Glossary

This section provides a glossary of technical terms used in the DirectX Programmer's Reference documentation. Entries are grouped by letter in alphabetical order.

A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z

A

alpha channel
> The opacity of an image defined by an alpha value per pixel interleaved with the color components (for example, ARGB), an alpha value per pixel stored in a separate alpha surface, or a constant alpha value for the entire surface.

alpha color component
> The portion of a 32-bit color that determines its opacity. In this case, the alpha value per pixel is interleaved with the color components (for example, ARGB). Less commonly, this term can also refer to an image with an alpha value per pixel stored in a separate alpha surface.

alpha constant
> A level of opacity (alpha value) applied to an entire surface.

alpha edge blend
> A particular use of alpha blending (and alpha channel information) to reduce aliasing by blending edges based on pixel coverage information.

ambient
> A light source that illuminates everything in a scene, regardless of the orientation, position, and surface characteristics of the objects in the scene. Because this illuminates a scene with equal strength everywhere, the position and orientation of the frame it is attached to are inconsequential. Multiple ambient light sources are combined within a scene.

anisotropic filtering
> A mipmap filtering mode that compensates for anisotropy, which is the distortion visible in the texels of a 3-D object whose surface is oriented at an angle with respect to the plane of the screen. The anisotropy is measured as the elongation (length divided by width) of a screen pixel that is inverse-mapped into texture space.

anisotropy
> The distortion visible in the image of a 3-D object whose surface is oriented at an angle with respect to the viewing plane.

array object
> A group of objects organized into an array. Array objects make it simpler to apply operations to the entire group. The COM interfaces that allow you to work

with array objects contain the **GetElement** and **GetSize** methods. These methods retrieve a pointer to an element in the array and the size of the array, respectively.

attach

To connect multiple DirectDrawSurface objects into complex structures, like those needed to support 3-D page flipping with z-buffers. Attachment is not bidirectional, and a surface cannot be attached to itself. Emulated surfaces (in system memory) cannot be attached to nonemulated surfaces. Unless one surface is a texture map, the two attached surfaces must be the same size.

attached

Physically connected to the system. A device may be installed but not currently attached.

attack

The period at the beginning of a force-feedback effect when the magnitude is reaching its basic or sustain level.

audio stream

Sound data, mixed or unmixed. DirectSound mixes audio streams from each secondary sound buffer that is playing and writes the result to the primary sound buffer, which supplies the sound hardware with audio data.

B

back buffer

A nonvisible surface that bitmaps and other images can be drawn to while the primary surface displays the currently visible image.

back clipping plane

The far boundary of a viewing frustum beyond which objects are not rendered. *See also* front clipping plane.

bank select

A MIDI controller that allows instruments to be chosen from different groups or banks, each identified by a two-byte code.

billboard

A primitive inserted into a 3-D scene that is oriented so that one face is toward the viewer. A texture, usually an animated sprite, is applied to the billboard to give the appearance of a 3-D object in the scene.

billboarding

A 2-D technique of simulating the appearance of a 3-D object in a scene. An application inserts a primitive, typically rectangular, into the scene oriented so that one face is toward the viewer and applies a texture or a set of textures. The texture or set of textures gives the appearance of an animated 3-D object.

blend factor

The description of how each color component is blended in texture blending.

blend mode

The algorithm used to determine how a texture is blended with the colors of the surface to which the texture is applied.

blending stage

One step in a texture cascade. A blending stage includes one texture and a set of texture blending operations that are used when blending multiple textures.

blit

A bit block transfer.

bounds checking

The process of checking that an on-screen image is displayed within the bounds of the screen.

bump mapping

A technique for simulating the appearance of rough surfaces in 3-D scenes. Variations in depth are stored in a texture and applied to a primitive using standard texture-blending techniques.

C

camera

A Direct3DRMFrame object used by the viewport to define the viewing position and direction. The viewport renders only what is visible along the positive z-axis of the camera frame, with the up direction being in the direction of the positive y-axis.

camera space

The frame of reference where the viewer is at the origin, looking in the direction of the positive z-direction. Objects are transformed from world space to camera space by using the view transformation.

client/server session

A DirectPlay session in which only the server stores the session's complete state, and each client has only a subset of the session's state. Each client has only the information that is relevant to that computer and receives that information from the server. When one computer changes something, it propagates the change to the server. The server then determines which clients it must inform of the change. *See also* peer-to-peer session.

clip list

A series of rectangles that describes the visible areas of the surface. The clip list cannot be set if a window handle is already associated with the DirectDrawClipper object.

clipper

A DirectDrawClipper object.

codec

Represents the phrase "compressor and decompressor."

collision detection

The process of determining if any pixels for two images share the same location on the screen. *See also* hit detection.

color key

A value indicating the color to be used for transparent or translucent effects. When using a hardware blitter, for example, all of the pixels of a rectangular area will be blitted except for the value that was set as the color key, thereby creating nonrectangular sprites on a surface.

color space

A model for representing color as three or more coordinates. Color-space models map color components onto a Cartesian coordinate system in three or more dimensions. A color space may use any of several types of color encoding and visualizing color. The two most common types of color space models are RGB and YUV.

color-space conversion

A technique for converting a color in one color space to another color space. Typically, this conversion is from YUV colors from a video source to RGB for display.

color table

An array of *n* color values (normally RGB triples).

complex surface

The collective term for several DirectDrawSurface objects, all of which are attached to a root surface. The complex-surface structure can be destroyed only by destroying the root.

cull

Skipping a back face of a 3-D primitive during the rendering process.

current play position

The location in a DirectSound buffer where a sound is being played.

current write position

The location in a DirectSound buffer where it is safe to change data in that buffer.

D

dark light

A light source that removes illumination from a scene, created by specifying negative values for the colors of the light.

DCI

Acronym for Display Control Interface. Defined by the Intel and Microsoft corporations, DCI in an interface that offers improved graphics performance as a result of direct video memory access.

dead zone

An area within the range of an axis where the axis is considered to be at the center.

decal

A texture that is rendered directly, as a visual. Decals are rendered into a viewport-aligned rectangle.

destination color key

The color that, in the case of blitting, will be replaced or, in the case of overlays, be covered up on the destination surface.

device window

A visible application window that DirectDraw uses for display. Applications can have a device window for each display device in a machine. *See also* focus window.

directional

A light source that is attached to a frame but appears to illuminate all objects with equal intensity, as if it were at an infinite distance from the objects. Directional light has orientation but no position, and it is commonly used to simulate distant light sources, such as the sun.

DirectPlay Address

A data format that DirectPlay uses to pass addressing information between lobby servers, applications, DirectPlay, and service providers. A DirectPlay Address is a sequence of variable-length data chunks tagged with a globally unique identifier (GUID) that supplies all the address information needed by DirectPlay. Examples of address information are: the network address of a server, the network address of a player, the e-mail name of a player, and the network address of a session.

DirectPlay defined property

A property that can be set and retrieved by applications from a lobby. When a DPLMSG_GETPROPERTYRESPONSE message is received, its *guidPropertyTag* field identifies the property, and its *dwPropertyData* field contains the property information.

DLS

Downloadable sounds (sometimes called downloadable samples). Digital samples in software that are used by a synthesizer to create instrument timbres.

E

emissive property

The material property that determines whether a material emits light. The emissive property of a material is one of two properties that determines how the material reflects light. *See also* specular property.

emissive setting

See emissive property.

enable frame

The frame to which a light applies.

envelope

A set of values that defines the shape of a force-feedback effect by modifying the magnitude at the beginning (attack) and end (fade).

even field

The second field comprising a video frame in an odd/even field set. Also known as field 2.

execute buffer

A fully self-contained, independent packet of information that describes a 3-D scene. An execute buffer contains a vertex list followed by an instruction stream. The instruction stream consists of operation codes, or opcodes, and the data that is operated on by those opcodes.

F

face

A single polygon in a mesh.

fade

The period between the central, or sustain, portion of a force feedback effect and its end.

falloff

Light attenuation that occurs between a spotlight's inner and outer cones.

field

Data for one-half of a single video frame within a video stream. Each field contains data for every other scan line. Fields are sent and received in odd field, even field order.

field polarity

Quality determining whether a field is an even field or an odd field. Odd fields are defined when the trailing edge of VREF does not occur during a scan line. Even fields are defined as when the trailing edge of VREF occurs during a scan line.

flimmering

A shimmering appearance on 3-D primitives that results from a poor separation of z values when doing decaling. Some pixels from the back texture are rendered onto the front texture and visa versa.

flip

The process of swapping the addresses associated with the back and front buffers. This effectively swaps the image in the back buffer to the front buffer, thereby displaying the image.

flipping chain

A series of surfaces, attached to each other, that can be flipped. *See also* flip.

flipping surface

Any piece of memory that can be flipped. *See also* flip.

focus window

An application window, visible or not visible, that DirectDraw uses to hook window messages. The focus window's message handler receives input messages as forwarded by DirectDraw. Applications can have only one focus window. *See also* device window.

frame

An invisible box that provides a frame of reference for objects in a scene. Objects can be placed in a scene by specifying their spatial relationship to a relevant reference frame. Visual objects take their positions and orientations from frames. Also, a single image from a movie or animation.

front buffer

The first buffer in a flipping chain. In many cases, this will be the visible primary surface. In other cases, such as a flipping chain of textures, the front buffer is the surface the 3-D engine will get the texture from, but it is not the primary surface and is not displayed. In the case of flipping overlay surfaces, the front buffer is displayed, but is only a surface overlaid on the primary surface. *See also* primary surface.

front clipping plane

The near boundary of a viewing frustum. Any object closer to the camera than the front clipping plane is not rendered. The height of the front clipping plane defines the field of view. *See also* back clipping plane.

G

genlocking

The process of synchronizing one video signal with another. Because they are synchronized, the genlocked signal can be mixed with the original signal, allowing dissolves, wipes, and other transition effects.

grid

Subdivision of a beat. The number of grids per beat is part of the DirectMusic time signature.

groove level

A value given to the music during style playback, determining which patterns can be selected at any given time. The author assigns a range of groove levels to each pattern.

group

A logical collection of players. DirectPlay supports groups within a session. By creating a group of players, an application can send a single message to the group, and all the players in the group will receive the message. A group is the means by which a network's multicast capabilities are exposed to the application.

Groups can be used as a general means to organize players in a session. A player can belong to more than one group. DirectPlay provides methods for administering groups and their membership.

H

HAL

The hardware-abstraction layer. Consists of hardware and device driver mechanisms that insulate applications from device-specific implementation details. If a capability requested by an application is not implemented by the current hardware, the capability will be emulated by the software.

hardware blitter

A hardware component, built into the display adapter, that performs efficient blit operations.

HEL

The hardware-emulation layer. Provides software-based emulation of features that are not present in hardware.

hit detection

See collision detection.

host

In DirectPlay, a virtual player whose ID is DPID_SYSMSG. The host manages system messages and messages sent to all players in a session.

HREF

Acronym for horizontal refresh. In a video stream, the HREF is active to signal that the display is to begin a new scan line. *See also* VREF.

I

index palette

A DirectDrawPalette object whose entries are indices into another palette object.

IPX service provider

A service provider that uses Winsock to communicate over a local area network (LAN) using the Internet Packet Exchange (IPX) protocol. The service provider only supports nonguaranteed messaging. A single computer can host only one DirectPlay sessions using IPX.

IRE

IRE, an acronym for International Radio Engineers, is a scale of values ranging from 0 to 100 that defines the brightness level of a broadcast video signal. The spectrum of low-to-high IRE values describes increasing brightness levels in a video signal. At 7.5 IRE brightness units — the "black cut-off" threshold for an NTSC signal — the electron guns of an NTSC display device are cut-off and do not display images.

L

latency

A delay in response. For example, in DirectSound, it is the interval between the time that a sound buffer plays and the time that the speakers actually reproduce the sound. In DirectPlay, it is the time it takes for a small packet to reach a given destination.

light map

A texture or group of textures that contain lighting information for a 3-D scene.

lobby-aware application

An application that, at a minimum, supports being launched from a lobby.

lobby client

Lobby management routines associated with the user's computer, including launching applications, updating the user interface, and communicating with the lobby server.

lobby provider

A client component (DLL) supplied by the developer of a lobby server. It implements communication functions with the lobby server as requested by DirectPlay.

lobby server

Lobby management routines associated with a remote server. The lobby server coordinates all the information about the users connected to a specific application.

lobby session

A connection to a lobby server where clients and the server have not been specifically written to interoperate.

M

Mach bands

Bands of color that are not smoothly blended across a 3-D primitive.

material

A property that determines how a surface reflects light. A material has two components: an emissive property (whether it emits light) and a specular property, whose brightness is determined by a power setting.

mesh

A set of faces, each of which is described by a simple polygon.

mipmap

Also known as MIP map (Latin: multum in parvo, translated "much in little"). A sequence of textures, each of which is a progressively lower-resolution, prefiltered representation of the same image. A higher-resolution image is used when a visible object is close to the viewer; as the object moves farther away (and gets smaller), lower-resolution images are used.

mixing

In DirectSound, the process of combining sound buffers that are playing and writing the result to the primary sound buffer, which supplies the sound hardware

with audio data. There are no limitations to the number of buffers that can be mixed, except the practicalities of available processing time.

Mode X

A hybrid display mode derived from the standard VGA Mode 13. This mode allows the use of up to 256 KB of display memory (rather than 64 KB allowed by Mode 13) by using the VGA display adapter's EGA multiple video plane system.

model coordinates

Coordinates that are relative to local origin. *See also* model space and world coordinates.

model space

The frame of reference, used by model coordinates, that uses vertices relative to a single 3-D model's local origin.

multipass texture blending

The repeated rendering of a 3-D primitive while blending on a texture with each pass. This technique is widely used to achieve a variety of special effects.

N

nagling

An algorithm that causes the TCP/IP service provider to buffer small data packets into larger ones before sending. Nagling prevents a TCP/IP server from transmitting many very small packets by requiring the server either to wait until it has accumulated enough small data packets to combine them into a single large packet, or until it has received an acknowledgment of the prior packet. Nagling can reduce message overhead (and decrease required bandwidth), but also causes a delay before small data packets are send (increasing latency).

normal vector

An imaginary ray extending perpendicularly from a surface that defines the face's orientation.

O

odd field

The first field comprising a video frame in an odd/even field set.

off-screen surface

A conceptually rectangular area in memory that is generally used to store bitmaps that will be blitted to a back buffer before being displayed. Commonly used to store sprites.

opcode

Operation code that defines how the vertices in an execute buffer should be interpreted or how the state of the system should be changed.

overdraw

The average number of times to which a screen pixel is written.

overlay surface

A conceptually rectangular area in memory whose stored image information will cover the image information of the primary surface to which it is applied. Overlays are assumed to be on top of all other screen components.

overlay z-order

Determines the order in which overlays clip each other, enabling a hardware sprite system to be implemented under DirectDraw.

P

page flipping

See flip.

palette

The set of colors used by an object or application. In DirectX, a DirectDrawPalette object.

palette index

An integer index into the palette table array that is used to select a particular color.

palettized surface

A DirectDrawSurface object that uses an attached palette to contain color information.

pan value

The relative volume, measured in hundredths of decibels, between the left and right audio channels.

parallel point

A light source that illuminates objects with parallel light, but the orientation of the light is taken from the position of the parallel point light source. For example, two meshes on either side of a parallel point light source are lit on the side that faces the position of the source.

PChannel

Abbreviation for performance channel. A PChannel is a MIDI channel in a particular channel group on a particular port.

peer-to-peer session

A DirectPlay session in which the session's complete state is replicated on all the computers in the session. The session description data—the list of players and groups, and the names and remote data associated with each session—are duplicated on every computer. When one computer changes something, it is immediately propagated to all the other computers. This is default mode of communication for DirectPlay. *See also* client/server session.

perspective correction

The technique of applying a texture map to a polygon that is angled away from the camera, interpolating so that the texture is stretched onto the polygon appropriately for the apparent depth of the polygon. Direct3D supplies perspective correction automatically.

pick

To search for visuals in a scene given a 2-D coordinate in a viewport.

pitch

The distance, in bytes, between an address that represents the beginning of a bitmap line and the beginning of the next line. Do not confuse memory pitch and memory width, since not all display memory is laid out as one linear block. For example, with rectangular memory, the pitch of the display memory could include the width of the bitmap plus part of a cache. *See also* width and stride.

player

A single participant in a DirectPlay session. Each player is associated with a player ID that enables messages to be exchanged among players.

player ID

A unique number that is assigned to each participant in a DirectPlay session when the participant is created. The application can exchange messages among players by using player IDs. The host is always assigned the DPID_SYSMSG player ID.

point light

A light source that radiates equally in all directions from its origin.

point list

The simplest 3-D primitive. A collection of unconnected points in 3-D space.

power

In the specular property of a material, the value that determines the sharpness of specular highlights. A value of 5 gives a metallic appearance, and higher values give a more plastic appearance.

primary sound buffer

The buffer the user hears when a game is playing. The primary buffer is generally used to mix sound from secondary buffers, but it can be accessed directly for custom mixing or other specialized activities.

primary surface

The area in memory containing the image being displayed on the monitor. In DirectX, the primary surface is represented by the primary DirectDrawSurface object.

projection space

Frame of reference containing vertices after they are modified from their world space locations by the projection transformation. Projection space is a homogeneous cuboid space where all vertices in a scene have x- and y-coordinates that range from -1.0 to 1.0, and a z-coordinate that ranges from 0.0 to 1.0. Projection space is sometimes referred to as "post-perspective homogeneous space."

projection transformation

The application of a matrix to vertices to change them from camera space to projection space.

Q

quaternion

A fourth element added to the [x, y, z] values that define a vector. Quaternions define a 3-D axis and a rotation around that axis.

R

reference count

A control for a component object model (COM) object. When an object is created, its reference count is set to 1. Every time an interface is bound to the object, its reference count is incremented; when the interface connection is destroyed, the reference count is decremented. The object is destroyed when the reference count reaches 0. All interfaces to that object are then invalid.

region

A range of notes for which a particular digital sample will be used in synthesizing an instrument's timbre.

root frame

A frame in Direct3D that has no parent frame; a frame at the top of a hierarchy of frames. The root frame contains the entire set of objects that make up a scene. *See also* scene.

S

saturation

Adjustment to the extreme value of a range when the actual value approaches the extreme. If the maximum value in a range is 1,000 and the maximum saturation point is set to 900, then any value greater than 899 is adjusted to 1,000.

scene

The entire set of objects that make up a virtual environment, including visible objects, sounds, lights, and frames. In Direct3D, the entire set of objects is contained by a root frame.

screen space

Frame of reference in which coordinates are related directly to two dimensional locations in the frame buffer, to be displayed on a monitor or other viewing device. Projection space coordinates are converted to screen space coordinates using a transformation matrix created from the viewport parameters.

secondary sound buffer

A section of audio memory that stores individual sounds that are played throughout an application. The sound can be played as a single event or as a looping sound that plays repeatedly. Secondary buffers can also play sounds that

are larger than available sound-buffer memory; the buffer serves as a queue that stores the portions of the sound about to be played.

secure session

A session in which all the users have been authenticated against a database of known users before being allowed to join a session. In a secure session, all DirectPlay system messages are digitally signed to verify the identity of the sender. Certain system messages that carry sensitive information are encrypted. System messages that originate from one player and need to be broadcast to all the other players in the session are first sent to the server. The server then puts its signature on the message and forwards the message to all the other computers in the session . Player to player messages are not signed by default and are not routed through the server.

service provider

A dynamic-link library used by DirectPlay to communicate over a network. The service provider contains all the network-specific code required to send and receive messages. Online services and network operators can supply service providers to use specialized hardware, protocols, communications media, and network resources.

session

In DirectPlay, an instance of several applications on remote machines communicating with each other. Before an application can start communicating with other computers, it must be part of a session. An application can enumerate all the existing sessions on a network and join one of them, or it can create a new session and wait for other computers to join it. Once the application is part of a session, it can create a player and exchange messages with all the other players in the session.

sound buffer

A segment of memory that stores DirectSound audio data. Sound buffers can be primary or secondary, static or streaming.

source color key

A color that, in the case of blitting, will not be copied, or, in the case of overlays, not be visible on the destination.

specular property

The material property that determines how a point of light on a shiny object corresponds to the reflected light source. The specular property of a material is one of two properties that determines how a material reflects light. *See also* emissive property.

spotlight

A light source that emits a cone of light. Only objects within the cone are illuminated. The cone produces light of two degrees of intensity, with a central brightly lit section that acts as a point source, and a surrounding dimly lit section that merges with the surrounding deep shadow.

static sound buffer

A section of memory that contains a complete sound. These buffers are convenient because the entire sound can be written once to the buffer.

sticky focus

In DirectSound, the capability to play sound buffers when the owning application does not have the input focus. For example, a DirectSound application could continue to play a sound buffer while the user was working in another application.

streaming sound buffer

A small sound buffer that can play lengthy sounds because the application dynamically loads audio data into the buffer as it plays. For example, an application could use a buffer that can hold 3 seconds of audio data to play a 2-minute sound. A streaming buffer requires much less memory than a static buffer.

stretching

Blitting an image into a destination with different dimensions. This operation is supported directly by some hardware.

stride

Synonymous with pitch. *See also* width.

surface

Memory that represents visual images. This is often display memory, but it can be system memory. *See also* complex surface, off-screen surface, overlay surface, and primary surface.

sustain

The period when the basic magnitude of a force feedback effect is attained, after the attack and before the fade.

system message

In DirectPlay, a message from the player ID DPID_SYSMSG. All system messages begin with a double-word value.

T

TCP/IP service provider

A service provider that uses Winsock to communicate over the Internet or local area network (LAN) using the TCP/IP protocol. It uses UDP (User Datagram Protocol) packets for nonguaranteed messaging and TCP for guaranteed messaging. A single computer can host multiple DirectPlay sessions using TCP/IP.

tearing

A visual artifact produced when the screen refresh rate is out of sync with an application's frame rate. The top portion of one frame is displayed at the same time as the bottom portion of another frame, with a discernible tear between the two partial images.

tessellate

Breaking an image into small, square regions for processing or output.

texel

A single element in a texture. When a texture has been applied to an object, the texels rarely correspond to pixels on the screen. Applications can use texture filtering to control how texels are interpolated to pixels.

texture

A rectangular array of pixels that is applied to a visual object in Direct3D.

texture blending

The technique of combining the colors of a texture with the colors of the surface to which the texture is applied.

texture coordinates

The coordinates that determine which texel in each texture is assigned to each vertex in an object.

texture filtering

The process of mapping texel colors from one or more textures onto the pixels that comprise the image of a 3-D primitive.

texture mapping

The application of a texture to an object. Because a texture is a flat image and the object is often not, the texture must be mapped to the surface of the object, using texture coordinates and wrapping flags. *See also* texture coordinates and wrap.

U

user authentication

Authentication is used to verify that the user is allowed access to the server by virtue of having been added to the membership database by the administrator of the server. Only users that are part of the membership database are permitted to join the session. User authentication should not be confused with password protection of a session. A password can be added to a session so that only those members who know the password can join a particular session. Authentication requires a server that supports authentication, while any computer can put a password on a session.

V

VBI

Abbreviation for Vertical Blanking Interval.

velocity

In music, the speed at which a key is struck; roughly equivalent to the volume of a note.

In 3-D sound, the speed at which a sound source or listener is considered to be moving, for the purpose of calculating Doppler shift.

vertex

A point in 3-D space.

video frame

A single image in a video stream, comprised of one odd field and one even field. *See also* field.

view space

See camera space.

view transformation

The application of a matrix to a model's vertices to change its orientation from world space to view space.

viewing frustum

A 3-D volume in a scene positioned relative to the viewport's camera. Objects within the frustum are visible. For perspective viewing, the viewing frustum is the volume of an imaginary pyramid that is between the front clipping plane and the back clipping plane. For orthographic viewing, the viewing frustum is cuboid.

viewport

A rectangle that defines how a 3-D scene is rendered into a 2-D window. A viewport also defines an area on a device into which objects will be rendered.

VREF

Acronym for vertical refresh. In a video stream, the VREF is active to signal that the display is to begin a new screen. *See also* HREF.

W

width

The distance between two addresses in memory that represent the beginning of a line and the end of the line of a stored bitmap. This distance represents only the width of the bitmap in memory; it does not include any extra memory required to reach the beginning of the next line of the bitmap, such as a cache in rectangular memory.

world coordinates

Coordinates that are relative to the origin of a scene. *See also* model coordinates and world space.

world space

The frame of reference, used by world coordinates, that declares vertices relative to a single origin within a 3-D scene.

world transformation

The application of a matrix to a model's vertices to change its orientation from model space to world space.

wrap

The procedure used to calculate texture coordinates for a face or mesh. The basic wrapping types are flat, cylindrical, spherical, and chrome.

Z

z-buffer
> A buffer that stores a depth value for each pixel in a scene. Pixels with a small z-value overwrite pixels with a large z-value.

z fighting
> See flimmering.