** and the corresponding execution of **glEnd**.

#### ASSOCIATED GETS

**glIsEnabled** with argument **GL\_FOG**  
**glGet** with argument **GL\_FOG\_COLOR**  
**glGet** with argument **GL\_FOG\_INDEX**  
**glGet** with argument **GL\_FOG\_DENSITY**  
**glGet** with argument **GL\_FOG\_START**  
**glGet** with argument **GL\_FOG\_END**  
**glGet** with argument **GL\_FOG\_MODE**

#### SEE ALSO

**glEnable**