
src Documentation

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Author

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psd-tools is a Python package for working with Adobe Photoshop PSD files as described in [specification](#).

CHAPTER 1

Installation

Use *pip* to install the package:

```
pip install psd-tools
```

Note: In order to extract images from 32bit PSD files PIL/Pillow must be built with LITTLECMS or LITTLECMS2 support (apt-get install liblcms2-2 or brew install little-cms2)

For complete layer image composition functionality, also install NumPy/SciPy:

```
pip install numpy scipy
```

Numpy will be necessary when:

- Blending modes other than *normal* are used;
- Gradient fill is used.

CHAPTER 2

Getting started

```
from psd_tools import PSDImage

psd = PSDImage.open('example.psd')
psd.compose().save('example.png')

for layer in psd:
    print(layer)
```

Check out the *Usage* documentation for more examples.

2.1 Usage

2.1.1 Command line

The package provides command line tools to handle a PSD document:

```
psd-tools export <input_file> <output_file> [options]
psd-tools show <input_file> [options]
psd-tools debug <input_file> [options]
psd-tools -h | --help
psd-tools --version
```

Example:

```
psd-tools show example.psd # Show the file content
psd-tools export example.psd example.png # Export as PNG
psd-tools export example.psd[0] example-0.png # Export layer as PNG
```

2.1.2 Working with PSD document

`psd_tools.api` package provides the user-friendly API to work with PSD files. *PSDImage* represents a PSD file.

Open an image:

```
from psd_tools import PSDImage
psd = PSDImage.open('my_image.psd')
```

Most of the data structure in the `psd-tools` supports pretty printing in IPython environment.

```
In [1]: PSDImage.open('example.psd')
Out[1]:
PSDImage(mode=RGB size=101x55 depth=8 channels=3)
  [0] PixelLayer('Background' size=101x55)
  [1] PixelLayer('Layer 1' size=85x46)
```

Internal layers are accessible by iterator or indexing:

```
for layer in psd:
    print(layer)
    if layer.is_group():
        for child in layer:
            print(child)

child = psd[0][0]
```

Note: The iteration order is from background to foreground, which is reversed from version prior to 1.7.x. Use `reversed(list(psd))` to iterate from foreground to background.

The opened file can be saved:

```
psd.save('output.psd')
```

2.1.3 Working with Layers

There are various layer kinds in Photoshop.

The most basic layer type is *PixelLayer*:

```
print(layer.name)
layer.kind == 'pixel'
```

Some of the layer attributes are editable, such as a layer name:

```
layer.name = 'Updated layer 1'
```

Note: Currently, the package does not support adding or removing of a layer.

Group has internal layers:

```
for layer in group:
    print(layer)

first_layer = group[0]
```

TypeLayer is a layer with texts:

```
print(layer.text)
```

ShapeLayer draws a vector shape, and the shape information is stored in *vector_mask* and *origination* property. Other layers can also have shape information as a mask:

```
print(layer.vector_mask)
for shape in layer.origination:
    print(shape)
```

SmartObjectLayer embeds or links an external file for non-destructive editing. The file content is accessible via *smart_object* property:

```
import io
if layer.smart_object.filetype in ('jpg', 'png'):
    image = Image.open(io.BytesIO(layer.smart_object.data))
```

SolidColorFill, *PatternFill*, and *GradientFill* are fill layers that paint the entire region if there is no associated mask. Sub-classes of *AdjustmentLayer* represents layer adjustment applied to the composed image. See *Adjustment layers*.

2.1.4 Exporting data to PIL

Export the entire document as `PIL.Image`:

```
image = psd.compose()
image.save('exported.png')
```

Note that above `compose()` might return `None` if the PSD document has no visible pixel.

Export a single layer including masks and clipping layers:

```
image = layer.compose()
```

Export layer, mask, or clipping layers separately without composition:

```
image = layer.topil()
mask = layer.mask.topil()

from psd_tools import compose
clip_image = compose(layer.clip_layers)
```

2.2 Migrating to 1.8

There are major API changes in version 1.8.x.

Note: In version 1.8.0 - 1.8.7, the package name was *psd_tools2*.

2.2.1 PSDImage

File open method is changed from *load* to *open()*.

version 1.7.x:

```
psd = PSDImage.load(filename)
with open(filename, 'rb') as f:
    psd = PSDImage.from_stream(f)
```

version 1.8.x:

```
psd = PSDImage.open(filename)
with open(filename, 'rb') as f:
    psd = PSDImage.open(f)
```

2.2.2 Layers

Children of PSDImage or Group is directly accessible by iterator or indexing.

version 1.7.x:

```
for layer in group.layers:
    print(layer)

first_child = group.layers[0]
```

version 1.8.x:

```
for layer in group:
    print(layer)

first_child = group[0]
```

In version 1.8.x, the order of layers is reversed to reflect that the index should not change when a new layer is added on top.

2.2.3 PIL export

Primary PIL export method is now *compose()*.

version 1.7.x:

```
image = psd.as_PIL()

layer_image = compose(layer)
raw_layer_image = layer.as_PIL()
```

version 1.8.x:

```
image = psd.compose()

layer_image = layer.compose()
raw_layer_image = layer.topil()
```

2.2.4 Low-level data structure

Data structures are completely rewritten to support writing functionality. See `psd_tools.psd` subpackage. version 1.7.x:

```
psd.decoded_data
```

version 1.8.x:

```
psd._record
```

2.2.5 Drop pymaging support

Pymaging support is dropped.

2.3 Contributing

Development happens at github: [bug tracker](#). Feel free to submit [bug reports](#) or pull requests. Attaching an erroneous PSD file makes the debugging process faster. Such PSD file might be added to the test suite.

The license is MIT.

2.3.1 Package design

The package consists of two major subpackages:

- 1) `psd_tools.psd`: **subpackage that reads/writes low-level binary** structure of the PSD/PSB file. The core data structures are built around `attrs` class that all implement `read` and `write` methods. Each data object tries to resemble the structure described in the [specification](#). Although documented, the [specification](#) is far from complete and some are even inaccurate. When `psd-tools` finds unknown data structure, the package keeps such data as `bytes` in the parsed result.
- 2) `psd_tools.api`: **User-facing API that implements various** easy-to-use methods that manipulate low-level `psd_tools.psd` data structures.

2.3.2 Testing

In order to run tests, make sure PIL/Pillow is built with LittleCMS or LittleCMS2 support, install `tox` and type:

```
tox
```

from the source checkout. Or, it is a good idea to install and run `detox` for parallel execution:

```
detox
```

2.3.3 Documentation

Install Sphinx to generate documents:

```
pip install sphinx sphinx_rtd_theme
```

Once installed, use *Makefile*:

```
make docs
```

2.3.4 Acknowledgments

Great thanks to all the contributors.

Supported:

- Read and write of the low-level PSD/PSB file structure;
- Raw layer image export;
- ICC profile handling for sRGB images.

Limited support:

- Composition of basic pixel-based layers by normal blending;
- Composition of fill layer effects;
- Editing of some layer attributes such as layer name.

Not supported:

- Bitmap image export;
- Editing of layer structure, such as adding or removing a layer;
- Blending modes other than normal;
- Composition of layer effects;
- Drawing of bezier curves;
- Font rendering.

3.1 psd_tools

See *Usage* for examples.

3.1.1 PSDImage

class `psd_tools.PSDImage` (*data*)

Photoshop PSD/PSB file object.

The low-level data structure is accessible at `PSDImage._record`.

Example:

```
from psd_tools import PSDImage

psd = PSDImage.open('example.psd')
image = psd.compose()

for layer in psd:
    layer_image = layer.compose()
```

bbox

Minimal bounding box that contains all the visible layers.

Use `viewbox` to get viewport bounding box. When the `psd` is empty, `bbox` is equal to the canvas bounding box.

Returns (left, top, right, bottom) *tuple*.

bottom

Bottom coordinate.

Returns *int*

channels

Number of color channels.

Returns *int*

color_mode

Document color mode, such as 'RGB' or 'GRAYSCALE'. See *ColorMode*.

Returns *ColorMode*

compose (*force=False, bbox=None, **kwargs*)

Compose the PSD image.

See *compose()* for available extra arguments.

Parameters `bbox` – Viewport tuple (left, top, right, bottom).

Returns `PIL.Image`, or `None` if there is no pixel.

depth

Pixel depth bits.

Returns *int*

descendants (*include_clip=True*)

Return a generator to iterate over all descendant layers.

Example:

```
# Iterate over all layers
for layer in psd.descendants():
    print(layer)
```

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```
# Iterate over all layers in reverse order
for layer in reversed(list(psd.descendants())):
    print(layer)
```

Parameters **include_clip** – include clipping layers.

classmethod frompil (*image*, *compression=<Compression.PACK_BITS: 1>*)
Create a new PSD document from PIL Image.

Parameters

- **image** – PIL Image object.
- **compression** – ImageData compression option. See *Compression*.

Returns A PSDImage object.

has_preview ()
Returns if the document has real merged data. When True, *topil()* returns pre-composed data.

has_thumbnail ()
True if the PSDImage has a thumbnail resource.

height
Document height.

Returns *int*

image_resources
Document image resources. *ImageResources* is a dict-like structure that keeps various document settings.

See *psd_tools.constants.Resource* for available keys.

Returns *ImageResources*

Example:

```
from psd_tools.constants import Resource
version_info = psd.image_resources.get_data(Resource.VERSION_INFO)
slices = psd.image_resources.get_data(Resource.SLICES)
```

Image resources contain an ICC profile. The following shows how to export a PNG file with embedded ICC profile:

```
from psd_tools.constants import Resource
icc_profile = psd.image_resources.get_data(Resource.ICC_PROFILE)
image = psd.compose(apply_icc=False)
image.save('output.png', icc_profile=icc_profile)
```

is_group ()
Return True if the layer is a group.

Returns *bool*

is_visible ()
Returns visibility of the element.

Returns *bool*

kind

Kind.

Returns *'psdimage'*

left

Left coordinate.

Returns *0*

name

Element name.

Returns *'Root'*

classmethod new (*mode, size, color=0, depth=8, **kwargs*)

Create a new PSD document.

Parameters

- **mode** – The color mode to use for the new image.
- **size** – A tuple containing (width, height) in pixels.
- **color** – What color to use for the image. Default is black.

Returns A PSDImage object.

offset

(left, top) tuple.

Returns *tuple*

classmethod open (*fp, **kwargs*)

Open a PSD document.

Parameters

- **fp** – filename or file-like object.
- **encoding** – charset encoding of the pascal string within the file, default 'macroman'. Some psd files need explicit encoding option.

Returns A PSDImage object.

parent

Parent of this layer.

right

Right coordinate.

Returns *int*

save (*fp, mode='wb', **kwargs*)

Save the PSD file.

Parameters

- **fp** – filename or file-like object.
- **encoding** – charset encoding of the pascal string within the file, default 'macroman'.
- **mode** – file open mode, default 'wb'.

size

(width, height) tuple.

Returns *tuple*

tagged_blocks

Document tagged blocks that is a dict-like container of settings.

See `psd_tools.constants.Tag` for available keys.

Returns `TaggedBlocks` or `None`.

Example:

```
from psd_tools.constants import Tag
patterns = psd.tagged_blocks.get_data(Tag.PATTERNS1)
```

thumbnail()

Returns a thumbnail image in `PIL.Image`. When the file does not contain an embedded thumbnail image, returns `None`.

top

Top coordinate.

Returns `0`

topil(channel=None, **kwargs)

Get PIL Image.

Parameters `channel` – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See `ChannelID`. When `None`, the method returns all the channels supported by PIL modes.

Returns `PIL.Image`, or `None` if the composed image is not available.

version

Document version. PSD file is 1, and PSB file is 2.

Returns `int`

viewbox

Return bounding box of the viewport.

Returns (left, top, right, bottom) `tuple`.

visible

Visibility.

Returns `True`

width

Document width.

Returns `int`

3.1.2 compose

`psd_tools.compose(layers, bbox=None, context=None, layer_filter=None, color=None, **kwargs)`

Compose layers to a single `PIL.Image`. If the layers do not have visible pixels, the function returns `None`.

Example:

```
image = compose([layer1, layer2])
```

In order to skip some layers, pass `layer_filter` function which should take `layer` as an argument and return `True` to keep the layer or return `False` to skip:

```
image = compose(  
    layers,  
    layer_filter=lambda x: x.is_visible() and x.kind == 'type'  
)
```

By default, visible layers are composed.

Note: This function is experimental and does not guarantee Photoshop-quality rendering.

Currently the following are ignored:

- Adjustments layers
- Layer effects
- Blending mode (all blending modes become normal)

Shape drawing is inaccurate if the PSD file is not saved with maximum compatibility.

Parameters

- **layers** – a layer, or an iterable of layers.
- **bbox** – (left, top, bottom, right) tuple that specifies a region to compose. By default, all the visible area is composed. The origin is at the top-left corner of the PSD document.
- **context** – *PIL.Image* object for the backdrop rendering context. Must be used with the correct *bbox* size.
- **layer_filter** – a callable that takes a layer and returns *bool*.
- **color** – background color in *int* or *tuple*.

Returns *PIL.Image* or *None*.

3.2 psd_tools.api.adjustments

Adjustment and fill layers.

Example:

```
if layer.kind == 'brightnesscontrast':  
    print(layer.brightness)  
  
if layer.kind == 'gradientfill':  
    print(layer.gradient_kind)
```

3.2.1 Fill layers

Fill layers are similar to *ShapeLayer* except that the layer might not have an associated vector mask. The layer therefore expands the entire canvas of the PSD document.

Fill layers all inherit from *FillLayer*.

Example:

```
if isinstance(layer, psd_tools.layers.FillLayer):
    image = layer.compose()
```

SolidColorFill

class `psd_tools.api.adjustments.SolidColorFill(*args)`
Solid color fill.

bbox
(left, top, right, bottom) tuple.

blend_mode
Blend mode of this layer. Writable.

Example:

```
from psd_tools.constants import BlendMode
if layer.blend_mode == BlendMode.NORMAL:
    layer.blend_mode = BlendMode.SCREEN
```

Returns *BlendMode*.

bottom
Bottom coordinate.

Returns int

clip_layers
Clip layers associated with this layer.

To compose clipping layers:

```
from psd_tools import compose
clip_mask = compose(layer.clip_layers)
```

Returns list of layers

compose (*bbox=None, **kwargs*)
Compose layer and masks (mask, vector mask, and clipping layers).

Note that the resulting image size is not necessarily equal to the layer size due to different mask dimensions. The offset of the composed image is stored at *.info['offset']* attribute of *PIL.Image*.

Parameters **bbox** – Viewport bounding box specified by (x1, y1, x2, y2) tuple.

Returns *PIL.Image*, or *None* if the layer has no pixel.

data
Color in Descriptor(RGB).

effects
Layer effects.

Returns *Effects*

has_clip_layers ()
Returns True if the layer has associated clipping.

Returns *bool*

has_effects ()

Returns True if the layer has effects.

Returns *bool*

has_mask ()

Returns True if the layer has a mask.

Returns *bool*

has_origination ()

Returns True if the layer has live shape properties.

Returns *bool*

has_pixels ()

Returns True if the layer has associated pixels. When this is True, *topil* method returns `PIL.Image`.

Returns *bool*

has_stroke ()

Returns True if the shape has a stroke.

has_vector_mask ()

Returns True if the layer has a vector mask.

Returns *bool*

height

Height of the layer.

Returns *int*

is_group ()

Return True if the layer is a group.

Returns *bool*

is_visible ()

Layer visibility. Takes group visibility in account.

Returns *bool*

kind

Kind of this layer, such as group, pixel, shape, type, smartobject, or psdimage. Class name without *layer* suffix.

Returns *str*

layer_id

Layer ID.

Returns *int* layer id. if the layer is not assigned an id, -1.

left

Left coordinate. Writable.

Returns *int*

mask

Returns mask associated with this layer.

Returns *Mask* or *None*

name

Layer name. Writable.

Returns *str*

offset

(left, top) tuple. Writable.

Returns *tuple*

opacity

Opacity of this layer in [0, 255] range. Writable.

Returns *int*

origination

Property for a list of live shapes or a line.

Some of the vector masks have associated live shape properties, that are Photoshop feature to handle primitive shapes such as a rectangle, an ellipse, or a line. Vector masks without live shape properties are plain path objects.

See `psd_tools.api.shape`.

Returns List of *Invalidated*, *Rectangle*, *RoundedRectangle*, *Ellipse*, or *Line*.

parent

Parent of this layer.

right

Right coordinate.

Returns *int*

size

(width, height) tuple.

Returns *tuple*

stroke

Property for strokes.

tagged_blocks

Layer tagged blocks that is a dict-like container of settings.

See `psd_tools.constants.Tag` for available keys.

Returns *TaggedBlocks* or *None*.

Example:

```
from psd_tools.constants import Tag
metadata = layer.tagged_blocks.get_data(Tag.METADATA_SETTING)
```

top

Top coordinate. Writable.

Returns *int*

topil (*channel=None*, ***kwargs*)

Get PIL Image of the layer.

Parameters **channel** – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See *ChannelID*. When *None*, the method returns all the channels supported by PIL modes.

Returns *PIL*. Image, or *None* if the layer has no pixels.

Example:

```
from psd_tools.constants import ChannelID

image = layer.topil()
red = layer.topil(ChannelID.CHANNEL_0)
alpha = layer.topil(ChannelID.TRANSPARENCY_MASK)
```

Note: Not all of the PSD image modes are supported in `PIL.Image`. For example, ‘CMYK’ mode cannot include alpha channel in PIL. In this case, `topil` drops alpha channel.

vector_mask

Returns vector mask associated with this layer.

Returns *VectorMask* or *None*

visible

Layer visibility. Doesn’t take group visibility in account. Writable.

Returns *bool*

width

Width of the layer.

Returns *int*

PatternFill

class `psd_tools.api.adjustments.PatternFill(*args)`
Pattern fill.

bbox

(left, top, right, bottom) tuple.

blend_mode

Blend mode of this layer. Writable.

Example:

```
from psd_tools.constants import BlendMode
if layer.blend_mode == BlendMode.NORMAL:
    layer.blend_mode = BlendMode.SCREEN
```

Returns *BlendMode*.

bottom

Bottom coordinate.

Returns *int*

clip_layers

Clip layers associated with this layer.

To compose clipping layers:

```
from psd_tools import compose
clip_mask = compose(layer.clip_layers)
```

Returns list of layers

compose (*bbox=None, **kwargs*)

Compose layer and masks (mask, vector mask, and clipping layers).

Note that the resulting image size is not necessarily equal to the layer size due to different mask dimensions. The offset of the composed image is stored at *.info['offset']* attribute of *PIL.Image*.

Parameters **bbox** – Viewport bounding box specified by (x1, y1, x2, y2) tuple.

Returns *PIL.Image*, or *None* if the layer has no pixel.

data

Pattern in Descriptor(PATTERN).

effects

Layer effects.

Returns *Effects*

has_clip_layers ()

Returns True if the layer has associated clipping.

Returns *bool*

has_effects ()

Returns True if the layer has effects.

Returns *bool*

has_mask ()

Returns True if the layer has a mask.

Returns *bool*

has_origination ()

Returns True if the layer has live shape properties.

Returns *bool*

has_pixels ()

Returns True if the layer has associated pixels. When this is True, *topil* method returns *PIL.Image*.

Returns *bool*

has_stroke ()

Returns True if the shape has a stroke.

has_vector_mask ()

Returns True if the layer has a vector mask.

Returns *bool*

height

Height of the layer.

Returns *int*

is_group ()

Return True if the layer is a group.

Returns *bool*

is_visible ()

Layer visibility. Takes group visibility in account.

Returns *bool*

kind

Kind of this layer, such as group, pixel, shape, type, smartobject, or psdimage. Class name without *layer* suffix.

Returns *str*

layer_id

Layer ID.

Returns int layer id. if the layer is not assigned an id, -1.

left

Left coordinate. Writable.

Returns int

mask

Returns mask associated with this layer.

Returns *Mask* or *None*

name

Layer name. Writable.

Returns *str*

offset

(left, top) tuple. Writable.

Returns *tuple*

opacity

Opacity of this layer in [0, 255] range. Writable.

Returns int

origination

Property for a list of live shapes or a line.

Some of the vector masks have associated live shape properties, that are Photoshop feature to handle primitive shapes such as a rectangle, an ellipse, or a line. Vector masks without live shape properties are plain path objects.

See *psd_tools.api.shape*.

Returns List of *Invalidated*, *Rectangle*, *RoundedRectangle*, *Ellipse*, or *Line*.

parent

Parent of this layer.

right

Right coordinate.

Returns int

size

(width, height) tuple.

Returns *tuple*

stroke

Property for strokes.

tagged_blocks

Layer tagged blocks that is a dict-like container of settings.

See `psd_tools.constants.Tag` for available keys.

Returns `TaggedBlocks` or `None`.

Example:

```
from psd_tools.constants import Tag
metadata = layer.tagged_blocks.get_data(Tag.METADATA_SETTING)
```

top

Top coordinate. Writable.

Returns `int`

topil (*channel=None, **kwargs*)

Get PIL Image of the layer.

Parameters `channel` – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See `ChannelID`. When `None`, the method returns all the channels supported by PIL modes.

Returns `PIL.Image`, or `None` if the layer has no pixels.

Example:

```
from psd_tools.constants import ChannelID

image = layer.topil()
red = layer.topil(ChannelID.CHANNEL_0)
alpha = layer.topil(ChannelID.TRANSPARENCY_MASK)
```

Note: Not all of the PSD image modes are supported in `PIL.Image`. For example, ‘CMYK’ mode cannot include alpha channel in PIL. In this case, `topil` drops alpha channel.

vector_mask

Returns vector mask associated with this layer.

Returns `VectorMask` or `None`

visible

Layer visibility. Doesn’t take group visibility in account. Writable.

Returns `bool`

width

Width of the layer.

Returns `int`

GradientFill

class `psd_tools.api.adjustments.GradientFill` (**args*)

Gradient fill.

bbox

(left, top, right, bottom) tuple.

blend_mode

Blend mode of this layer. Writable.

Example:

```
from psd_tools.constants import BlendMode
if layer.blend_mode == BlendMode.NORMAL:
    layer.blend_mode = BlendMode.SCREEN
```

Returns *BlendMode*.

bottom

Bottom coordinate.

Returns *int*

clip_layers

Clip layers associated with this layer.

To compose clipping layers:

```
from psd_tools import compose
clip_mask = compose(layer.clip_layers)
```

Returns *list of layers*

compose (*bbox=None, **kwargs*)

Compose layer and masks (mask, vector mask, and clipping layers).

Note that the resulting image size is not necessarily equal to the layer size due to different mask dimensions. The offset of the composed image is stored at *.info['offset']* attribute of *PIL.Image*.

Parameters **bbox** – Viewport bounding box specified by (x1, y1, x2, y2) tuple.

Returns *PIL.Image*, or *None* if the layer has no pixel.

data

Gradient in Descriptor(*GRADIENT*).

effects

Layer effects.

Returns *Effects*

gradient_kind

Kind of the gradient, one of the following:

- *Linear*
- *Radial*
- *Angle*
- *Reflected*
- *Diamond*

has_clip_layers ()

Returns True if the layer has associated clipping.

Returns *bool*

has_effects ()

Returns True if the layer has effects.

Returns *bool*

has_mask()
Returns True if the layer has a mask.
Returns *bool*

has_origination()
Returns True if the layer has live shape properties.
Returns *bool*

has_pixels()
Returns True if the layer has associated pixels. When this is True, *topil* method returns `PIL.Image`.
Returns *bool*

has_stroke()
Returns True if the shape has a stroke.

has_vector_mask()
Returns True if the layer has a vector mask.
Returns *bool*

height
Height of the layer.
Returns *int*

is_group()
Return True if the layer is a group.
Returns *bool*

is_visible()
Layer visibility. Takes group visibility in account.
Returns *bool*

kind
Kind of this layer, such as group, pixel, shape, type, smartobject, or psdimage. Class name without *layer* suffix.
Returns *str*

layer_id
Layer ID.
Returns *int* layer id. if the layer is not assigned an id, -1.

left
Left coordinate. Writable.
Returns *int*

mask
Returns mask associated with this layer.
Returns *Mask* or *None*

name
Layer name. Writable.
Returns *str*

offset
(left, top) tuple. Writable.

Returns *tuple*

opacity

Opacity of this layer in [0, 255] range. Writable.

Returns *int*

origination

Property for a list of live shapes or a line.

Some of the vector masks have associated live shape properties, that are Photoshop feature to handle primitive shapes such as a rectangle, an ellipse, or a line. Vector masks without live shape properties are plain path objects.

See *psd_tools.api.shape*.

Returns List of *Invalidated*, *Rectangle*, *RoundedRectangle*, *Ellipse*, or *Line*.

parent

Parent of this layer.

right

Right coordinate.

Returns *int*

size

(width, height) tuple.

Returns *tuple*

stroke

Property for strokes.

tagged_blocks

Layer tagged blocks that is a dict-like container of settings.

See *psd_tools.constants.Tag* for available keys.

Returns *TaggedBlocks* or *None*.

Example:

```
from psd_tools.constants import Tag
metadata = layer.tagged_blocks.get_data(Tag.METADATA_SETTING)
```

top

Top coordinate. Writable.

Returns *int*

topil (*channel=None*, ***kwargs*)

Get PIL Image of the layer.

Parameters **channel** – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See *ChannelID*. When *None*, the method returns all the channels supported by PIL modes.

Returns *PIL*. Image, or *None* if the layer has no pixels.

Example:

```
from psd_tools.constants import ChannelID
image = layer.topil()
```

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```
red = layer.topil(ChannelID.CHANNEL_0)
alpha = layer.topil(ChannelID.TRANSPARENCY_MASK)
```

Note: Not all of the PSD image modes are supported in `PIL.Image`. For example, ‘CMYK’ mode cannot include alpha channel in PIL. In this case, `topil` drops alpha channel.

vector_mask

Returns vector mask associated with this layer.

Returns *VectorMask* or *None*

visible

Layer visibility. Doesn’t take group visibility in account. Writable.

Returns *bool*

width

Width of the layer.

Returns *int*

3.2.2 Adjustment layers

Adjustment layers apply image filtering to the composed result. All adjustment layers inherit from `AdjustmentLayer`. Adjustment layers do not have pixels, and currently ignored in `compose`. Attempts to call `topil` on adjustment layers always return *None*.

Just as any other layer, adjustment layers might have an associated mask or vector mask. Adjustment can appear in other layers’ clipping layers.

Example:

```
if isinstance(layer, psd_tools.layers.AdjustmentLayer):
    print(layer.kind)
```

BrightnessContrast

class `psd_tools.api.adjustments.BrightnessContrast` (*args)

Brightness and contrast adjustment.

automatic

brightness

contrast

lab

mean

use_legacy

vrsn

Curves

```
class psd_tools.api.adjustments.Curves(*args)
    Curves adjustment.

    data
        Raw data.

        Returns Curves

    extra
```

Exposure

```
class psd_tools.api.adjustments.Exposure(*args)
    Exposure adjustment.

    exposure
        Exposure.

        Returns float

    gamma
        Gamma.

        Returns float

    offset
        Offset.

        Returns float
```

Levels

```
class psd_tools.api.adjustments.Levels(*args)
    Levels adjustment.

    Levels contain a list of LevelRecord.

    data
        List of level records. The first record is the master.

        Returns Levels.

    master
        Master record.
```

Vibrance

```
class psd_tools.api.adjustments.Vibrance(*args)
    Vibrance adjustment.

    saturation
        Saturation.

        Returns int

    vibrance
        Vibrance.
```


Returns *int*

HueSaturation

class `psd_tools.api.adjustments.HueSaturation(*args)`
Hue/Saturation adjustment.

HueSaturation contains a list of data.

colorization
Colorization.

Returns *tuple*

data
List of Hue/Saturation records.

Returns *list*

enable_colorization
Enable colorization.

Returns *int*

master
Master record.

Returns *tuple*

ColorBalance

class `psd_tools.api.adjustments.ColorBalance(*args)`
Color balance adjustment.

highlights
Highlights.

Returns *tuple*

luminosity
Luminosity.

Returns *int*

midtone
Mid-tones.

Returns *tuple*

shadows
Shadows.

Returns *tuple*

BlackAndWhite

class `psd_tools.api.adjustments.BlackAndWhite(*args)`
Black and white adjustment.

blue

cyan
green
magenta
preset_file_name
preset_kind
red
tint_color
use_tint
yellow

PhotoFilter

```
class psd_tools.api.adjustments.PhotoFilter(*args)
    Photo filter adjustment.

    color_components
    color_space
    density
    luminosity
    xyz
        xyz.

        Returns bool
```

ChannelMixer

```
class psd_tools.api.adjustments.ChannelMixer(*args)
    Channel mixer adjustment.

    data
    monochrome
```

ColorLookup

```
class psd_tools.api.adjustments.ColorLookup(*args)
    Color lookup adjustment.
```

Posterize

```
class psd_tools.api.adjustments.Posterize(*args)
    Posterize adjustment.

    posterize
        Posterize value.

        Returns int
```

Threshold

```
class psd_tools.api.adjustments.Threshold(*args)
    Threshold adjustment.

    threshold
        Threshold value.

        Returns int
```

SelectiveColor

```
class psd_tools.api.adjustments.SelectiveColor(*args)
    Selective color adjustment.

    data

    method
```

GradientMap

```
class psd_tools.api.adjustments.GradientMap(*args)
    Gradient map adjustment.

    color_model

    color_stops

    dithered

    expansion

    gradient_name

    interpolation
        Interpolation between 0.0 and 1.0.

    length

    max_color

    min_color

    mode

    random_seed

    reversed

    roughness

    show_transparency

    transparency_stops

    use_vector_color
```

3.3 psd_tools.api.effects

Effects module.

class `psd_tools.api.effects.Effects` (*layer*)
List-like effects.

enabled
Whether if all the effects are enabled.

Return type `bool`

scale
Scale value.

3.3.1 DropShadow

class `psd_tools.api.effects.DropShadow` (*value, image_resources*)

angle
Angle value.

anti_aliased
Angi-aliased.

blend_mode
Effect blending mode.

choke
Choke level.

color
Color.

contour
Contour configuration.

distance
Distance.

enabled
Whether if the effect is enabled.

layer_knocks_out
Layers are knocking out.

noise
Noise level.

opacity
Layer effect opacity in percentage.

present
Whether if the effect is present in Photoshop UI.

shown
Whether if the effect is shown in dialog.

size
Size in pixels.

use_global_light
Using global light.

3.3.2 InnerShadow

class `psd_tools.api.effects.InnerShadow` (*value, image_resources*)

angle
Angle value.

anti_aliased
Angi-aliased.

blend_mode
Effect blending mode.

choke
Choke level.

color
Color.

contour
Contour configuration.

distance
Distance.

enabled
Whether if the effect is enabled.

noise
Noise level.

opacity
Layer effect opacity in percentage.

present
Whether if the effect is present in Photoshop UI.

shown
Whether if the effect is shown in dialog.

size
Size in pixels.

use_global_light
Using global light.

3.3.3 OuterGlow

class `psd_tools.api.effects.OuterGlow` (*value, image_resources*)

anti_aliased
Angi-aliased.

blend_mode
Effect blending mode.

choke
Choke level.

color
Color.

contour
Contour configuration.

enabled
Whether if the effect is enabled.

glow_type
Glow type.

gradient
Gradient configuration.

noise
Noise level.

opacity
Layer effect opacity in percentage.

present
Whether if the effect is present in Photoshop UI.

quality_jitter
Quality jitter

quality_range
Quality range.

shown
Whether if the effect is shown in dialog.

size
Size in pixels.

3.3.4 InnerGlow

class `psd_tools.api.effects.InnerGlow` (*value, image_resources*)

anti_aliased
Anti-aliased.

blend_mode
Effect blending mode.

choke
Choke level.

color
Color.

contour
Contour configuration.

enabled
Whether if the effect is enabled.

glow_source
Elements source.

glow_type
Glow type.

gradient
Gradient configuration.

noise
Noise level.

opacity
Layer effect opacity in percentage.

present
Whether if the effect is present in Photoshop UI.

quality_jitter
Quality jitter

quality_range
Quality range.

shown
Whether if the effect is shown in dialog.

size
Size in pixels.

3.3.5 ColorOverlay

class `psd_tools.api.effects.ColorOverlay` (*value, image_resources*)

blend_mode
Effect blending mode.

color
Color.

enabled
Whether if the effect is enabled.

opacity
Layer effect opacity in percentage.

present
Whether if the effect is present in Photoshop UI.

shown
Whether if the effect is shown in dialog.

3.3.6 GradientOverlay

class `psd_tools.api.effects.GradientOverlay` (*value, image_resources*)

aligned
Aligned.

angle
Angle value.

blend_mode
Effect blending mode.

dithered
Dither flag.

enabled
Whether if the effect is enabled.

gradient
Gradient configuration.

offset
Offset value.

opacity
Layer effect opacity in percentage.

present
Whether if the effect is present in Photoshop UI.

reversed
Reverse flag.

scale
Scale value.

shown
Whether if the effect is shown in dialog.

type
Gradient type, one of *linear*, *radial*, *angle*, *reflected*, or *diamond*.

3.3.7 PatternOverlay

class `psd_tools.api.effects.PatternOverlay` (*value*, *image_resources*)

aligned
Aligned.

blend_mode
Effect blending mode.

enabled
Whether if the effect is enabled.

opacity
Layer effect opacity in percentage.

pattern
Pattern config.

phase
Phase value in Point.

present
Whether if the effect is present in Photoshop UI.

scale

Scale value.

shown

Whether if the effect is shown in dialog.

3.3.8 Stroke

class `psd_tools.api.effects.Stroke` (*value, image_resources*)

blend_mode

Effect blending mode.

color

Color.

enabled

Whether if the effect is enabled.

fill_type

Fill type, SolidColor, Gradient, or Pattern.

gradient

Gradient configuration.

opacity

Layer effect opacity in percentage.

overprint

Overprint flag.

pattern

Pattern config.

position

Position of the stroke, InsetFrame, OutsetFrame, or CenteredFrame.

present

Whether if the effect is present in Photoshop UI.

shown

Whether if the effect is shown in dialog.

size

Size value.

3.3.9 BevelEmboss

class `psd_tools.api.effects.BevelEmboss` (*value, image_resources*)

altitude

Altitude value.

angle

Angle value.

anti_aliased

Anti-aliased.

bevel_style

Bevel style, one of *OuterBevel*, *InnerBevel*, *Emboss*, *PillowEmboss*, or *StrokeEmboss*.

bevel_type

Bevel type, one of *SoftMatte*, *HardLight*, *SoftLight*.

contour

Contour configuration.

depth

Depth value.

direction

Direction, either *StampIn* or *StampOut*.

enabled

Whether if the effect is enabled.

highlight_color

Highlight color value.

highlight_mode

Highlight blending mode.

highlight_opacity

Highlight opacity value.

opacity

Layer effect opacity in percentage.

present

Whether if the effect is present in Photoshop UI.

shadow_color

Shadow color value.

shadow_mode

Shadow blending mode.

shadow_opacity

Shadow opacity value.

shown

Whether if the effect is shown in dialog.

size

Size value in pixel.

soften

Soften value.

use_global_light

Using global light.

use_shape

Using shape.

use_texture

Using texture.

3.3.10 Satin

class `psd_tools.api.effects.Satin` (*value, image_resources*)

Satin effect

angle

Angle value.

anti_aliased

Anti-aliased.

blend_mode

Effect blending mode.

color

Color.

contour

Contour configuration.

distance

Distance value.

enabled

Whether if the effect is enabled.

inverted

Inverted.

opacity

Layer effect opacity in percentage.

present

Whether if the effect is present in Photoshop UI.

shown

Whether if the effect is shown in dialog.

size

Size value in pixel.

3.4 psd_tools.api.layers

Layer module.

3.4.1 Artboard

class `psd_tools.api.layers.Artboard` (**args*)

Artboard is a special kind of group that has a pre-defined viewbox.

Example:

```
artboard = psd[1]
image = artboard.compose()
```

bbox

(left, top, right, bottom) tuple.

blend_mode

Blend mode of this layer. Writable.

Example:

```
from psd_tools.constants import BlendMode
if layer.blend_mode == BlendMode.NORMAL:
    layer.blend_mode = BlendMode.SCREEN
```

Returns *BlendMode*.

bottom

Bottom coordinate.

Returns int

clip_layers

Clip layers associated with this layer.

To compose clipping layers:

```
from psd_tools import compose
clip_mask = compose(layer.clip_layers)
```

Returns list of layers

compose (*bbox=None, **kwargs*)

Compose the artboard.

See *compose()* for available extra arguments.

Parameters **bbox** – Viewport tuple (left, top, right, bottom).

Returns PIL. Image, or *None* if there is no pixel.

descendants (*include_clip=True*)

Return a generator to iterate over all descendant layers.

Example:

```
# Iterate over all layers
for layer in psd.descendants():
    print(layer)

# Iterate over all layers in reverse order
for layer in reversed(list(psd.descendants())):
    print(layer)
```

Parameters **include_clip** – include clipping layers.

effects

Layer effects.

Returns *Effects*

static extract_bbox (*layers*)

Returns a bounding box for *layers* or (0, 0, 0, 0) if the layers have no bounding box.

has_clip_layers ()

Returns True if the layer has associated clipping.

Returns *bool*

has_effects ()

Returns True if the layer has effects.

Returns *bool*

has_mask ()

Returns True if the layer has a mask.

Returns *bool*

has_origination ()

Returns True if the layer has live shape properties.

Returns *bool*

has_pixels ()

Returns True if the layer has associated pixels. When this is True, *topil* method returns `PIL.Image`.

Returns *bool*

has_stroke ()

Returns True if the shape has a stroke.

has_vector_mask ()

Returns True if the layer has a vector mask.

Returns *bool*

height

Height of the layer.

Returns *int*

is_group ()

Return True if the layer is a group.

Returns *bool*

is_visible ()

Layer visibility. Takes group visibility in account.

Returns *bool*

kind

Kind of this layer, such as group, pixel, shape, type, smartobject, or psdimage. Class name without *layer* suffix.

Returns *str*

layer_id

Layer ID.

Returns *int* layer id. if the layer is not assigned an id, -1.

left

Left coordinate. Writable.

Returns *int*

mask

Returns mask associated with this layer.

Returns *Mask* or *None*

name

Layer name. Writable.

Returns *str*

offset

(left, top) tuple. Writable.

Returns *tuple*

opacity

Opacity of this layer in [0, 255] range. Writable.

Returns *int*

origination

Property for a list of live shapes or a line.

Some of the vector masks have associated live shape properties, that are Photoshop feature to handle primitive shapes such as a rectangle, an ellipse, or a line. Vector masks without live shape properties are plain path objects.

See *psd_tools.api.shape*.

Returns List of *Invalidated*, *Rectangle*, *RoundedRectangle*, *Ellipse*, or *Line*.

parent

Parent of this layer.

right

Right coordinate.

Returns *int*

size

(width, height) tuple.

Returns *tuple*

stroke

Property for strokes.

tagged_blocks

Layer tagged blocks that is a dict-like container of settings.

See *psd_tools.constants.Tag* for available keys.

Returns *TaggedBlocks* or *None*.

Example:

```
from psd_tools.constants import Tag
metadata = layer.tagged_blocks.get_data(Tag.METADATA_SETTING)
```

top

Top coordinate. Writable.

Returns *int*

topil (*channel=None, **kwargs*)

Get PIL Image of the layer.

Parameters **channel** – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See *ChannelID*. When *None*, the method returns all the channels supported by PIL modes.

Returns *PIL*.Image, or *None* if the layer has no pixels.

Example:

```
from psd_tools.constants import ChannelID

image = layer.topil()
red = layer.topil(ChannelID.CHANNEL_0)
alpha = layer.topil(ChannelID.TRANSPARENCY_MASK)
```

Note: Not all of the PSD image modes are supported in `PIL.Image`. For example, ‘CMYK’ mode cannot include alpha channel in `PIL`. In this case, `topil` drops alpha channel.

vector_mask

Returns vector mask associated with this layer.

Returns *VectorMask* or *None*

visible

Layer visibility. Doesn’t take group visibility in account. Writable.

Returns *bool*

width

Width of the layer.

Returns *int*

3.4.2 Group

class `psd_tools.api.layers.Group(*args)`

Group of layers.

Example:

```
group = psd[1]
for layer in group:
    if layer.kind == 'pixel':
        print(layer.name)
```

bbox

(left, top, right, bottom) tuple.

blend_mode

Blend mode of this layer. Writable.

Example:

```
from psd_tools.constants import BlendMode
if layer.blend_mode == BlendMode.NORMAL:
    layer.blend_mode = BlendMode.SCREEN
```

Returns *BlendMode*.

clip_layers

Clip layers associated with this layer.

To compose clipping layers:

```
from psd_tools import compose
clip_mask = compose(layer.clip_layers)
```

Returns list of layers

compose (**kwargs)

Compose layer and masks (mask, vector mask, and clipping layers).

Returns PIL Image object, or None if the layer has no pixels.

descendants (include_clip=True)

Return a generator to iterate over all descendant layers.

Example:

```
# Iterate over all layers
for layer in psd.descendants():
    print(layer)

# Iterate over all layers in reverse order
for layer in reversed(list(psd.descendants())):
    print(layer)
```

Parameters include_clip – include clipping layers.

effects

Layer effects.

Returns *Effects*

static extract_bbox (layers)

Returns a bounding box for *layers* or (0, 0, 0, 0) if the layers have no bounding box.

has_clip_layers ()

Returns True if the layer has associated clipping.

Returns *bool*

has_effects ()

Returns True if the layer has effects.

Returns *bool*

has_mask ()

Returns True if the layer has a mask.

Returns *bool*

has_origination ()

Returns True if the layer has live shape properties.

Returns *bool*

has_pixels ()

Returns True if the layer has associated pixels. When this is True, *topil* method returns *PIL.Image*.

Returns *bool*

has_stroke ()

Returns True if the shape has a stroke.

has_vector_mask()

Returns True if the layer has a vector mask.

Returns *bool*

height

Height of the layer.

Returns *int*

is_group()

Return True if the layer is a group.

Returns *bool*

is_visible()

Layer visibility. Takes group visibility in account.

Returns *bool*

kind

Kind of this layer, such as group, pixel, shape, type, smartobject, or psdimage. Class name without *layer* suffix.

Returns *str*

layer_id

Layer ID.

Returns *int* layer id. if the layer is not assigned an id, -1.

mask

Returns mask associated with this layer.

Returns *Mask* or *None*

name

Layer name. Writable.

Returns *str*

offset

(left, top) tuple. Writable.

Returns *tuple*

opacity

Opacity of this layer in [0, 255] range. Writable.

Returns *int*

origination

Property for a list of live shapes or a line.

Some of the vector masks have associated live shape properties, that are Photoshop feature to handle primitive shapes such as a rectangle, an ellipse, or a line. Vector masks without live shape properties are plain path objects.

See [psd_tools.api.shape](#).

Returns List of *Invalidated*, *Rectangle*, *RoundedRectangle*, *Ellipse*, or *Line*.

parent

Parent of this layer.

size

(width, height) tuple.

Returns *tuple*

stroke

Property for strokes.

tagged_blocks

Layer tagged blocks that is a dict-like container of settings.

See `psd_tools.constants.Tag` for available keys.

Returns *TaggedBlocks* or *None*.

Example:

```
from psd_tools.constants import Tag
metadata = layer.tagged_blocks.get_data(Tag.METADATA_SETTING)
```

topil (*channel=None, **kwargs*)

Get PIL Image of the layer.

Parameters **channel** – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See *ChannelID*. When *None*, the method returns all the channels supported by PIL modes.

Returns *PIL.Image*, or *None* if the layer has no pixels.

Example:

```
from psd_tools.constants import ChannelID

image = layer.topil()
red = layer.topil(ChannelID.CHANNEL_0)
alpha = layer.topil(ChannelID.TRANSPARENCY_MASK)
```

Note: Not all of the PSD image modes are supported in *PIL.Image*. For example, ‘CMYK’ mode cannot include alpha channel in *PIL*. In this case, *topil* drops alpha channel.

vector_mask

Returns vector mask associated with this layer.

Returns *VectorMask* or *None*

visible

Layer visibility. Doesn’t take group visibility in account. Writable.

Returns *bool*

width

Width of the layer.

Returns *int*

3.4.3 PixelLayer

class `psd_tools.api.layers.PixelLayer` (*psd, record, channels, parent*)

Layer that has rasterized image in pixels.

Example:

```

assert layer.kind == 'pixel':
image = layer.topil()
image.save('layer.png')

composed_image = layer.compose()
composed_image.save('composed-layer.png')

```

bbox

(left, top, right, bottom) tuple.

blend_mode

Blend mode of this layer. Writable.

Example:

```

from psd_tools.constants import BlendMode
if layer.blend_mode == BlendMode.NORMAL:
    layer.blend_mode = BlendMode.SCREEN

```

Returns *BlendMode*.

bottom

Bottom coordinate.

Returns int

clip_layers

Clip layers associated with this layer.

To compose clipping layers:

```

from psd_tools import compose
clip_mask = compose(layer.clip_layers)

```

Returns list of layers

compose (*bbox=None, **kwargs*)

Compose layer and masks (mask, vector mask, and clipping layers).

Note that the resulting image size is not necessarily equal to the layer size due to different mask dimensions. The offset of the composed image is stored at *.info['offset']* attribute of *PIL.Image*.

Parameters **bbox** – Viewport bounding box specified by (x1, y1, x2, y2) tuple.

Returns *PIL.Image*, or *None* if the layer has no pixel.

effects

Layer effects.

Returns *Effects*

has_clip_layers ()

Returns True if the layer has associated clipping.

Returns *bool*

has_effects ()

Returns True if the layer has effects.

Returns *bool*

has_mask ()

Returns True if the layer has a mask.

Returns *bool*

has_origination ()

Returns True if the layer has live shape properties.

Returns *bool*

has_pixels ()

Returns True if the layer has associated pixels. When this is True, *topil* method returns `PIL.Image`.

Returns *bool*

has_stroke ()

Returns True if the shape has a stroke.

has_vector_mask ()

Returns True if the layer has a vector mask.

Returns *bool*

height

Height of the layer.

Returns *int*

is_group ()

Return True if the layer is a group.

Returns *bool*

is_visible ()

Layer visibility. Takes group visibility in account.

Returns *bool*

kind

Kind of this layer, such as group, pixel, shape, type, smartobject, or psdimage. Class name without *layer* suffix.

Returns *str*

layer_id

Layer ID.

Returns *int* layer id. if the layer is not assigned an id, -1.

left

Left coordinate. Writable.

Returns *int*

mask

Returns mask associated with this layer.

Returns *Mask* or *None*

name

Layer name. Writable.

Returns *str*

offset

(left, top) tuple. Writable.

Returns *tuple*

opacity

Opacity of this layer in [0, 255] range. Writable.

Returns *int*

origination

Property for a list of live shapes or a line.

Some of the vector masks have associated live shape properties, that are Photoshop feature to handle primitive shapes such as a rectangle, an ellipse, or a line. Vector masks without live shape properties are plain path objects.

See `psd_tools.api.shape`.

Returns List of *Invalidated*, *Rectangle*, *RoundedRectangle*, *Ellipse*, or *Line*.

parent

Parent of this layer.

right

Right coordinate.

Returns *int*

size

(width, height) tuple.

Returns *tuple*

stroke

Property for strokes.

tagged_blocks

Layer tagged blocks that is a dict-like container of settings.

See `psd_tools.constants.Tag` for available keys.

Returns *TaggedBlocks* or *None*.

Example:

```
from psd_tools.constants import Tag
metadata = layer.tagged_blocks.get_data(Tag.METADATA_SETTING)
```

top

Top coordinate. Writable.

Returns *int*

topil (*channel=None*, ***kwargs*)

Get PIL Image of the layer.

Parameters **channel** – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See `ChannelID`. When *None*, the method returns all the channels supported by PIL modes.

Returns `PIL.Image`, or *None* if the layer has no pixels.

Example:

```
from psd_tools.constants import ChannelID

image = layer.topil()
```

(continues on next page)

(continued from previous page)

```
red = layer.topil(ChannelID.CHANNEL_0)
alpha = layer.topil(ChannelID.TRANSPARENCY_MASK)
```

Note: Not all of the PSD image modes are supported in `PIL.Image`. For example, ‘CMYK’ mode cannot include alpha channel in PIL. In this case, `topil` drops alpha channel.

vector_mask

Returns vector mask associated with this layer.

Returns *VectorMask* or *None*

visible

Layer visibility. Doesn’t take group visibility in account. Writable.

Returns *bool*

width

Width of the layer.

Returns *int*

3.4.4 ShapeLayer

class `psd_tools.api.layers.ShapeLayer` (*psd, record, channels, parent*)

Layer that has drawing in vector mask.

bbox

(left, top, right, bottom) tuple.

blend_mode

Blend mode of this layer. Writable.

Example:

```
from psd_tools.constants import BlendMode
if layer.blend_mode == BlendMode.NORMAL:
    layer.blend_mode = BlendMode.SCREEN
```

Returns *BlendMode*.

bottom

Bottom coordinate.

Returns *int*

clip_layers

Clip layers associated with this layer.

To compose clipping layers:

```
from psd_tools import compose
clip_mask = compose(layer.clip_layers)
```

Returns list of layers

compose (*bbox=None, **kwargs*)

Compose layer and masks (mask, vector mask, and clipping layers).

Note that the resulting image size is not necessarily equal to the layer size due to different mask dimensions. The offset of the composed image is stored at `.info['offset']` attribute of `PIL.Image`.

Parameters **bbox** – Viewport bounding box specified by (x1, y1, x2, y2) tuple.

Returns `PIL.Image`, or `None` if the layer has no pixel.

effects

Layer effects.

Returns `Effects`

has_clip_layers ()

Returns True if the layer has associated clipping.

Returns `bool`

has_effects ()

Returns True if the layer has effects.

Returns `bool`

has_mask ()

Returns True if the layer has a mask.

Returns `bool`

has_origination ()

Returns True if the layer has live shape properties.

Returns `bool`

has_pixels ()

Returns True if the layer has associated pixels. When this is True, `topil` method returns `PIL.Image`.

Returns `bool`

has_stroke ()

Returns True if the shape has a stroke.

has_vector_mask ()

Returns True if the layer has a vector mask.

Returns `bool`

height

Height of the layer.

Returns `int`

is_group ()

Return True if the layer is a group.

Returns `bool`

is_visible ()

Layer visibility. Takes group visibility in account.

Returns `bool`

kind

Kind of this layer, such as group, pixel, shape, type, smartobject, or psdimage. Class name without *layer* suffix.

Returns *str*

layer_id

Layer ID.

Returns int layer id. if the layer is not assigned an id, -1.

left

Left coordinate. Writable.

Returns int

mask

Returns mask associated with this layer.

Returns *Mask* or *None*

name

Layer name. Writable.

Returns *str*

offset

(left, top) tuple. Writable.

Returns *tuple*

opacity

Opacity of this layer in [0, 255] range. Writable.

Returns int

origination

Property for a list of live shapes or a line.

Some of the vector masks have associated live shape properties, that are Photoshop feature to handle primitive shapes such as a rectangle, an ellipse, or a line. Vector masks without live shape properties are plain path objects.

See [*psd_tools.api.shape*](#).

Returns List of *Invalidated*, *Rectangle*, *RoundedRectangle*, *Ellipse*, or *Line*.

parent

Parent of this layer.

right

Right coordinate.

Returns int

size

(width, height) tuple.

Returns *tuple*

stroke

Property for strokes.

tagged_blocks

Layer tagged blocks that is a dict-like container of settings.

See [*psd_tools.constants.Tag*](#) for available keys.

Returns *TaggedBlocks* or *None*.

Example:


```
from psd_tools.constants import Tag
metadata = layer.tagged_blocks.get_data(Tag.METADATA_SETTING)
```

top

Top coordinate. Writable.

Returns int

topil (*channel=None*, ***kwargs*)

Get PIL Image of the layer.

Parameters **channel** – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See *ChannelID*. When *None*, the method returns all the channels supported by PIL modes.

Returns PIL. Image, or *None* if the layer has no pixels.

Example:

```
from psd_tools.constants import ChannelID

image = layer.topil()
red = layer.topil(ChannelID.CHANNEL_0)
alpha = layer.topil(ChannelID.TRANSPARENCY_MASK)
```

Note: Not all of the PSD image modes are supported in PIL. Image. For example, ‘CMYK’ mode cannot include alpha channel in PIL. In this case, topil drops alpha channel.

vector_mask

Returns vector mask associated with this layer.

Returns *VectorMask* or *None*

visible

Layer visibility. Doesn’t take group visibility in account. Writable.

Returns *bool*

width

Width of the layer.

Returns int

3.4.5 SmartObjectLayer

class psd_tools.api.layers.**SmartObjectLayer** (*psd, record, channels, parent*)

Layer that inserts external data.

Use *smart_object* attribute to get the external data. See *SmartObject*.

Example:

```
import io
if layer.smart_object.filetype == 'jpg':
    image = Image.open(io.BytesIO(layer.smart_object.data))
```

bbox

(left, top, right, bottom) tuple.

blend_mode

Blend mode of this layer. Writable.

Example:

```
from psd_tools.constants import BlendMode
if layer.blend_mode == BlendMode.NORMAL:
    layer.blend_mode = BlendMode.SCREEN
```

Returns *BlendMode*.

bottom

Bottom coordinate.

Returns *int*

clip_layers

Clip layers associated with this layer.

To compose clipping layers:

```
from psd_tools import compose
clip_mask = compose(layer.clip_layers)
```

Returns list of layers

compose (*bbox=None, **kwargs*)

Compose layer and masks (mask, vector mask, and clipping layers).

Note that the resulting image size is not necessarily equal to the layer size due to different mask dimensions. The offset of the composed image is stored at *.info['offset']* attribute of *PIL.Image*.

Parameters **bbox** – Viewport bounding box specified by (x1, y1, x2, y2) tuple.

Returns *PIL.Image*, or *None* if the layer has no pixel.

effects

Layer effects.

Returns *Effects*

has_clip_layers ()

Returns True if the layer has associated clipping.

Returns *bool*

has_effects ()

Returns True if the layer has effects.

Returns *bool*

has_mask ()

Returns True if the layer has a mask.

Returns *bool*

has_origination ()

Returns True if the layer has live shape properties.

Returns *bool*

has_pixels ()

Returns True if the layer has associated pixels. When this is True, *topil* method returns *PIL.Image*.

Returns *bool*

has_stroke ()

Returns True if the shape has a stroke.

has_vector_mask ()

Returns True if the layer has a vector mask.

Returns *bool*

height

Height of the layer.

Returns *int*

is_group ()

Return True if the layer is a group.

Returns *bool*

is_visible ()

Layer visibility. Takes group visibility in account.

Returns *bool*

kind

Kind of this layer, such as group, pixel, shape, type, smartobject, or psdimage. Class name without *layer* suffix.

Returns *str*

layer_id

Layer ID.

Returns *int* layer id. if the layer is not assigned an id, -1.

left

Left coordinate. Writable.

Returns *int*

mask

Returns mask associated with this layer.

Returns *Mask* or *None*

name

Layer name. Writable.

Returns *str*

offset

(left, top) tuple. Writable.

Returns *tuple*

opacity

Opacity of this layer in [0, 255] range. Writable.

Returns *int*

origination

Property for a list of live shapes or a line.

Some of the vector masks have associated live shape properties, that are Photoshop feature to handle primitive shapes such as a rectangle, an ellipse, or a line. Vector masks without live shape properties are plain path objects.

See `psd_tools.api.shape`.

Returns List of *Invalidated*, *Rectangle*, *RoundedRectangle*, *Ellipse*, or *Line*.

parent

Parent of this layer.

right

Right coordinate.

Returns int

size

(width, height) tuple.

Returns tuple

smart_object

Associated smart object.

Returns *SmartObject*.

stroke

Property for strokes.

tagged_blocks

Layer tagged blocks that is a dict-like container of settings.

See `psd_tools.constants.Tag` for available keys.

Returns *TaggedBlocks* or *None*.

Example:

```
from psd_tools.constants import Tag
metadata = layer.tagged_blocks.get_data(Tag.METADATA_SETTING)
```

top

Top coordinate. Writable.

Returns int

topil (*channel=None*, ***kwargs*)

Get PIL Image of the layer.

Parameters **channel** – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See *ChannelID*. When *None*, the method returns all the channels supported by PIL modes.

Returns PIL. Image, or *None* if the layer has no pixels.

Example:

```
from psd_tools.constants import ChannelID

image = layer.topil()
red = layer.topil(ChannelID.CHANNEL_0)
alpha = layer.topil(ChannelID.TRANSPARENCY_MASK)
```

Note: Not all of the PSD image modes are supported in `PIL.Image`. For example, 'CMYK' mode cannot include alpha channel in PIL. In this case, `topil` drops alpha channel.

vector_mask

Returns vector mask associated with this layer.

Returns `VectorMask` or `None`

visible

Layer visibility. Doesn't take group visibility in account. Writable.

Returns `bool`

width

Width of the layer.

Returns `int`

3.4.6 TypeLayer

class `psd_tools.api.layers.TypeLayer` (*args)

Layer that has text and styling information for fonts or paragraphs.

Text is accessible at `text` property. Styling information for paragraphs is in `engine_dict`. Document styling information such as font list is in `resource_dict`.

Currently, textual information is read-only.

Example:

```
if layer.kind == 'type':
    print(layer.text)
    print(layer.engine_dict['StyleRun'])

    # Extract font for each substring in the text.
    text = layer.engine_dict['Editor']['Text'].value
    fontset = layer.resource_dict['FontSet']
    runlength = layer.engine_dict['StyleRun']['RunLengthArray']
    rundata = layer.engine_dict['StyleRun']['RunArray']
    index = 0
    for length, style in zip(runlength, rundata):
        substring = text[index:index + length]
        stylesheet = style['StyleSheet']['StyleSheetData']
        font = fontset[stylesheet['Font']]
        print('%r gets %s' % (substring, font))
        index += length
```

bbox

(left, top, right, bottom) tuple.

blend_mode

Blend mode of this layer. Writable.

Example:

```
from psd_tools.constants import BlendMode
if layer.blend_mode == BlendMode.NORMAL:
    layer.blend_mode = BlendMode.SCREEN
```

Returns *BlendMode*.

bottom

Bottom coordinate.

Returns *int*

clip_layers

Clip layers associated with this layer.

To compose clipping layers:

```
from psd_tools import compose
clip_mask = compose(layer.clip_layers)
```

Returns list of layers

compose (*bbox=None, **kwargs*)

Compose layer and masks (mask, vector mask, and clipping layers).

Note that the resulting image size is not necessarily equal to the layer size due to different mask dimensions. The offset of the composed image is stored at *.info['offset']* attribute of *PIL.Image*.

Parameters **bbox** – Viewport bounding box specified by (x1, y1, x2, y2) tuple.

Returns *PIL.Image*, or *None* if the layer has no pixel.

document_resources

Resource set relevant to the document.

effects

Layer effects.

Returns *Effects*

engine_dict

Styling information dict.

has_clip_layers ()

Returns True if the layer has associated clipping.

Returns *bool*

has_effects ()

Returns True if the layer has effects.

Returns *bool*

has_mask ()

Returns True if the layer has a mask.

Returns *bool*

has_origination ()

Returns True if the layer has live shape properties.

Returns *bool*

has_pixels ()

Returns True if the layer has associated pixels. When this is True, *topil* method returns *PIL.Image*.

Returns *bool*

has_stroke()

Returns True if the shape has a stroke.

has_vector_mask()

Returns True if the layer has a vector mask.

Returns *bool*

height

Height of the layer.

Returns *int*

is_group()

Return True if the layer is a group.

Returns *bool*

is_visible()

Layer visibility. Takes group visibility in account.

Returns *bool*

kind

Kind of this layer, such as group, pixel, shape, type, smartobject, or psdimage. Class name without *layer* suffix.

Returns *str*

layer_id

Layer ID.

Returns *int* layer id. if the layer is not assigned an id, -1.

left

Left coordinate. Writable.

Returns *int*

mask

Returns mask associated with this layer.

Returns *Mask* or *None*

name

Layer name. Writable.

Returns *str*

offset

(left, top) tuple. Writable.

Returns *tuple*

opacity

Opacity of this layer in [0, 255] range. Writable.

Returns *int*

origination

Property for a list of live shapes or a line.

Some of the vector masks have associated live shape properties, that are Photoshop feature to handle primitive shapes such as a rectangle, an ellipse, or a line. Vector masks without live shape properties are plain path objects.

See `psd_tools.api.shape`.

Returns List of *Invalidated*, *Rectangle*, *RoundedRectangle*, *Ellipse*, or *Line*.

parent

Parent of this layer.

resource_dict

Resource set.

right

Right coordinate.

Returns int

size

(width, height) tuple.

Returns *tuple*

stroke

Property for strokes.

tagged_blocks

Layer tagged blocks that is a dict-like container of settings.

See `psd_tools.constants.Tag` for available keys.

Returns *TaggedBlocks* or *None*.

Example:

```
from psd_tools.constants import Tag
metadata = layer.tagged_blocks.get_data(Tag.METADATA_SETTING)
```

text

Text in the layer. Read-only.

Note: New-line character in Photoshop is `'\r'`.

top

Top coordinate. Writable.

Returns int

topil (*channel=None*, ***kwargs*)

Get PIL Image of the layer.

Parameters **channel** – Which channel to return; e.g., 0 for ‘R’ channel in RGB image. See *ChannelID*. When *None*, the method returns all the channels supported by PIL modes.

Returns *PIL*.Image, or *None* if the layer has no pixels.

Example:

```
from psd_tools.constants import ChannelID

image = layer.topil()
red = layer.topil(ChannelID.CHANNEL_0)
alpha = layer.topil(ChannelID.TRANSPARENCY_MASK)
```

Note: Not all of the PSD image modes are supported in `PIL.Image`. For example, ‘CMYK’ mode cannot include alpha channel in PIL. In this case, `topil` drops alpha channel.

transform

Matrix (xx, xy, yx, yy, tx, ty) applies affine transformation.

vector_mask

Returns vector mask associated with this layer.

Returns *VectorMask* or *None*

visible

Layer visibility. Doesn’t take group visibility in account. Writable.

Returns *bool*

warp

Warp configuration.

width

Width of the layer.

Returns *int*

3.5 psd_tools.api.mask

Mask module.

3.5.1 Mask

class `psd_tools.api.mask.Mask` (*layer*)

Mask data attached to a layer.

There are two distinct internal mask data: user mask and vector mask. User mask refers any pixel-based mask whereas vector mask refers a mask from a shape path. Internally, two masks are combined and referred real mask.

background_color

Background color.

bbox

BBox

bottom

Bottom coordinate.

disabled

Disabled.

flags

Flags.

height

Height.

left

Left coordinate.

parameters

Parameters.

real_flags

Real flag.

right

Right coordinate.

size

(Width, Height) tuple.

top

Top coordinate.

topil (*real=True, **kwargs*)

Get PIL Image of the mask.

Parameters **real** – When True, returns pixel + vector mask combined.**Returns** PIL Image object, or None if the mask is empty.**width**

Width.

3.6 psd_tools.api.shape

Shape module.

In PSD/PSB, shapes are all represented as *VectorMask* in each layer, and optionally there might be *Origination* object to control live shape properties and *Stroke* to specify how outline is stylized.

3.6.1 VectorMask

class `psd_tools.api.shape.VectorMask` (*data*)

Vector mask data.

Vector mask is a resolution-independent mask that consists of one or more Path objects. In Photoshop, all the path objects are represented as Bezier curves. Check *paths* property for how to deal with path objects.

bbox

Bounding box tuple (left, top, right, bottom) in relative coordinates, where top-left corner is (0., 0.) and bottom-right corner is (1., 1.).

Returns *tuple***clipboard_record**

Clipboard record containing bounding box information.

Depending on the Photoshop version, this field can be *None*.**disabled**

If the mask is disabled.

initial_fill_rule

Initial fill rule.

When 0, fill inside of the path. When 1, fill outside of the shape.

Returns *int*

inverted

Invert the mask.

not_linked

If the knots are not linked.

paths

List of *Subpath*. Subpath is a list-like structure that contains one or more *Knot* items. Knot contains relative coordinates of control points for a Bezier curve. *index* indicates which origination item the subpath belongs, and *operation* indicates how to combine multiple shape paths.

In PSD, path fill rule is even-odd.

Example:

```
for subpath in layer.vector_mask.paths:
    anchors = [(
        int(knot.anchor[1] * psd.width),
        int(knot.anchor[0] * psd.height),
    ) for knot in subpath]
```

Returns List of Subpath.

3.6.2 Stroke

class `psd_tools.api.shape.Stroke` (*data*)

Stroke contains decorative information for strokes.

This is a thin wrapper around *Descriptor* structure. Check *_data* attribute to get the raw data.

blend_mode

Blend mode.

content

Fill effect.

enabled

If the stroke is enabled.

fill_enabled

If the stroke fill is enabled.

line_alignment

Alignment, one of *inner*, *outer*, *center*.

line_cap_type

Cap type, one of *butt*, *round*, *square*.

line_dash_offset

Line dash offset in float.

Returns float

line_dash_set

Line dash set in list of `UnitFloat`.

Returns list

line_join_type

Join type, one of *miter*, *round*, *bevel*.

line_width
Stroke width in float.

miter_limit
Miter limit in float.

opacity
Opacity value.

stroke_adjust
Stroke adjust

3.6.3 Origination

Origination keeps live shape properties for some of the primitive shapes. Origination objects are accessible via origination property of layers. Following primitive shapes are defined: *Invalidated*, *Line*, *Rectangle*, *Ellipse*, and *RoundedRectangle*.

Invalidated

class `psd_tools.api.shape.Invalidated` (*data*)
Invalidated live shape.

This equals to a primitive shape that does not provide Live shape properties. Use *VectorMask* to access shape information instead of this origination object.

invalidated
Returns *bool*

Line

class `psd_tools.api.shape.Line` (*data*)
Line live shape.

arrow_conc
Returns *int*

arrow_end
Line arrow end.
Returns *bool*

arrow_length
Line arrow length.
Returns *float*

arrow_start
Line arrow start.
Returns *bool*

arrow_width
Line arrow width.
Returns *float*

bbox
Bounding box of the live shape.
Returns *Descriptor*

index
Origination item index.
Returns *int*

invalidated
Returns *bool*

line_end
Line end.
Returns *Descriptor*

line_start
Line start.
Returns *Descriptor*

line_weight
Line weight
Returns *float*

origin_type
Type of the vector shape.

- 1: *Rectangle*
- 2: *RoundedRectangle*
- 4: *Line*
- 5: *Ellipse*

Returns *int*

resolution
Resolution.
Returns *float*

Ellipse

class `psd_tools.api.shape.Ellipse` (*data*)
Ellipse live shape.

bbox
Bounding box of the live shape.
Returns *Descriptor*

index
Origination item index.
Returns *int*

invalidated
Returns *bool*

origin_type

Type of the vector shape.

- 1: *Rectangle*
- 2: *RoundedRectangle*
- 4: *Line*
- 5: *Ellipse*

Returns *int*

resolution

Resolution.

Returns *float*

Rectangle

class `psd_tools.api.shape.Rectangle` (*data*)

Rectangle live shape.

bbox

Bounding box of the live shape.

Returns *Descriptor*

index

Origination item index.

Returns *int*

invalidated

Returns *bool*

origin_type

Type of the vector shape.

- 1: *Rectangle*
- 2: *RoundedRectangle*
- 4: *Line*
- 5: *Ellipse*

Returns *int*

resolution

Resolution.

Returns *float*

RoundedRectangle

class `psd_tools.api.shape.RoundedRectangle` (*data*)

Rounded rectangle live shape.

bbox

Bounding box of the live shape.

Returns *Descriptor*

index

Origination item index.

Returns *int*

invalidated

Returns *bool*

origin_type

Type of the vector shape.

- 1: *Rectangle*
- 2: *RoundedRectangle*
- 4: *Line*
- 5: *Ellipse*

Returns *int*

radii

Corner radii of rounded rectangles. The order is top-left, top-right, bottom-left, bottom-right.

Returns *Descriptor*

resolution

Resolution.

Returns *float*

3.7 psd_tools.api.smart_object

Smart object module.

3.7.1 SmartObject

class `psd_tools.api.smart_object.SmartObject` (*layer*)

Smart object that represents embedded or external file.

Smart objects are attached to *SmartObjectLayer*.

data

Embedded file content, or empty if kind is *external* or *alias*

filename

Original file name of the object.

filesize

File size of the object.

filetype

Preferred file extension, such as *jpg*.

is_psd()

Return True if the file is embedded PSD/PSB.

kind

Kind of the link, 'data', 'alias', or 'external'.

open (*external_dir=None*)

Open the smart object as binary IO.

Parameters **external_dir** – Path to the directory of the external file.

Example:

```
with layer.smart_object.open() as f:  
    data = f.read()
```

resolution

Resolution of the object.

save (*filename=None*)

Save the smart object to a file.

Parameters **filename** – File name to export. If None, use the embedded name.

unique_id

UUID of the object.

warp

Warp parameters.

3.8 psd_tools.constants

Various constants for psd_tools

3.8.1 BlendMode

class psd_tools.constants.BlendMode

Blend modes.

COLOR = b'colr'

COLOR_BURN = b'idiv'

COLOR_DODGE = b'div '

DARKEN = b'dark'

DARKER_COLOR = b'dkCl'

DIFFERENCE = b'diff'

DISSOLVE = b'diss'

DIVIDE = b'fdiv'

EXCLUSION = b'smud'

HARD_LIGHT = b'hLit'

HARD_MIX = b'hMix'

HUE = b'hue '

LIGHTEN = b'lite'


```
LIGHTER_COLOR = b'lgCl'  
LINEAR_BURN = b'lbrn'  
LINEAR_DODGE = b'lddg'  
LINEAR_LIGHT = b'lLit'  
LUMINOSITY = b'lum '  
MULTIPLY = b'mul '  
NORMAL = b'norm'  
OVERLAY = b'over'  
PASS_THROUGH = b'pass'  
PIN_LIGHT = b'pLit'  
SATURATION = b'sat '  
SCREEN = b'scrn'  
SOFT_LIGHT = b'sLit'  
SUBTRACT = b'fsub'  
VIVID_LIGHT = b'vLit'
```

3.8.2 ChannelID

class `psd_tools.constants.ChannelID`

Channel types.

```
CHANNEL_0 = 0  
CHANNEL_1 = 1  
CHANNEL_2 = 2  
CHANNEL_3 = 3  
CHANNEL_4 = 4  
CHANNEL_5 = 5  
CHANNEL_6 = 6  
CHANNEL_7 = 7  
CHANNEL_8 = 8  
CHANNEL_9 = 9  
REAL_USER_LAYER_MASK = -3  
TRANSPARENCY_MASK = -1  
USER_LAYER_MASK = -2
```

3.8.3 Clipping

```
class psd_tools.constants.Clipping
    Clipping.

    BASE = 0
    NON_BASE = 1
```

3.8.4 ColorMode

```
class psd_tools.constants.ColorMode
    Color mode.

    BITMAP = 0
    CMYK = 4
    DUOTONE = 8
    GRAYSCALE = 1
    INDEXED = 2
    LAB = 9
    MULTICHANNEL = 7
    RGB = 3
    channels = <function ColorMode.channels>
```

3.8.5 ColorSpaceID

```
class psd_tools.constants.ColorSpaceID
    Color space types.

    CMYK = 2
    GRAYSCALE = 8
    HSB = 1
    LAB = 7
    RGB = 0
```

3.8.6 Compression

```
class psd_tools.constants.Compression
    Compression modes.

    Compression. 0 = Raw Data, 1 = RLE compressed, 2 = ZIP without prediction, 3 = ZIP with prediction.

    PACK_BITS = 1
    RAW = 0
    ZIP = 2
    ZIP_WITH_PREDICTION = 3
```

3.8.7 EffectOSType

```
class psd_tools.constants.EffectOSType
    OS Type keys for Layer Effects.

    BEVEL = b'bev1'
    COMMON_STATE = b'cmnS'
    DROP_SHADOW = b'dsdw'
    INNER_GLOW = b'iglw'
    INNER_SHADOW = b'isdw'
    OUTER_GLOW = b'oglw'
    SOLID_FILL = b'sofi'
```

3.8.8 GlobalLayerMaskKind

```
class psd_tools.constants.GlobalLayerMaskKind
    Global layer mask kind.

    COLOR_PROTECTED = 1
    COLOR_SELECTED = 0
    PER_LAYER = 128
```

3.8.9 LinkedLayerType

```
class psd_tools.constants.LinkedLayerType
    Linked layer types.

    ALIAS = b'liFA'
    DATA = b'liFD'
    EXTERNAL = b'liFE'
```

3.8.10 PathResourceID

```
class psd_tools.constants.PathResourceID
    An enumeration.

    CLIPBOARD = 7
    CLOSED_KNOT_LINKED = 1
    CLOSED_KNOT_UNLINKED = 2
    CLOSED_LENGTH = 0
    INITIAL_FILL = 8
    OPEN_KNOT_LINKED = 4
    OPEN_KNOT_UNLINKED = 5
    OPEN_LENGTH = 3
```

```
PATH_FILL = 6
```

3.8.11 PlacedLayerType

```
class psd_tools.constants.PlacedLayerType
```

An enumeration.

```
IMAGE_STACK = 3
```

```
RASTER = 2
```

```
UNKNOWN = 0
```

```
VECTOR = 1
```

3.8.12 PrintScaleStyle

```
class psd_tools.constants.PrintScaleStyle
```

Print scale style.

```
CENTERED = 0
```

```
SIZE_TO_FIT = 1
```

```
USER_DEFINED = 2
```

3.8.13 Resource

```
class psd_tools.constants.Resource
```

Image resource keys.

Note the following is not defined for performance reasons.

- `PATH_INFO_10` to `PATH_INFO_989` corresponding to 2010 - 2989
- `PLUGIN_RESOURCES_10` to `PLUGIN_RESOURCES_989` corresponding to 4010 - 4989

```
ALPHA_IDENTIFIERS = 1053
```

```
ALPHA_NAMES_PASCAL = 1006
```

```
ALPHA_NAMES_UNICODE = 1045
```

```
ALTERNATE_DUOTONE_COLORS = 1066
```

```
ALTERNATE_SPOT_COLORS = 1067
```

```
AUTO_SAVE_FILE_PATH = 1086
```

```
AUTO_SAVE_FORMAT = 1087
```

```
BACKGROUND_COLOR = 1010
```

```
BORDER_INFO = 1009
```

```
CAPTION_DIGEST = 1061
```

```
CAPTION_PASCAL = 1008
```

```
CLIPPING_PATH_NAME = 2999
```

```
COLOR_HALFTONING_INFO = 1013
```

COLOR_SAMPLERS_RESOURCE = 1073
COLOR_SAMPLERS_RESOURCE_OBSOLETE = 1038
COLOR_TRANSFER_FUNCTION = 1016
COPYRIGHT_FLAG = 1034
COUNT_INFO = 1080
DISPLAY_INFO = 1077
DISPLAY_INFO_OBSOLETE = 1007
DUOTONE_HALFTONING_INFO = 1014
DUOTONE_IMAGE_INFO = 1018
DUOTONE_TRANSFER_FUNCTION = 1017
EFFECTIVE_BW = 1019
EFFECTS_VISIBLE = 1042
EPS_OPTIONS = 1021
EXIF_DATA_1 = 1058
EXIF_DATA_3 = 1059
GLOBAL_ALTITUDE = 1049
GLOBAL_ANGLE = 1037
GRAYSCALE_HALFTONING_INFO = 1012
GRAYSCALE_TRANSFER_FUNCTION = 1015
GRID_AND_GUIDES_INFO = 1032
HDR_TONING_INFO = 1070
ICC_PROFILE = 1039
ICC_UNTAGGED_PROFILE = 1041
IDS_SEED_NUMBER = 1044
IMAGE_MODE_RAW = 1029
IMAGE_READY_DATA_SETS = 7001
IMAGE_READY_VARIABLES = 7000
INDEXED_COLOR_TABLE_COUNT = 1046
IPTC_NAA = 1028
JPEG_QUALITY = 1030
JUMP_TO_XPEP = 1052
LAYER_COMPS = 1065
LAYER_GROUPS_ENABLED_ID = 1072
LAYER_GROUP_INFO = 1026
LAYER_SELECTION_IDS = 1069
LAYER_STATE_INFO = 1024

LIGHTROOM_WORKFLOW = 8000
MAC_NSPRINTINFO = 1084
MAC_PRINT_MANAGER_INFO = 1001
MEASUREMENT_SCALE = 1074
OBSOLETE1 = 1000
OBSOLETE2 = 1003
OBSOLETE3 = 1020
OBSOLETE4 = 1023
OBSOLETE5 = 1027
ONION_SKINS = 1078
ORIGIN_PATH_INFO = 3000
PATH_INFO_0 = 2000
PATH_INFO_1 = 2001
PATH_INFO_2 = 2002
PATH_INFO_3 = 2003
PATH_INFO_4 = 2004
PATH_INFO_5 = 2005
PATH_INFO_6 = 2006
PATH_INFO_7 = 2007
PATH_INFO_8 = 2008
PATH_INFO_9 = 2009
PATH_INFO_990 = 2990
PATH_INFO_991 = 2991
PATH_INFO_992 = 2992
PATH_INFO_993 = 2993
PATH_INFO_994 = 2994
PATH_INFO_995 = 2995
PATH_INFO_996 = 2996
PATH_INFO_997 = 2997
PATH_SELECTION_STATE = 1088
PIXEL_ASPECT_RATIO = 1064
PLUGIN_RESOURCE_0 = 4000
PLUGIN_RESOURCE_1 = 4001
PLUGIN_RESOURCE_2 = 4002
PLUGIN_RESOURCE_3 = 4003
PLUGIN_RESOURCE_4 = 4004

```
PLUGIN_RESOURCE_4990 = 4990
PLUGIN_RESOURCE_4991 = 4991
PLUGIN_RESOURCE_4992 = 4992
PLUGIN_RESOURCE_4993 = 4993
PLUGIN_RESOURCE_4994 = 4994
PLUGIN_RESOURCE_4995 = 4995
PLUGIN_RESOURCE_4996 = 4996
PLUGIN_RESOURCE_4997 = 4997
PLUGIN_RESOURCE_4998 = 4998
PLUGIN_RESOURCE_4999 = 4990
PLUGIN_RESOURCE_5 = 4005
PLUGIN_RESOURCE_6 = 4006
PLUGIN_RESOURCE_7 = 4007
PLUGIN_RESOURCE_8 = 4008
PLUGIN_RESOURCE_9 = 4009
PRINT_FLAGS = 1011
PRINT_FLAGS_INFO = 10000
PRINT_INFO_CS2 = 1071
PRINT_INFO_CS5 = 1082
PRINT_SCALE = 1062
PRINT_STYLE = 1083
QUICK_MASK_INFO = 1022
RESOLUTION_INFO = 1005
SHEET_DISCLOSURE = 1076
SLICES = 1050
SPOT_HALFTONE = 1043
THUMBNAIL_RESOURCE = 1036
THUMBNAIL_RESOURCE_PS4 = 1033
TIMELINE_INFO = 1075
TRANSPARENCY_INDEX = 1047
URL = 1035
URL_LIST = 1054
VERSION_INFO = 1057
WATERMARK = 1040
WINDOWS_DEVMODE = 1085
WORKFLOW_URL = 1051
```

```
WORKING_PATH = 1025
XMP_METADATA = 1060
is_path_info = <function Resource.is_path_info>
is_plugin_resource = <function Resource.is_plugin_resource>
```

3.8.14 SectionDivider

```
class psd_tools.constants.SectionDivider
    An enumeration.

    BOUNDING_SECTION_DIVIDER = 3
    CLOSED_FOLDER = 2
    OPEN_FOLDER = 1
    OTHER = 0
```

3.8.15 Tag

```
class psd_tools.constants.Tag
    Tagged blocks keys.

    ALPHA = b'Alph'
    ANIMATION_EFFECTS = b'anFX'
    ANNOTATIONS = b'Anno'
    ARTBOARD_DATA1 = b'artb'
    ARTBOARD_DATA2 = b'artd'
    ARTBOARD_DATA3 = b'abdd'
    BLACK_AND_WHITE = b'blwh'
    BLEND_CLIPPING_ELEMENTS = b'clbl'
    BLEND_FILL_OPACITY = b'iOpa'
    BLEND_INTERIOR_ELEMENTS = b'infx'
    BRIGHTNESS_AND_CONTRAST = b'brit'
    CHANNEL_BLENDING_RESTRICTIONS_SETTING = b'brst'
    CHANNEL_MIXER = b'mixr'
    COLOR_BALANCE = b'blnc'
    COLOR_LOOKUP = b'clrL'
    COMPUTER_INFO = b'cinf'
    CONTENT_GENERATOR_EXTRA_DATA = b'CgEd'
    CURVES = b'curv'
    EFFECTS_LAYER = b'lrFX'
    EXPORT_SETTING1 = b'extd'
```



```
EXPORT_SETTING2 = b'extn'  
EXPOSURE = b'expA'  
FILTER_EFFECTS1 = b'FXid'  
FILTER_EFFECTS2 = b'FEid'  
FILTER_EFFECTS3 = b'FELS'  
FILTER_MASK = b'Fmsk'  
FOREIGN_EFFECT_ID = b'ffxi'  
GRADIENT_FILL_SETTING = b'GdFl'  
GRADIENT_MAP = b'grdm'  
HUE_SATURATION = b'hue2'  
HUE_SATURATION_V4 = b'hue '  
INVERT = b'nvrt'  
KNOCKOUT_SETTING = b'knko'  
LAYER = b'Layr'  
LAYER_16 = b'Lr16'  
LAYER_32 = b'Lr32'  
LAYER_ID = b'lyid'  
LAYER_MASK_AS_GLOBAL_MASK = b'lmgm'  
LAYER_NAME_SOURCE_SETTING = b'lnsr'  
LAYER_VERSION = b'lyvr'  
LEVELS = b'levl'  
LINKED_LAYER1 = b'lnkD'  
LINKED_LAYER2 = b'lnk2'  
LINKED_LAYER3 = b'lnk3'  
LINKED_LAYER_EXTERNAL = b'lnkE'  
METADATA_SETTING = b'shmd'  
NESTED_SECTION_DIVIDER_SETTING = b'lsdk'  
OBJECT_BASED_EFFECTS_LAYER_INFO = b'lfx2'  
OBJECT_BASED_EFFECTS_LAYER_INFO_V0 = b'lmfx'  
OBJECT_BASED_EFFECTS_LAYER_INFO_V1 = b'lfxs'  
PATTERNS1 = b'Patt'  
PATTERNS2 = b'Pat2'  
PATTERNS3 = b'Pat3'  
PATTERN_DATA = b'shpa'  
PATTERN_FILL_SETTING = b'PtFl'  
PHOTO_FILTER = b'phfl'
```

```
PIXEL_SOURCE_DATA1 = b'PxSc'  
PIXEL_SOURCE_DATA2 = b'PxSD'  
PLACED_LAYER1 = b'plLd'  
PLACED_LAYER2 = b'PlLd'  
POSTERIZE = b'post'  
PROTECTED_SETTING = b'lspf'  
REFERENCE_POINT = b'fxrp'  
SAVING_MERGED_TRANSPARENCY = b'Mtrn'  
SAVING_MERGED_TRANSPARENCY16 = b'Mt16'  
SAVING_MERGED_TRANSPARENCY32 = b'Mt32'  
SECTION_DIVIDER_SETTING = b'lset'  
SELECTIVE_COLOR = b'selc'  
SHEET_COLOR_SETTING = b'lclr'  
SMART_OBJECT_LAYER_DATA1 = b'SoLd'  
SMART_OBJECT_LAYER_DATA2 = b'SoLE'  
SOLID_COLOR_SHEET_SETTING = b'SoCo'  
TEXT_ENGINE_DATA = b'Txt2'  
THRESHOLD = b'thrs'  
TRANSPARENCY_SHAPES_LAYER = b'tsly'  
TYPE_TOOL_INFO = b'tySh'  
TYPE_TOOL_OBJECT_SETTING = b'TySh'  
UNICODE_LAYER_NAME = b'luni'  
UNICODE_PATH_NAME = b'pths'  
USER_MASK = b'lMsk'  
USING_ALIGNED_RENDERING = b'sn2P'  
VECTOR_MASK_AS_GLOBAL_MASK = b'vmgm'  
VECTOR_MASK_SETTING1 = b'vmsk'  
VECTOR_MASK_SETTING2 = b'vsms'  
VECTOR_ORIGINATION_DATA = b'vogk'  
VECTOR_STROKE_CONTENT_DATA = b'vscg'  
VECTOR_STROKE_DATA = b'vstk'  
VIBRANCE = b'viba'
```

3.9 psd_tools.psd

Low-level API that translates binary data to Python structure.

All the data structure in this subpackage inherits from one of the object defined in `psd_tools.psd.base` module.

3.9.1 PSD

```
class psd_tools.psd.PSD (header=NOTHING, color_mode_data=NOTHING, im-  
                        age_resources=NOTHING, layer_and_mask_information=NOTHING,  
                        image_data=NOTHING)
```

Low-level PSD file structure that resembles the [specification](#).

Example:

```
from psd_tools.psd import PSD

with open(input_file, 'rb') as f:
    psd = PSD.read(f)

with open(output_file, 'wb') as f:
    psd.write(f)
```

header

See [FileHeader](#).

color_mode_data

See [ColorModeData](#).

image_resources

See [ImageResources](#).

layer_and_mask_information

See [LayerAndMaskInformation](#).

image_data

See [ImageData](#).

3.10 psd_tools.psd.base

Base data structures intended for inheritance.

All the data objects in this subpackage inherit from the base classes here. That means, all the data structures in the `psd_tools.psd` subpackage implements the methods of `BaseElement` for serialization and decoding.

Objects that inherit from the `BaseElement` typically gets `attrs` decoration to have data fields.

3.10.1 BaseElement

```
class psd_tools.psd.base.BaseElement
```

Base element of various PSD file structs. All the data objects in `psd_tools.psd` subpackage inherit from this class.

```
classmethod read(cls, fp)
```

Read the element from a file-like object.

write (*self*, *fp*)
Write the element to a file-like object.

classmethod frombytes (*self*, *data*, **args*, ***kwargs*)
Read the element from bytes.

tobytes (*self*, **args*, ***kwargs*)
Write the element to bytes.

validate (*self*)
Validate the attribute.

3.10.2 EmptyElement

class `psd_tools.psd.base.EmptyElement`
Empty element that does not have a value.

3.10.3 ValueElement

class `psd_tools.psd.base.ValueElement` (*value=None*)
Single value wrapper that has a *value* attribute.

Pretty printing shows the internal value by default. Inherit with `@attr.s(repr=False)` decorator to keep this behavior.

value
Internal value.

3.10.4 NumericElement

class `psd_tools.psd.base.NumericElement` (*value=0.0*)
Single value element that has a numeric *value* attribute.

3.10.5 IntegerElement

class `psd_tools.psd.base.IntegerElement` (*value=0*)
Single integer value element that has a *value* attribute.

Use with `@attr.s(repr=False)` decorator.

3.10.6 ShortIntegerElement

class `psd_tools.psd.base.ShortIntegerElement` (*value=0*)
Single short integer element that has a *value* attribute.

Use with `@attr.s(repr=False)` decorator.

3.10.7 ByteElement

class `psd_tools.psd.base.ByteElement` (*value=0*)
Single 1-byte integer element that has a *value* attribute.

Use with `@attr.s(repr=False)` decorator.

3.10.8 BooleanElement

class `psd_tools.psd.base.BooleanElement` (*value=False*)
Single bool value element that has a *value* attribute.

Use with `@attr.s(repr=False)` decorator.

3.10.9 StringElement

class `psd_tools.psd.base.StringElement` (*value: str = ""*)
Single unicode string.

value
str value

3.10.10 ListElement

class `psd_tools.psd.base.ListElement` (*items=NOTHING*)
List-like element that has *items* list.

3.10.11 DictElement

class `psd_tools.psd.base.DictElement` (*items=NOTHING*)
Dict-like element that has *items* OrderedDict.

3.11 psd_tools.psd.color_mode_data

Color mode data structure.

3.11.1 ColorModeData

class `psd_tools.psd.color_mode_data.ColorModeData` (*value: bytes = b""*)
Color mode data section of the PSD file.

For indexed color images the data is the color table for the image in a non-interleaved order.

Duotone images also have this data, but the data format is undocumented.

interleave ()
Returns interleaved color table in bytes.

3.12 psd_tools.psd.descriptor

Descriptor data structure.

Descriptors are basic data structure used throughout PSD files. Descriptor is one kind of serialization protocol for data objects, and enum classes in `psd_tools.terminology` or bytes indicates what kind of descriptor it is.

The class ID can be pre-defined enum if the tag is 4-byte length or plain bytes if the length is arbitrary. They depend on the internal version of Adobe Photoshop but the detail is unknown.

Pretty printing is the best approach to check the descriptor content:

```
from IPython.pretty import pprint
pprint(descriptor)
```

3.12.1 Alias

class psd_tools.psd.descriptor.**Alias** (*value: bytes = b'x00x00x00x00'*)
Alias structure equivalent to *RawData*.

3.12.2 Bool

class psd_tools.psd.descriptor.**Bool** (*value=False*)
Bool structure.
value
bool value

3.12.3 Class

class psd_tools.psd.descriptor.**Class** (*name: str = "", classID: bytes = b'x00x00x00x00'*)
Class structure.
name
str value
classID
bytes in *Klass*

3.12.4 Class1

class psd_tools.psd.descriptor.**Class1** (*name: str = "", classID: bytes = b'x00x00x00x00'*)
Class structure equivalent to *Class*.

3.12.5 Class2

class psd_tools.psd.descriptor.**Class2** (*name: str = "", classID: bytes = b'x00x00x00x00'*)
Class structure equivalent to *Class*.

3.12.6 Class3

class psd_tools.psd.descriptor.**Class3** (*name: str = "", classID: bytes = b'x00x00x00x00'*)
Class structure equivalent to *Class*.

3.12.7 Descriptor

class `psd_tools.psd.descriptor.Descriptor` (*items=NOTHING, name: str = "", classID=b'null'*)

Dict-like descriptor structure.

Key values can be 4-character *bytes* in *Key* or arbitrary length *bytes*. Supports direct access by *Key*.

Example:

```
from psd_tools.terminology import Key

descriptor[Key.Enabled]

for key in descriptor:
    print(descriptor[key])
```

name
str

classID
bytes in *Klass*

3.12.8 Double

class `psd_tools.psd.descriptor.Double` (*value=0.0*)
Double structure.

value
float value

3.12.9 Enumerated

class `psd_tools.psd.descriptor.Enumerated` (*typeID: bytes = b'x00x00x00x00', enum: bytes = b'x00x00x00x00'*)

Enum structure.

typeID
bytes in *Type*

enum
bytes in *Enum*

get_name ()
Get enum name.

3.12.10 EnumeratedReference

class `psd_tools.psd.descriptor.EnumeratedReference` (*name: str = "", classID: bytes = b'x00x00x00x00', typeID: bytes = b'x00x00x00x00', enum: bytes = b'x00x00x00x00'*)

Enumerated reference structure.

name
str value

classID
bytes in *Klass*

typeID
bytes in *Type*

enum
bytes in *Enum*

3.12.11 GlobalObject

class `psd_tools.psd.descriptor.GlobalObject` (*items=NOTHING, name: str = "", classID=b'null'*)

Global object structure equivalent to *Descriptor*.

3.12.12 Identifier

class `psd_tools.psd.descriptor.Identifier` (*value=0*)
Identifier equivalent to *Integer*.

3.12.13 Index

class `psd_tools.psd.descriptor.Index` (*value=0*)
Index equivalent to *Integer*.

3.12.14 Integer

class `psd_tools.psd.descriptor.Integer` (*value=0*)
Integer structure.

value
int value

3.12.15 LargeInteger

class `psd_tools.psd.descriptor.LargeInteger` (*value=0*)
LargeInteger structure.

value
int value

3.12.16 List

class `psd_tools.psd.descriptor.List` (*items=NOTHING*)
List structure.

Example:

```
for item in list_value:
    print(item)
```


3.12.17 Name

class psd_tools.psd.descriptor.**Name** (*name: str = "", classID: bytes = b'x00x00x00x00', value: str = ""*)

Name structure (Undocumented).

name
str

classID
bytes in *Klass*

value
str

3.12.18 ObjectArray

class psd_tools.psd.descriptor.**ObjectArray** (*items=NOTHING, items_count: int = 0, name: str = "", classID=b'null'*)

Object array structure almost equivalent to *Descriptor*.

items_count
int value

name
str value

classID
bytes in *Klass*

3.12.19 Property

class psd_tools.psd.descriptor.**Property** (*name: str = "", classID: bytes = b'x00x00x00x00', keyID: bytes = b'x00x00x00x00'*)

Property structure.

name
str value

classID
bytes in *Klass*

keyID
bytes in *Key*

3.12.20 Offset

class psd_tools.psd.descriptor.**Offset** (*name: str = "", classID: bytes = b'x00x00x00x00', value=0*)

Offset structure.

name
str value

classID
bytes in *Klass*

value
int value

3.12.21 Path

class `psd_tools.psd.descriptor.Path` (*value: bytes = b'x00x00x00x00'*)
Undocumented path structure equivalent to `RawData`.

3.12.22 RawData

class `psd_tools.psd.descriptor.RawData` (*value: bytes = b'x00x00x00x00'*)
RawData structure.

value
bytes value

3.12.23 Reference

class `psd_tools.psd.descriptor.Reference` (*items=NOTHING*)
Reference structure equivalent to `List`.

3.12.24 String

class `psd_tools.psd.descriptor.String` (*value: str = ""*)
String structure.

value
str value

3.12.25 UnitFloat

class `psd_tools.psd.descriptor.UnitFloat` (*value: float = 0.0, unit=<Unit._None: b'#Nne'>*)
Unit float structure.

unit
unit of the value in Unit

value
float value

3.12.26 UnitFloats

class `psd_tools.psd.descriptor.UnitFloats` (*unit=<Unit._None: b'#Nne'>, values=NOTHING*)
Unit floats structure.

unit
unit of the value in Unit

values
List of *float* values

3.13 psd_tools.psd.engine_data

EngineData structure.

PSD file embeds text formatting data in its own markup language referred EngineData. The format looks like the following:

```
<<
  /EngineDict
  <<
    /Editor
    <<
      /Text (~Make a change and save.)
    >>
  >>
  /Font
  <<
    /Name (~HelveticaNeue-Light)
    /FillColor
    <<
      /Type 1
      /Values [ 1.0 0.0 0.0 0.0 ]
    >>
    /StyleSheetSet [
      <<
        /Name (~Normal RGB)
      >>
    ]
  >>
>>
```

3.13.1 EngineData

class `psd_tools.psd.engine_data.EngineData` (*items=NOTHING*)

Dict-like element.

TYPE_TOOL_OBJECT_SETTING tagged block contains this object in its descriptor.

3.13.2 EngineData2

class `psd_tools.psd.engine_data.EngineData2` (*items=NOTHING*)

Dict-like element.

TEXT_ENGINE_DATA tagged block has this object.

3.13.3 Bool

class `psd_tools.psd.engine_data.Bool` (*value=False*)

Bool element.

3.13.4 Dict

class `psd_tools.psd.engine_data.Dict` (*items=NOTHING*)
Dict-like element.

3.13.5 Float

class `psd_tools.psd.engine_data.Float` (*value=0.0*)
Float element.

3.13.6 Integer

class `psd_tools.psd.engine_data.Integer` (*value=0*)
Integer element.

3.13.7 List

class `psd_tools.psd.engine_data.List` (*items=NOTHING*)
List-like element.

3.13.8 Property

class `psd_tools.psd.engine_data.Property` (*value=None*)
Property element.

3.13.9 String

class `psd_tools.psd.engine_data.String` (*value=None*)
String element.

3.14 psd_tools.psd.effects_layer

Effects layer structure.

Note the structures in this module is obsolete and object-based layer effects are stored in tagged blocks.

3.14.1 EffectsLayer

class `psd_tools.psd.effects_layer.EffectsLayer` (*items=NOTHING, version: int = 0*)
Dict-like EffectsLayer structure. See `psd_tools.constants.EffectOSType` for available keys.
version

3.14.2 CommonStateInfo

class `psd_tools.psd.effects_layer.CommonStateInfo` (*version: int = 0, visible: int = 1*)
Effects layer common state info.

version

visible

3.14.3 ShadowInfo

class `psd_tools.psd.effects_layer.ShadowInfo` (*version: int = 0, blur: int = 0, intensity: int = 0, angle: int = 0, distance: int = 0, color=NOTHING, blend_mode=<BlendMode.NORMAL: b'norm'>, enabled: int = 0, use_global_angle: int = 0, opacity: int = 0, native_color=NOTHING*)

Effects layer shadow info.

version

blur

intensity

angle

distance

color

blend_mode

enabled

use_global_angle

opacity

native_color

3.14.4 OuterGlowInfo

class `psd_tools.psd.effects_layer.OuterGlowInfo` (*version: int = 0, blur: int = 0, intensity: int = 0, color=NOTHING, blend_mode=<BlendMode.NORMAL: b'norm'>, enabled: int = 0, opacity: int = 0, native_color=None*)

Effects layer outer glow info.

version

blur

intensity

color

blend_mode

enabled

`opacity`
`native_color`

3.14.5 InnerGlowInfo

```
class psd_tools.psd.effects_layer.InnerGlowInfo(version: int = 0, blur: int = 0, intensity: int = 0, color=NOTHING, blend_mode=<BlendMode.NORMAL: b'norm'>, enabled: int = 0, opacity: int = 0, invert=None, native_color=None)
```

Effects layer inner glow info.

`version`
`blur`
`intensity`
`color`
`blend_mode`
`enabled`
`opacity`
`invert`
`native_color`

3.14.6 BevelInfo

```
class psd_tools.psd.effects_layer.BevelInfo(version: int = 0, angle: int = 0, depth: int = 0, blur: int = 0, highlight_blend_mode=<BlendMode.NORMAL: b'norm'>, shadow_blend_mode=<BlendMode.NORMAL: b'norm'>, highlight_color=NOTHING, shadow_color=NOTHING, bevel_style: int = 0, highlight_opacity: int = 0, shadow_opacity: int = 0, enabled: int = 0, use_global_angle: int = 0, direction: int = 0, real_highlight_color=None, real_shadow_color=None)
```

Effects layer bevel info.

`version`
`angle`
`depth`
`blur`
`highlight_blend_mode`
`shadow_blend_mode`
`highlight_color`
`shadow_color`

```

highlight_opacity
shadow_opacity
enabled
use_global_angle
direction
real_highlight_color
real_shadow_color

```

3.14.7 SolidFillInfo

```

class psd_tools.psd.effects_layer.SolidFillInfo (version: int = 2,
blend_mode=<BlendMode.NORMAL:
b'norm'>, color=NOTHING, opacity: int = 0, enabled: int = 0,
native_color=NOTHING)

```

Effects layer inner glow info.

```

version
blend_mode
color
opacity
enabled
native_color

```

3.15 psd_tools.psd.filter_effects

Filter effects structure.

3.15.1 FilterEffects

```

class psd_tools.psd.filter_effects.FilterEffects (items=NOTHING, version: int = 1)
List-like FilterEffects structure. See FilterEffect.

```

```

version

```

3.15.2 FilterEffect

```

class psd_tools.psd.filter_effects.FilterEffect (uuid=None, version=None,
rectangle=None, depth=None,
max_channels=None, channels=None,
extra=None)

```

FilterEffect structure.

```

uuid
version

```

rectangle

depth

max_channels

channels

List of *FilterEffectChannel*.

extra

See *FilterEffectExtra*.

3.15.3 FilterEffectChannel

class `psd_tools.psd.filter_effects.FilterEffectChannel` (*is_written=0, compression=None, data=b''*)

FilterEffectChannel structure.

is_written

compression

data

3.15.4 FilterEffectExtra

class `psd_tools.psd.filter_effects.FilterEffectExtra` (*is_written=0, rectangle=NOTHING, compression:int = 0, data: bytes = b''*)

FilterEffectExtra structure.

is_written

rectangle

compression

data

3.16 psd_tools.psd.header

File header structure.

3.16.1 FileHeader

class `psd_tools.psd.header.FileHeader` (*signature: bytes = b'8BPS', version: int = 1, channels: int = 4, height: int = 64, width: int = 64, depth: int = 8, color_mode=<ColorMode.RGB: 3>*)

Header section of the PSD file.

Example:

```
from psd_tools.psd.header import FileHeader
from psd_tools.constants import ColorMode

header = FileHeader(channels=2, height=359, width=400, depth=8,
                    color_mode=ColorMode.GRAYSCALE)
```


signature

Signature: always equal to b'8BPS'.

version

Version number. PSD is 1, and PSB is 2.

channels

The number of channels in the image, including any user-defined alpha channel.

height

The height of the image in pixels.

width

The width of the image in pixels.

depth

The number of bits per channel.

color_mode

The color mode of the file. See *ColorMode*

3.17 psd_tools.psd.image_data

Image data section structure.

ImageData corresponds to the last section of the PSD/PSB file where a composited image is stored. When the file does not contain layers, this is the only place pixels are saved.

3.17.1 ImageData

```
class psd_tools.psd.image_data.ImageData (compression=<Compression.RAW: 0>, data:
                                         bytes = b'')
```

Merged channel image data.

compression

See *Compression*.

data

bytes as compressed in the *compression* flag.

get_data (*header*)

Get decompressed data.

Parameters *header* – See *FileHeader*.

Returns *list* of bytes corresponding each channel.

```
classmethod new (header, color=0, compression=<Compression.RAW: 0>)
```

Create a new image data object.

Parameters

- **header** – *FileHeader*.
- **compression** – compression type.
- **color** – default color. int or iterable for channel length.

set_data (*data*, *header*)

Set raw data and compress.

Parameters

- **data** – list of raw data bytes corresponding channels.
- **compression** – compression type, see *Compression*.
- **header** – See *FileHeader*.

Returns length of compressed data.

3.18 psd_tools.psd.image_resources

Image resources section structure. Image resources are used to store non-pixel data associated with images, such as pen tool paths or slices.

See *Resource* to check available resource names.

Example:

```
from psd_tools.constants import Resource

version_info = psd.image_resources.get_data(Resource.VERSION_INFO)
```

The following resources are plain bytes:

```
Resource.OBSOLETE1: 1000
Resource.MAC_PRINT_MANAGER_INFO: 1001
Resource.OBSOLETE2: 1003
Resource.DISPLAY_INFO_OBSOLETE: 1007
Resource.BORDER_INFO: 1009
Resource.DUOTONE_IMAGE_INFO: 1018
Resource.EFFECTIVE_BW: 1019
Resource.OBSOLETE3: 1020
Resource.EPS_OPTIONS: 1021
Resource.QUICK_MASK_INFO: 1022
Resource.OBSOLETE4: 1023
Resource.WORKING_PATH: 1025
Resource.OBSOLETE5: 1027
Resource.IPTC_NAA: 1028
Resource.IMAGE_MODE_RAW: 1029
Resource.JPEG_QUALITY: 1030
Resource.URL: 1035
Resource.COLOR_SAMPLERS_RESOURCE_OBSOLETE: 1038
Resource.ICC_PROFILE: 1039
Resource.SPOT_HALFTONE: 1043
Resource.JUMP_TO_XPEP: 1052
Resource.EXIF_DATA_1: 1058
Resource.EXIF_DATA_3: 1059
Resource.XMP_METADATA: 1060
Resource.CAPTION_DIGEST: 1061
Resource.ALTERNATE_DUOTONE_COLORS: 1066
Resource.ALTERNATE_SPOT_COLORS: 1067
Resource.HDR_TONING_INFO: 1070
Resource.PRINT_INFO_CS2: 1071
Resource.COLOR_SAMPLERS_RESOURCE: 1073
Resource.DISPLAY_INFO: 1077
Resource.MAC_NSPRINTINFO: 1084
Resource.WINDOWS_DEVMODE: 1085
```

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```
Resource.PATH_INFO_N: 2000-2999
Resource.PLUGIN_RESOURCES_N: 4000-4999
Resource.IMAGE_READY_VARIABLES: 7000
Resource.IMAGE_READY_DATA_SETS: 7001
Resource.LIGHTROOM_WORKFLOW: 8000
```

3.18.1 ImageResources

class `psd_tools.psd.image_resources.ImageResources` (*items=NOTHING*)
Image resources section of the PSD file. Dict of *ImageResource*.

get_data (*key, default=None*)
Get data from the image resources.

Shortcut for the following:

```
if key in image_resources:
    value = tagged_blocks[key].data
```

classmethod new (***kwargs*)
Create a new default image resources.

Returns *ImageResources*

3.18.2 ImageResource

class `psd_tools.psd.image_resources.ImageResource` (*signature: bytes = b'8BIM', key: int = 1000, name: str = "", data: bytes = b"*)

Image resource block.

signature
Binary signature, always `b'8BIM'`.

key
Unique identifier for the resource. See *Resource*.

name

data
The resource data.

3.18.3 Alphaidentifiers

class `psd_tools.psd.image_resources.AlphaIdentifiers` (*items=NOTHING*)
List of alpha identifiers.

3.18.4 AlphaNamesPascal

class `psd_tools.psd.image_resources.AlphaNamesPascal` (*items=NOTHING*)
List of alpha names.

3.18.5 AlphaNamesUnicode

class `psd_tools.psd.image_resources.AlphaNamesUnicode` (*items=NOTHING*)
List of alpha names.

3.18.6 Byte

class `psd_tools.psd.image_resources.Byte` (*value=0*)
Byte element.

3.18.7 GridGuidesInfo

class `psd_tools.psd.image_resources.GridGuidesInfo` (*version: int = 1, horizontal: int = 0, vertical: int = 0, data=NOTHING*)
Grid and guides info structure.

3.18.8 HalftoneScreens

class `psd_tools.psd.image_resources.HalftoneScreens` (*items=NOTHING*)
Halftone screens.

3.18.9 HalftoneScreen

class `psd_tools.psd.image_resources.HalftoneScreen` (*freq: int = 0, unit: int = 0, angle: int = 0, shape: int = 0, use_accurate: bool = False, use_printer: bool = False*)
Halftone screen.

freq
unit
angle
shape
use_accurate
use_printer

3.18.10 Integer

class `psd_tools.psd.image_resources.Integer` (*value=0*)
Integer element.

3.18.11 LayerGroupEnabledIDs

class `psd_tools.psd.image_resources.LayerGroupEnabledIDs` (*items=NOTHING*)
Layer group enabled ids.

3.18.12 LayerGroupInfo

class `psd_tools.psd.image_resources.LayerGroupInfo` (*items=NOTHING*)
 Layer group info list.

3.18.13 LayerSelectionIDs

class `psd_tools.psd.image_resources.LayerSelectionIDs` (*items=NOTHING*)
 Layer selection ids.

3.18.14 ShortInteger

class `psd_tools.psd.image_resources.ShortInteger` (*value=0*)
 Short integer element.

3.18.15 PascalString

class `psd_tools.psd.image_resources.PascalString` (*value=None*)
 Pascal string element.

3.18.16 PixelAspectRatio

class `psd_tools.psd.image_resources.PixelAspectRatio` (*value=0.0, version: int = 1*)
 Pixel aspect ratio.

3.18.17 PrintFlags

class `psd_tools.psd.image_resources.PrintFlags` (*labels: bool = False, crop_marks: bool = False, colorbars: bool = False, registration_marks: bool = False, negative: bool = False, flip: bool = False, interpolate: bool = False, caption: bool = False, print_flags=None*)
 Print flags.

3.18.18 PrintFlagsInfo

class `psd_tools.psd.image_resources.PrintFlagsInfo` (*version: int = 0, center_crop: int = 0, bleed_width_value: int = 0, bleed_width_scale: int = 0*)
 Print flags info structure.

```
version
center_crop
bleed_width_value
bleed_width_scale
```

3.18.19 PrintScale

```
class psd_tools.psd.image_resources.PrintScale (style=<PrintScaleStyle.CENTERED:0>, x: float = 0.0, y: float = 0.0, scale: float = 0.0)
```

Print scale structure.

style

x

y

scale

3.18.20 ResolutionInfo

```
class psd_tools.psd.image_resources.ResolutionInfo (horizontal: int = 0, horizontal_unit: int = 0, width_unit: int = 0, vertical: int = 0, vertical_unit: int = 0, height_unit: int = 0)
```

Resolution info structure.

horizontal

horizontal_unit

width_unit

vertical

vertical_unit

height_unit

3.18.21 Slices

```
class psd_tools.psd.image_resources.Slices (version: int = 0, data=None)
```

Slices resource.

version

data

3.18.22 SlicesV6

```
class psd_tools.psd.image_resources.SlicesV6 (bbox=NOTHING, name: str = "", items=NOTHING)
```

Slices resource version 6.

bbox

name

items

3.18.23 SliceV6

```
class psd_tools.psd.image_resources.SliceV6 (slice_id: int = 0, group_id: int = 0, origin: int = 0, associated_id=None, name: str = "", slice_type: int = 0, bbox=NOTHING, url: str = "", target: str = "", message: str = "", alt_tag: str = "", cell_is_html: bool = False, cell_text: str = "", horizontal_align: int = 0, vertical_align: int = 0, alpha: int = 0, red: int = 0, green: int = 0, blue: int = 0, data=None)
```

Slice element for version 6.

```
slice_id
group_id
origin
associated_id
name
slice_type
bbox
url
target
message
alt_tag
cell_is_html
cell_text
horizontal
vertical
alpha
red
green
blue
data
```

3.18.24 ThumbnailResource

```
class psd_tools.psd.image_resources.ThumbnailResource (fmt: int = 0, width: int = 0, height: int = 0, row: int = 0, total_size: int = 0, bits: int = 0, planes: int = 0, data: bytes = b")
```

Thumbnail resource structure.

```
fmt
width
```

height

row

total_size

size

bits

planes

data

topil()

Get PIL Image.

Returns PIL Image object.

3.18.25 ThumbnailResourceV4

```
class psd_tools.psd.image_resources.ThumbnailResourceV4 (fmt: int = 0, width: int = 0,  
height: int = 0, row: int =  
0, total_size: int = 0, bits:  
int = 0, planes: int = 0,  
data: bytes = b"
```

3.18.26 TransferFunctions

```
class psd_tools.psd.image_resources.TransferFunctions (items=NOTHING)  
Transfer functions.
```

3.18.27 TransferFunction

```
class psd_tools.psd.image_resources.TransferFunction (curve=NOTHING, override:  
bool = False)  
Transfer function
```

3.18.28 URLList

```
class psd_tools.psd.image_resources.URLList (items=NOTHING)  
URL list structure.
```

3.18.29 URLItem

```
class psd_tools.psd.image_resources.URLItem (number: int = 0, id: int = 0, name: str = "  
URL item.  
number  
id  
name
```


3.18.30 VersionInfo

```
class psd_tools.psd.image_resources.VersionInfo (version: int = 1, has_composite: bool = False, writer: str = "", reader: str = "", file_version: int = 1)
```

Version info structure.

```
version
has_composite
writer
reader
file_version
```

3.19 psd_tools.psd.layer_and_mask

Layer and mask data structure.

3.19.1 LayerAndMaskInformation

```
class psd_tools.psd.layer_and_mask.LayerAndMaskInformation (layer_info=None, global_layer_mask_info=None, tagged_blocks=None)
```

Layer and mask information section.

```
layer_info
    See LayerInfo.
global_layer_mask_info
    See GlobalLayerMaskInfo.
tagged_blocks
    See TaggedBlocks.
```

3.19.2 LayerInfo

```
class psd_tools.psd.layer_and_mask.LayerInfo (layer_count: int = 0, layer_records=None, channel_image_data=None)
```

High-level organization of the layer information.

```
layer_count
    Layer count. If it is a negative number, its absolute value is the number of layers and the first alpha channel contains the transparency data for the merged result.
layer_records
    Information about each layer. See LayerRecords.
channel_image_data
    Channel image data. See ChannelImageData.
```

3.19.3 GlobalLayerMaskInfo

```
class psd_tools.psd.layer_and_mask.GlobalLayerMaskInfo (overlay_color=None,  
opacity: int = 0,  
kind=<GlobalLayerMaskKind.PER_LAYER:  
128>)
```

Global mask information.

overlay_color

Overlay color space (undocumented) and color components.

opacity

Opacity. 0 = transparent, 100 = opaque.

kind

Kind. 0 = Color selected–i.e. inverted; 1 = Color protected; 128 = use value stored per layer. This value is preferred. The others are for backward compatibility with beta versions.

3.19.4 LayerRecords

```
class psd_tools.psd.layer_and_mask.LayerRecords (items=NOTHING)  
List of layer records. See LayerRecord.
```

3.19.5 LayerRecord

```
class psd_tools.psd.layer_and_mask.LayerRecord (top: int = 0, left: int = 0, bottom: int = 0,  
right: int = 0, channel_info=NOTHING,  
signature: bytes = b'8BIM',  
blend_mode=<BlendMode.NORMAL:  
b'norm'>, opacity: int = 255,  
clipping=<Clipping.BASE: 0>,  
flags=NOTHING, mask_data=None,  
blending_ranges=NOTHING, name: str  
= ", tagged_blocks=NOTHING)
```

Layer record.

top

Top position.

left

Left position.

bottom

Bottom position.

right

Right position.

channel_info

List of *ChannelInfo*.

signature

Blend mode signature b'8BIM'.

blend_mode

Blend mode key. See *BlendMode*.

opacity
Opacity, 0 = transparent, 255 = opaque.

clipping
Clipping, 0 = base, 1 = non-base. See *Clipping*.

flags
See *LayerFlags*.

mask_data
MaskData or None.

blending_ranges
See *LayerBlendingRanges*.

name
Layer name.

tagged_blocks
See *TaggedBlocks*.

channel_sizes
List of channel sizes: [(width, height)].

height
Height of the layer.

width
Width of the layer.

3.19.6 LayerFlags

class `psd_tools.psd.layer_and_mask.LayerFlags` (*transparency_protected: bool = False, visible: bool = True, obsolete: bool = False, photoshop_v5_later: bool = True, pixel_data_irrelevant: bool = False, undocumented_1: bool = False, undocumented_2: bool = False, undocumented_3: bool = False*)

Layer flags.

Note there are undocumented flags. Maybe photoshop version.

transparency_protected
visible
pixel_data_irrelevant

3.19.7 LayerBlendingRanges

class `psd_tools.psd.layer_and_mask.LayerBlendingRanges` (*composite_ranges=NOTHING, channel_ranges=NOTHING*)

Layer blending ranges.

All ranges contain 2 black values followed by 2 white values.

composite_ranges
List of composite gray blend source and destination ranges.

channel_ranges

List of channel source and destination ranges.

3.19.8 MaskData

```
class psd_tools.psd.layer_and_mask.MaskData (top: int = 0, left: int = 0, bot-  
tom: int = 0, right: int = 0, back-  
ground_color: int = 0, flags=NOTHING,  
parameters=None, real_flags=None,  
real_background_color=None,  
real_top=None, real_left=None,  
real_bottom=None, real_right=None)
```

Mask data.

Real user mask is a final composite mask of vector and pixel masks.

top

Top position.

left

Left position.

bottom

Bottom position.

right

Right position.

background_color

Default color. 0 or 255.

flags

See *MaskFlags*.

parameters

MaskParameters or None.

real_flags

Real user mask flags. See *MaskFlags*.

real_background_color

Real user mask background. 0 or 255.

real_top

Top position of real user mask.

real_left

Left position of real user mask.

real_bottom

Bottom position of real user mask.

real_right

Right position of real user mask.

height

Height of the mask.

real_height

Height of real user mask.

real_width
Width of real user mask.

width
Width of the mask.

3.19.9 MaskFlags

```
class psd_tools.psd.layer_and_mask.MaskFlags (pos_relative_to_layer: bool = False,  
mask_disabled: bool = False, invert_mask:  
bool = False, user_mask_from_render:  
bool = False, parameters_applied: bool  
= False, undocumented_1: bool = False,  
undocumented_2: bool = False, undocu-  
mented_3: bool = False)
```

Mask flags.

pos_relative_to_layer
Position relative to layer.

mask_disabled
Layer mask disabled.

invert_mask
Invert layer mask when blending (Obsolete).

user_mask_from_render
The user mask actually came from rendering other data.

parameters_applied
The user and/or vector masks have parameters applied to them.

3.19.10 MaskParameters

```
class psd_tools.psd.layer_and_mask.MaskParameters (user_mask_density=None,  
user_mask_feather=None, vec-  
tor_mask_density=None, vec-  
tor_mask_feather=None)
```

Mask parameters.

user_mask_density

user_mask_feather

vector_mask_density

vector_mask_feather

3.19.11 ChannelInfo

```
class psd_tools.psd.layer_and_mask.ChannelInfo (id=<ChannelID.CHANNEL_0: 0>,  
length: int = 0)
```

Channel information.

id
Channel ID: 0 = red, 1 = green, etc.; -1 = transparency mask; -2 = user supplied layer mask, -3 real user supplied layer mask (when both a user mask and a vector mask are present). See [ChannelID](#).

length

Length of the corresponding channel data.

3.19.12 ChannelImageData

class `psd_tools.psd.layer_and_mask.ChannelImageData` (*items=NOTHING*)

List of channel data list.

This size of this list corresponds to the size of *LayerRecords*. Each item corresponds to the channels of each layer.

See *ChannelDataList*.

3.19.13 ChannelDataList

class `psd_tools.psd.layer_and_mask.ChannelDataList` (*items=NOTHING*)

List of channel image data, corresponding to each color or alpha.

See *ChannelData*.

3.19.14 ChannelData

class `psd_tools.psd.layer_and_mask.ChannelData` (*compression=<Compression.RAW: 0>*,
data: bytes = b'')

Channel data.

compression

Compression type. See *Compression*.

data

Data.

get_data (*width, height, depth, version=1*)

Get decompressed channel data.

Parameters

- **width** – width.
- **height** – height.
- **depth** – bit depth of the pixel.
- **version** – psd file version.

Return type bytes

set_data (*data, width, height, depth, version=1*)

Set raw channel data and compress to store.

Parameters

- **data** – raw data bytes to write.
- **compression** – compression type, see *Compression*.
- **width** – width.
- **height** – height.
- **depth** – bit depth of the pixel.

- **version** – psd file version.

3.20 psd_tools.psd.linked_layer

Linked layer structure.

3.20.1 LinkedLayers

class psd_tools.psd.linked_layer.**LinkedLayers** (*items=NOTHING*)
List of `LinkedLayer` structure. See [LinkedLayer](#).

3.20.2 LinkedLayer

class psd_tools.psd.linked_layer.**LinkedLayer** (*kind=<LinkedLayerType.ALIAS: b'liFA'>, version=1, uuid: str = "", filename: str = "", filetype: bytes = b'x00x00x00x00', creator: bytes = b'x00x00x00x00', filesize=None, open_file=None, linked_file=None, timestamp=None, data=None, child_id=None, mod_time=None, lock_state=None*)

LinkedLayer structure.

kind
version
uuid
filename
filetype
creator
filesize
open_file
linked_file
timestamp
data
child_id
mod_time
lock_state

3.21 psd_tools.psd.patterns

Patterns structure.

3.21.1 Patterns

class `psd_tools.psd.patterns.Patterns` (*items=NOTHING*)
List of Pattern structure. See *Pattern*.

3.21.2 Pattern

class `psd_tools.psd.patterns.Pattern` (*version: int = 1, image_mode=<enum 'ColorMode'>, point=None, name: str = "", pattern_id: str = "", color_table=None, data=None*)

Pattern structure.

version

image_mode

See *ColorMode*

point

Size in tuple.

name

str name of the pattern.

pattern_id

ID of this pattern.

color_table

Color table if the mode is INDEXED.

data

See *VirtualMemoryArrayList*

3.21.3 VirtualMemoryArrayList

class `psd_tools.psd.patterns.VirtualMemoryArrayList` (*version: int = 3, rectangle=None, channels=None*)

VirtualMemoryArrayList structure. Container of channels.

version

rectangle

Tuple of *int*

channels

List of *VirtualMemoryArray*

3.21.4 VirtualMemoryArray

class `psd_tools.psd.patterns.VirtualMemoryArray` (*is_written=0, depth=None, rectangle=None, pixel_depth=None, compression=<Compression.RAW: 0>, data=b""*)

VirtualMemoryArrayList structure, corresponding to each channel.

is_written

depth

rectangle
pixel_depth
compression
data
get_data (*version=1*)
 Get decompressed bytes.
set_data (*size, data, depth, compression=0, version=1*)
 Set bytes.

3.22 psd_tools.psd.tagged_blocks

Tagged block data structure.

Todo: Support the following tagged blocks: `Tag.PATTERN_DATA`, `Tag.TYPE_TOOL_INFO`, `Tag.LAYER`, `Tag.ALPHA`

3.22.1 TaggedBlocks

class `psd_tools.psd.tagged_blocks.TaggedBlocks` (*items=NOTHING*)

Dict of tagged block items.

See *Tag* for available keys.

Example:

```

from psd_tools.constants import Tag

# Iterate over fields
for key in tagged_blocks:
    print(key)

# Get a field
value = tagged_blocks.get_data(Tag.TYPE_TOOL_OBJECT_SETTING)
  
```

3.22.2 TaggedBlock

class `psd_tools.psd.tagged_blocks.TaggedBlock` (*signature=b'8BIM', key=b'', data=b''*)

Layer tagged block with extra info.

key

4-character code. See *Tag*

data

Data.

3.22.3 Annotations

class `psd_tools.psd.tagged_blocks.Annotations` (*items=NOTHING, major_version: int = 2, minor_version: int = 1*)

List of Annotation, see :py:class: `.Annotation`.

major_version

minor_version

3.22.4 Annotation

class `psd_tools.psd.tagged_blocks.Annotation` (*kind: bytes = b'txtA', is_open: int = 0, flags: int = 0, optional_blocks: int = 1, icon_location=NOTHING, popup_location=NOTHING, color=NOTHING, author: str = "", name: str = "", mod_date: str = "", marker: bytes = b'txtC', data: bytes = b''*)

Annotation structure.

kind

is_open

3.22.5 Bytes

class `psd_tools.psd.tagged_blocks.Bytes` (*value: bytes = b'x00x00x00x00'*)

Bytes structure.

value

3.22.6 ChannelBlendingRestrictionsSetting

class `psd_tools.psd.tagged_blocks.ChannelBlendingRestrictionsSetting` (*items=NOTHING*)

ChannelBlendingRestrictionsSetting structure.

List of restricted channel numbers (int).

3.22.7 FilterMask

class `psd_tools.psd.tagged_blocks.FilterMask` (*color=None, opacity: int = 0*)

FilterMask structure.

color

opacity

3.22.8 MetadataSettings

class `psd_tools.psd.tagged_blocks.MetadataSettings` (*items=NOTHING*)

MetadataSettings structure.

3.22.9 MetadataSetting

```
class psd_tools.psd.tagged_blocks.MetadataSetting (signature: bytes = b'8BIM', key: bytes = b'', copy_on_sheet: bool = False, data: bytes = b'')
```

MetadataSetting structure.

3.22.10 PixelSourceData2

```
class psd_tools.psd.tagged_blocks.PixelSourceData2 (items=NOTHING)
```

PixelSourceData2 structure.

3.22.11 PlacedLayerData

```
class psd_tools.psd.tagged_blocks.PlacedLayerData (kind: bytes = b'plcL', version: int = 3, uuid: bytes = "", page: int = 0, total_pages: int = 0, anti_alias: int = 0, layer_type=<PlacedLayerType.UNKNOWN: 0>, transform: tuple = (0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0), warp=None)
```

PlacedLayerData structure.

3.22.12 ProtectedSetting

```
class psd_tools.psd.tagged_blocks.ProtectedSetting (value=0)
```

ProtectedSetting structure.

3.22.13 ReferencePoint

```
class psd_tools.psd.tagged_blocks.ReferencePoint (items=NOTHING)
```

ReferencePoint structure.

3.22.14 SectionDividerSetting

```
class psd_tools.psd.tagged_blocks.SectionDividerSetting (kind=<SectionDivider.OTHER: 0>, signature=None, blend_mode=None, sub_type=None)
```

SectionDividerSetting structure.

```
kind
blend_mode
sub_type
```

3.22.15 SheetColorSetting

class `psd_tools.psd.tagged_blocks.SheetColorSetting` (*value=0*)
SheetColorSetting value.

This setting represents color label in the layers panel in Photoshop UI.

value

3.22.16 SmartObjectLayerData

class `psd_tools.psd.tagged_blocks.SmartObjectLayerData` (*kind: bytes = b'soLD',
version: int = 5, data:
psd_tools.psd.descriptor.DescriptorBlock
= None*)

VersionedDescriptorBlock structure.

kind

version

data

3.22.17 TypeToolObjectSetting

class `psd_tools.psd.tagged_blocks.TypeToolObjectSetting` (*version: int = 1, transform:
tuple = (0.0, 0.0, 0.0, 0.0,
0.0, 0.0), text_version:
int = 1, text_data:
psd_tools.psd.descriptor.DescriptorBlock
= None, warp_version:
int = 1, warp:
psd_tools.psd.descriptor.DescriptorBlock
= None, left: int = 0, top:
int = 0, right: int = 0,
bottom: int = 0*)

TypeToolObjectSetting structure.

version

transform

Tuple of affine transform parameters (xx, xy, yx, yy, tx, ty).

text_version

text_data

warp_version

warp

left

top

right

bottom

3.22.18 UserMask

class `psd_tools.psd.tagged_blocks.UserMask` (*color=None, opacity: int = 0, flag: int = 128*)
UserMask structure.

color

opacity

flag

3.23 psd_tools.psd.vector

Vector mask, path, and stroke structure.

3.23.1 Path

class `psd_tools.psd.vector.Path` (*items=NOTHING*)
List-like Path structure. Elements are either PathFillRule, InitialFillRule, ClipboardRecord, ClosedPath, or OpenPath.

3.23.2 Subpath

class `psd_tools.psd.vector.Subpath` (*items=NOTHING, operation: int = 1, unknown1: int = 1, unknown2: int = 0, index: int = 0, unknown3: bytes = b'x00x00x00x00x00x00x00x00x00x00'*)

Subpath element. This is a list of Knot objects.

Note: There are undocumented data associated with this structure.

operation

int value indicating how multiple subpath should be combined:

1: Or (union), 2: Not-Or, 3: And (intersect), 0: Xor (exclude)

The first path element is applied to the background surface. Intersection does not have strokes.

index

int index that specifies corresponding origination object.

is_closed()

Returns whether if the path is closed or not.

Returns *bool*.

3.23.3 Knot

class `psd_tools.psd.vector.Knot` (*preceding: tuple = (0.0, 0.0), anchor: tuple = (0.0, 0.0), leaving: tuple = (0.0, 0.0)*)

Knot element consisting of 3 control points for Bezier curves.

preceding

(y, x) tuple of preceding control point in relative coordinates.

anchor

(y, x) tuple of anchor point in relative coordinates.

leaving

(y, x) tuple of leaving control point in relative coordinates.

3.23.4 ClipboardRecord

```
class psd_tools.psd.vector.ClipboardRecord(top: int = 0, left: int = 0, bottom: int = 0,  
right: int = 0, resolution: int = 0)
```

Clipboard record.

top

Top position in *int*

left

Left position in *int*

bottom

Bottom position in *int*

right

Right position in *int*

resolution

Resolution in *int*

3.23.5 PathFillRule

```
class psd_tools.psd.vector.PathFillRule  
Path fill rule record, empty.
```

3.23.6 InitialFillRule

```
class psd_tools.psd.vector.InitialFillRule(value=0)  
Initial fill rule record.
```

rule

A value of 1 means that the fill starts with all pixels. The value will be either 0 or 1.

3.23.7 VectorMaskSetting

```
class psd_tools.psd.vector.VectorMaskSetting(version: int = 3, flags: int = 0, path=None)  
VectorMaskSetting structure.
```

version**path**

List of *Subpath* objects.

disable

Flag to indicate that the vector mask is disabled.

invert

Flag to indicate that the vector mask is inverted.

not_link

Flag to indicate that the vector mask is not linked.

3.23.8 VectorStrokeContentSetting

```
class psd_tools.psd.vector.VectorStrokeContentSetting (items=NOTHING, name: str
= "", classID=b'null', key:
bytes = b'x00x00x00x00',
version: int = 1)
```

Dict-like Descriptor-based structure. See *Descriptor*.

key

version

3.24 psd_tools.terminology

Constants for descriptor.

This file is automatically generated by tools/extract_terminology.py

3.24.1 Klass

```
class psd_tools.terminology.Klass
```

Klass definitions extracted from PITerminology.h.

See <https://www.adobe.com/devnet/photoshop/sdk.html>

Action = b'Actn'

ActionSet = b'ASet'

Adjustment = b'Adjs'

AdjustmentLayer = b'AdjL'

AirbrushTool = b'AbTl'

AlphaChannelOptions = b'ACHl'

AntiAliasedPICTAcquire = b'AntA'

Application = b'capp'

Arrowhead = b'cArw'

ArtHistoryBrushTool = b'ABTl'

Assert = b'Asrt'

AssumedProfile = b'AssP'

BMPFormat = b'BMPF'

BackLight = b'BakL'

BackgroundEraserTool = b'SETl'

BackgroundLayer = b'BckL'

BevelEmboss = b'ebbl'

```
BitmapMode = b'BtmM'  
BlendRange = b'Blnd'  
BlurTool = b'BlTl'  
BookColor = b'BkCl'  
BrightnessContrast = b'BrgC'  
Brush = b'Brsh'  
BurnInTool = b'BrTl'  
CMYKColor = b'CMYC'  
CMYKColorMode = b'CMYM'  
CMYKSetup = b'CMYS'  
CachePrefs = b'CchP'  
Calculation = b'Clcl'  
Channel = b'Chnl'  
ChannelMatrix = b'ChMx'  
ChannelMixer = b'ChnM'  
ChromeFX = b'ChFX'  
CineonFormat = b'SDPX'  
ClippingInfo = b'Clpo'  
ClippingPath = b'ClpP'  
CloneStampTool = b'ClTl'  
Color = b'Clr '  
ColorBalance = b'ClrB'  
ColorCast = b'ColC'  
ColorCorrection = b'ClrC'  
ColorPickerPrefs = b'ClrK'  
ColorSampler = b'ClSm'  
ColorStop = b'Clrt'  
Command = b'Cmdn'  
Contour = b'FxSc'  
CurvePoint = b'CrPt'  
Curves = b'Crvs'  
CurvesAdjustment = b'CrvA'  
CustomPalette = b'Cstl'  
CustomPhosphors = b'CstP'  
CustomWhitePoint = b'CstW'  
DicomFormat = b'Dicm'
```



```
DisplayPrefs = b'DspP'  
Document = b'Dcmn'  
DodgeTool = b'DdTl'  
DropShadow = b'DrSh'  
DuotoneInk = b'DtnI'  
DuotoneMode = b'DtnM'  
EPSTIFFPreview = b'EPST'  
EPSPICTPreview = b'EPSC'  
EPSTIFFPreview = b'EPST'  
Element = b'Elmn'  
Ellipse = b'Elps'  
EraserTool = b'ErTl'  
Export = b'Expr'  
FileInfo = b'FlIn'  
FileSavePrefs = b'FlSv'  
FillFlash = b'FilF'  
FlashPixFormat = b'FlsP'  
FontDesignAxes = b'FntD'  
Format = b'Fmt '  
FrameFX = b'FrFX'  
GIF89aExport = b'GF89'  
GIFFormat = b'GFFr'  
GeneralPrefs = b'GnrP'  
GlobalAngle = b'gblA'  
Gradient = b'Grdn'  
GradientFill = b'Grdf'  
GradientMap = b'GdMp'  
GradientTool = b'GrTl'  
GraySetup = b'GrSt'  
Grayscale = b'Grsc'  
GrayscaleMode = b'Grys'  
Guide = b'Gd '  
GuidesPrefs = b'GdPr'  
HSBColor = b'HSBC'  
HSBColorMode = b'HSBM'  
HalftoneScreen = b'Hlfs'
```

```
HalftoneSpec = b'Hlfp'  
HistoryBrushTool = b'HBT1'  
HistoryPrefs = b'CHsP'  
HistoryState = b'HstS'  
HueSatAdjustment = b'HStA'  
HueSatAdjustmentV2 = b'Hst2'  
HueSaturation = b'HStr'  
IFFFormat = b'IFFF'  
IllustratorPathsExport = b'IlsP'  
ImagePoint = b'ImgP'  
Import = b'Impr'  
IndexedColorMode = b'IndC'  
InkTransfer = b'InkT'  
InnerGlow = b'IrGl'  
InnerShadow = b'IrSh'  
InterfaceColor = b'IClr'  
Invert = b'Invr'  
JPEGFormat = b'JPEG'  
LabColor = b'LbCl'  
LabColorMode = b'LbCM'  
Layer = b'Lyr '  
LayerEffects = b'Lefx'  
LayerFXVisible = b'lfxv'  
Levels = b'Lvls'  
LevelsAdjustment = b'LvlA'  
LightSource = b'LghS'  
Line = b'Ln '  
MacPaintFormat = b'McPn'  
MagicEraserTool = b'MgEr'  
MagicPoint = b'Mgcp'  
Mask = b'Msk '  
MenuItem = b'Mn '  
Mode = b'Md '  
MultichannelMode = b'MltC'  
Null = b'null'  
ObsoleteTextLayer = b'TxLy'
```

```
Offset = b'Ofst'  
Opacity = b'Opac'  
OuterGlow = b'OrGl'  
PDFGenericFormat = b'PDFG'  
PICTFileFormat = b'PICF'  
PICTResourceFormat = b'PICR'  
PNGFormat = b'PNGF'  
PageSetup = b'PgSt'  
PaintbrushTool = b'PbTl'  
Path = b'Path'  
PathComponent = b'PaCm'  
PathPoint = b'Pthp'  
Pattern = b'PttR'  
PatternStampTool = b'PaTl'  
PencilTool = b'PcTl'  
Photoshop20Format = b'Pht2'  
Photoshop35Format = b'Pht3'  
PhotoshopDCS2Format = b'PhD2'  
PhotoshopDCSFormat = b'PhD1'  
PhotoshopEPSFormat = b'PhtE'  
PhotoshopPDFFormat = b'PhtP'  
Pixel = b'Pxel'  
PixelPaintFormat = b'Pxlp'  
PluginPrefs = b'PlgP'  
Point = b'Pnt '  
Point16 = b'Pnt1'  
Polygon = b'Plgn'  
Posterize = b'Pstr'  
Preferences = b'GnrP'  
ProfileSetup = b'Prfs'  
Property = b'Prpr'  
RGBColor = b'RGBC'  
RGBColorMode = b'RGBM'  
RGBSetup = b'RGBt'  
Range = b'Rang'  
RawFormat = b'Rw '
```

```
Rect16 = b'Rct1'  
Rectangle = b'Rctn'  
SaturationTool = b'SrTl'  
ScitexCTFormat = b'Sctx'  
Selection = b'csel'  
SelectiveColor = b'SlcC'  
ShapingCurve = b'ShpC'  
SharpenTool = b'ShTl'  
SingleColumn = b'Sngc'  
SingleRow = b'Sngr'  
SmudgeTool = b'SmTl'  
Snapshot = b'SnpS'  
SolidFill = b'SoFi'  
SpotColorChannel = b'SCch'  
Style = b'StyC'  
SubPath = b'Sbpl'  
TIFFFormat = b'TIFF'  
TargaFormat = b'TrgF'  
TextLayer = b'TxLr'  
TextStyle = b'TxtS'  
TextStyleRange = b'Txtt'  
Threshold = b'Thrs'  
Tool = b'Tool'  
TransferPoint = b'DtnP'  
TransferSpec = b'Trfp'  
TransparencyPrefs = b'TrnP'  
TransparencyStop = b'TrnS'  
UnitsPrefs = b'UntP'  
UnspecifiedColor = b'UnsC'  
Version = b'Vrsn'  
WebdavPrefs = b'Wdbv'  
XYColor = b'XYC'  
  
_generate_next_value_(start, count, last_values)  
_member_map_ = {'Action': <Klass.Action: b'Actn'>, 'ActionSet': <Klass.ActionSet: b'ActnS'>}  
_member_names_ = ['Action', 'ActionSet', 'Adjustment', 'AdjustmentLayer', 'AirbrushTool']
```

```

_member_type_
    alias of builtins.bytes
_value2member_map_ = {b'ABT1': <Class.ArtHistoryBrushTool: b'ABT1'>, b'ACH1': <Klas

```

3.24.2 Enum

class psd_tools.terminology.Enum

Enum definitions extracted from PITerminology.h.

See <https://www.adobe.com/devnet/photoshop/sdk.html>

```

A = b'A '
ADSBottoms = b'AdBt'
ADSCentersH = b'AdCH'
ADSCentersV = b'AdCV'
ADSHorizontal = b'AdHr'
ADSLefts = b'AdLf'
ADSRights = b'AdRg'
ADSTops = b'AdTp'
ADSVertical = b'AdVr'
ASCII = b'ASCII'
AboutApp = b'AbAp'
AbsColorimetric = b'AClr'
Absolute = b'Absl'
ActualPixels = b'ActP'
Adaptive = b'Adpt'
Add = b'Add '
AdjustmentOptions = b'AdjO'
AdobeRGB1998 = b'SMPT'
AirbrushEraser = b'Arbs'
All = b'Al '
Amiga = b'Amga'
AmountHigh = b'amHi'
AmountLow = b'amLo'
AmountMedium = b'amMd'
Angle = b'Angl'
AntiAliasCrisp = b'AnCr'
AntiAliasHigh = b'AnHi'
AntiAliasLow = b'AnLo'
AntiAliasMedium = b'AnMd'

```

```
AntiAliasNone = b'Anno'  
AntiAliasSmooth = b'AnSm'  
AntiAliasStrong = b'AnSt'  
Any = b'Any '  
AppleRGB = b'AppR'  
ApplyImage = b'AplI'  
AroundCenter = b'ArnC'  
Arrange = b'Arng'  
Ask = b'Ask '  
AskWhenOpening = b'AskW'  
B = b'B '  
Back = b'Back'  
Background = b'Bckg'  
BackgroundColor = b'BckC'  
Backward = b'Bckw'  
Behind = b'Bhnd'  
Best = b'Bst '  
Better = b'Dthb'  
Bicubic = b'Bcbc'  
Bilinear = b'Blnr'  
Binary = b'Bnry'  
BitDepth1 = b'BD1 '  
BitDepth16 = b'BD16'  
BitDepth24 = b'BD24'  
BitDepth32 = b'BD32'  
BitDepth4 = b'BD4 '  
BitDepth8 = b'BD8 '  
BitDepthA1R5G5B5 = b'1565'  
BitDepthA4R4G4B4 = b'4444'  
BitDepthR5G6B5 = b'x565'  
BitDepthX4R4G4B4 = b'x444'  
BitDepthX8R8G8B8 = b'x888'  
Bitmap = b'Btmp'  
Black = b'Blck'  
BlackAndWhite = b'BanW'  
BlackBody = b'BlcB'
```

Blacks = b'Blks'
Blast = b'Blst'
BlockEraser = b'Blk '
Blocks = b'Blks'
Blue = b'Bl '
Blues = b'Bls '
Bottom = b'Bttm'
BrushDarkRough = b'BrDR'
BrushLightRough = b'BrsL'
BrushSimple = b'BrSm'
BrushSize = b'BrsS'
BrushSparkle = b'BrSp'
BrushWideBlurry = b'BrbW'
BrushWideSharp = b'BrsW'
BrushesAppend = b'BrsA'
BrushesDefine = b'BrsD'
BrushesDelete = b'Brsf'
BrushesLoad = b'Brsd'
BrushesNew = b'BrsN'
BrushesOptions = b'BrsO'
BrushesReset = b'BrsR'
BrushesSave = b'Brsv'
Builtin = b'Bltn'
BurnInH = b'BrnH'
BurnInM = b'BrnM'
BurnInS = b'BrnS'
ButtonMode = b'BtnM'
CIERGB = b'CRGB'
CMYK = b'CMYK'
CMYK64 = b'CMSF'
CMYKColor = b'ECMY'
Calculations = b'Clcl'
Cascade = b'Cscd'
Center = b'Ctr'
CenterGlow = b'SrcC'
CenteredFrame = b'CtrF'

```
ChannelOptions = b'ChnO'  
ChannelsPaletteOptions = b'ChnP'  
CheckerboardLarge = b'ChcL'  
CheckerboardMedium = b'ChcM'  
CheckerboardNone = b'ChcN'  
CheckerboardSmall = b'ChcS'  
Clear = b'Clar'  
ClearGuides = b'ClrG'  
Clipboard = b'Clpb'  
ClippingPath = b'ClpP'  
CloseAll = b'ClsA'  
CoarseDots = b'CrSD'  
Color = b'Clr '  
ColorBurn = b'CBrn'  
ColorDodge = b'CDdg'  
ColorMatch = b'ClMt'  
ColorNoise = b'ClNs'  
Colorimetric = b'Clrm'  
Composite = b'Cmps'  
ContourCustom = b'sp06'  
ContourDouble = b'sp04'  
ContourGaussian = b'sp02'  
ContourLinear = b'sp01'  
ContourSingle = b'sp03'  
ContourTriple = b'sp05'  
ConvertToCMYK = b'CnvC'  
ConvertToGray = b'CnvG'  
ConvertToLab = b'CnvL'  
ConvertToRGB = b'CnvR'  
CreateDuplicate = b'CrtD'  
CreateInterpolation = b'CrtI'  
Cross = b'CrS '  
CurrentLayer = b'CrrL'  
Custom = b'Cst '  
CustomPattern = b'Cstm'  
CustomStops = b'CstS'
```



```
Cyan = b'Cyn '
Cyans = b'Cyns'
Dark = b'Drk '
Darken = b'Drkn'
DarkenOnly = b'DrkO'
DashedLines = b'DshL'
Desaturate = b'Dstt'
Diamond = b'Dmnd'
Difference = b'Dfrn'
Diffusion = b'Dfsn'
DiffusionDither = b'DfnD'
DisplayCursorsPreferences = b'DspC'
Dissolve = b'Dslv'
Distort = b'Dstr'
DodgeH = b'DdgH'
DodgeM = b'DdgM'
DodgeS = b'DdgS'
Dots = b'Dts '
Draft = b'Drft'
Duotone = b'Dtn '
EBUITU = b'EBT '
EdgeGlow = b'SrcE'
EliminateEvenFields = b'ElmE'
EliminateOddFields = b'ElmO'
Ellipse = b'Elps'
Emboss = b'Embs'
Exact = b'Exct'
Exclusion = b'Xclu'
FPXCompressLossyJPEG = b'FxJP'
FPXCompressNone = b'FxNo'
Faster = b'Dthf'
File = b'Fle '
FileInfo = b'FlIn'
FillBack = b'FlBc'
FillFore = b'FlFr'
FillInverse = b'FlIn'
```

FillSame = b'FlSm'
FineDots = b'FnDt'
First = b'Frst'
FirstIdle = b'FrId'
FitOnScreen = b'FtOn'
ForegroundColor = b'FrgC'
Forward = b'Frwr'
FreeTransform = b'FrTr'
Front = b'Frnt'
FullDocument = b'Flld'
FullSize = b'FlSz'
GIFColorFileColorTable = b'GFCT'
GIFColorFileColors = b'GFCF'
GIFColorFileMicrosoftPalette = b'GFMS'
GIFPaletteAdaptive = b'GFPA'
GIFPaletteExact = b'GFPE'
GIFPaletteOther = b'GFPO'
GIFPaletteSystem = b'GFPS'
GIFRequiredColorSpaceIndexed = b'GFCI'
GIFRequiredColorSpaceRGB = b'GFRG'
GIFRowOrderInterlaced = b'GFIN'
GIFRowOrderNormal = b'GFNI'
GaussianDistribution = b'Gsn '
GeneralPreferences = b'GnrP'
Good = b'Gd '
GradientFill = b'GrFl'
GrainClumped = b'GrnC'
GrainContrasty = b'GrCn'
GrainEnlarged = b'GrnE'
GrainHorizontal = b'GrnH'
GrainRegular = b'GrnR'
GrainSoft = b'GrSf'
GrainSpeckle = b'GrSp'
GrainSprinkles = b'GrSr'
GrainStippled = b'GrSt'
GrainVertical = b'GrnV'

```
GrainyDots = b'GrnD'  
Graphics = b'Grp '  
Gray = b'Gry '  
Gray16 = b'GryX'  
Gray18 = b'Gr18'  
Gray22 = b'Gr22'  
Gray50 = b'Gr50'  
GrayScale = b'Gryc'  
Grayscale = b'Grys'  
Green = b'Grn '  
Greens = b'Grns'  
GuidesGridPreferences = b'GudG'  
HDTV = b'HDTV'  
HSBColor = b'HSB1'  
HSLColor = b'HSLC'  
HalftoneFile = b'Hlff'  
HalftoneScreen = b'Hlfs'  
HardLight = b'HrdL'  
Heavy = b'Hvy '  
HideAll = b'HdAl'  
HideSelection = b'HdSl'  
High = b'High'  
HighQuality = b'Hgh '  
Highlights = b'Hghl'  
Histogram = b'Hstg'  
History = b'Hsty'  
HistoryPaletteOptions = b'HstO'  
HistoryPreferences = b'HstP'  
Horizontal = b'Hrzn'  
HorizontalOnly = b'Hrzo'  
Hue = b'H '  
IBMPc = b'IBMP'  
ICC = b'ICC '  
Icon = b'Icn '  
IdleVM = b'IdVM'  
Ignore = b'Ignr'
```

```
Image = b'Img '  
ImageCachePreferences = b'ImgP'  
IndexedColor = b'Indl'  
InfoPaletteOptions = b'InfP'  
InfoPaletteToggleSamplers = b'InfT'  
InnerBevel = b'InrB'  
InsetFrame = b'InsF'  
Inside = b'Insd'  
JPEG = b'JPEG'  
JustifyAll = b'JstA'  
JustifyFull = b'JstF'  
KeepProfile = b'KPro'  
KeyboardPreferences = b'KybP'  
Lab = b'Lab '  
Lab48 = b'LbCF'  
LabColor = b'LbCl'  
Large = b'Lrg '  
Last = b'Lst '  
LastFilter = b'LstF'  
LayerOptions = b'LyrO'  
LayersPaletteOptions = b'LyrP'  
Left = b'Left'  
Left_PLUGIN = b'Lft '  
LevelBased = b'LvlB'  
Light = b'Lgt '  
LightBlue = b'LgtB'  
LightDirBottom = b'LDBt'  
LightDirBottomLeft = b'LDBL'  
LightDirBottomRight = b'LDBR'  
LightDirLeft = b'LDLf'  
LightDirRight = b'LDRg'  
LightDirTop = b'LDTp'  
LightDirTopLeft = b'LDTL'  
LightDirTopRight = b'LDTR'  
LightDirectional = b'LghD'  
LightGray = b'LgtG'
```

LightOmni = b'LghO'
LightPosBottom = b'LPBt'
LightPosBottomLeft = b'LPBL'
LightPosBottomRight = b'LPBr'
LightPosLeft = b'LPLf'
LightPosRight = b'LPRg'
LightPosTop = b'LPTp'
LightPosTopLeft = b'LPTL'
LightPosTopRight = b'LPTR'
LightRed = b'LgtR'
LightSpot = b'LghS'
Lighten = b'Lghn'
LightenOnly = b'LghO'
Lightness = b'Lght'
Line = b'Ln '
Linear = b'LnR '
Lines = b'Lns '
Linked = b'Lnkd'
LongLines = b'LngL'
LongStrokes = b'LngS'
Low = b'Low '
LowQuality = b'Lw '
Lower = b'Lwr '
Luminosity = b'Lnms'
MacThumbnail = b'McTh'
Macintosh = b'Mcnt'
MacintoshSystem = b'McnS'
Magenta = b'Mgnt'
Magentas = b'Mgnt'
Mask = b'Msk '
MaskedAreas = b'MskA'
MasterAdaptive = b'MAdp'
MasterPerceptual = b'MPer'
MasterSelective = b'MSel'
Maximum = b'Mxmm'
MaximumQuality = b'Mxm '

```
Maya = b'Maya'  
Medium = b'Mdim'  
MediumBlue = b'MdmB'  
MediumDots = b'MdmD'  
MediumLines = b'MdmL'  
MediumQuality = b'Mdm '  
MediumStrokes = b'MdmS'  
MemoryPreferences = b'MmrP'  
MergeChannels = b'MrgC'  
Merged = b'Mrgd'  
MergedLayers = b'Mrg2'  
MergedLayersOld = b'MrgL'  
Middle = b'Mddl'  
Midtones = b'Mdtn'  
ModeGray = b'MdGr'  
ModeRGB = b'MdRG'  
Monitor = b'Moni'  
MonitorSetup = b'MntS'  
Monotone = b'Mntn'  
Multi72Color = b'72CM'  
Multi72Gray = b'72GM'  
MultiNoCompositePS = b'NCmM'  
Multichannel = b'Mlth'  
Multiply = b'Mltp'  
NTSC = b'NTSC'  
NavigatorPaletteOptions = b'NvgP'  
NearestNeighbor = b'Nrst'  
NetscapeGray = b'NsGr'  
Neutrals = b'Ntrl'  
NewView = b'NwVw'  
Next = b'Nxt '  
Nikon = b'Nkn '  
Nikon105 = b'Nkn1'  
No = b'N '  
NoCompositePS = b'NCmp'  
Normal = b'Nrml'
```

```
NormalPath = b'NrmP'  
Null = b'null'  
OS2 = b'OS2 '  
Off = b'Off '  
On = b'On '  
OpenAs = b'OpAs'  
Orange = b'Orng'  
OutFromCenter = b'OtFr'  
OutOfGamut = b'OtOf'  
OuterBevel = b'OtrB'  
OutsetFrame = b'OutF'  
Outside = b'Otsd'  
Overlay = b'Ovrl'  
P22EBU = b'P22B'  
PNGFilterAdaptive = b'PGAd'  
PNGFilterAverage = b'PGAv'  
PNGFilterNone = b'PGNo'  
PNGFilterPaeth = b'PGPt'  
PNGFilterSub = b'PGSb'  
PNGFilterUp = b'PGUp'  
PNGInterlaceAdam7 = b'PGIA'  
PNGInterlaceNone = b'PGIN'  
PagePosCentered = b'PgPC'  
PagePosTopLeft = b'PgTL'  
PageSetup = b'PgSt'  
PaintbrushEraser = b'Pntb'  
PalSecam = b'PlSc'  
PanaVision = b'PnVs'  
PathsPaletteOptions = b'PthP'  
Pattern = b'Ptrn'  
PatternDither = b'PtnD'  
PencilEraser = b'Pncl'  
Perceptual = b'Perc'  
Perspective = b'Prsp'  
PhotoshopPicker = b'Phtk'  
PickCMYK = b'PckC'
```

```
PickGray = b'PckG'  
PickHSB = b'PckH'  
PickLab = b'PckL'  
PickOptions = b'PckO'  
PickRGB = b'PckR'  
PillowEmboss = b'PlEb'  
PixelPaintSize1 = b'PxS1'  
PixelPaintSize2 = b'PxS2'  
PixelPaintSize3 = b'PxS3'  
PixelPaintSize4 = b'PxS4'  
Place = b'Plce'  
PlaybackOptions = b'PbkO'  
PluginPicker = b'PlgP'  
PluginsScratchDiskPreferences = b'PlgS'  
PolarToRect = b'PlrR'  
PondRipples = b'PndR'  
Precise = b'Prc '  
PreciseMatte = b'PrBL'  
PreviewBlack = b'PrvB'  
PreviewCMY = b'PrvN'  
PreviewCMYK = b'PrvC'  
PreviewCyan = b'Prvy'  
PreviewMagenta = b'PrvM'  
PreviewOff = b'PrvO'  
PreviewYellow = b'PrvY'  
Previous = b'Prvs'  
Primaries = b'Prim'  
PrintSize = b'PrnS'  
PrintingInksSetup = b'PrnI'  
Purple = b'Prp '  
Pyramids = b'Pyrm'  
QCSAverage = b'Qcsa'  
QCSCorner0 = b'Qcs0'  
QCSCorner1 = b'Qcs1'  
QCSCorner2 = b'Qcs2'  
QCSCorner3 = b'Qcs3'
```



```
QCSIndependent = b'Qcsi'  
QCSSide0 = b'Qcs4'  
QCSSide1 = b'Qcs5'  
QCSSide2 = b'Qcs6'  
QCSSide3 = b'Qcs7'  
Quadtone = b'Qdtn'  
QueryAlways = b'QurA'  
QueryAsk = b'Qurl'  
QueryNever = b'QurN'  
RGB = b'RGB '  
RGB48 = b'RGBF'  
RGBColor = b'RGBC'  
Radial = b'Rdl '  
Random = b'Rndm'  
RectToPolar = b'RctP'  
Red = b'Rd '  
RedrawComplete = b'RdCm'  
Reds = b'Rds '  
Reflected = b'Rflc'  
Relative = b'Rltv'  
Repeat = b'Rpt '  
RepeatEdgePixels = b'RptE'  
RevealAll = b'RvlA'  
RevealSelection = b'RvlS'  
Revert = b'Rvrt'  
Right = b'Rght'  
Rotate = b'Rtte'  
RotoscopingPreferences = b'RtsP'  
Round = b'Rnd '  
RulerCm = b'RrCm'  
RulerInches = b'RrIn'  
RulerPercent = b'RrPr'  
RulerPicas = b'RrPi'  
RulerPixels = b'RrPx'  
RulerPoints = b'RrPt'  
SMPTEC = b'SMPC'
```

```
SRGB = b'SRGB'  
Sample3x3 = b'Smp3'  
Sample5x5 = b'Smp5'  
SamplePoint = b'SmpP'  
Saturate = b'Str '  
Saturation = b'Strt'  
SaveForWeb = b'Svfw'  
Saved = b'Sved'  
SavingFilesPreferences = b'SvnF'  
Scale = b'Scl '  
Screen = b'Scrn'  
ScreenCircle = b'ScrC'  
ScreenDot = b'ScrD'  
ScreenLine = b'ScrL'  
SelectedAreas = b'SlcA'  
Selection = b'Slct'  
Selective = b'Sele'  
SeparationSetup = b'SprS'  
SeparationTables = b'SprT'  
Shadows = b'Shdw'  
ShortLines = b'ShrL'  
ShortStrokes = b'ShSt'  
Single72Color = b'72CS'  
Single72Gray = b'72GS'  
SingleNoCompositePS = b'NCmS'  
Skew = b'Skew'  
SlopeLimitMatte = b'Slmt'  
Small = b'Sml '  
SmartBlurModeEdgeOnly = b'SBME'  
SmartBlurModeNormal = b'SBMN'  
SmartBlurModeOverlayEdge = b'SBMO'  
SmartBlurQualityHigh = b'SBQH'  
SmartBlurQualityLow = b'SBQL'  
SmartBlurQualityMedium = b'SBQM'  
Snapshot = b'Snps'  
SoftLight = b'SftL'
```

```
SoftMatte = b'SfBL'  
SolidColor = b'SClr'  
Spectrum = b'Spct'  
Spin = b'Spn '  
SpotColor = b'Spot'  
Square = b'Sqr '  
Stagger = b'Stgr'  
StampIn = b'In '  
StampOut = b'Out '  
Standard = b'Std '  
StdA = b'StdA'  
StdB = b'StdB'  
StdC = b'StdC'  
StdE = b'StdE'  
StretchToFit = b'StrF'  
StrokeDirHorizontal = b'SDHz '  
StrokeDirLeftDiag = b'SDLd '  
StrokeDirRightDiag = b'SDRD '  
StrokeDirVertical = b'SDVt '  
StylesAppend = b'SlsA '  
StylesDelete = b'Slsf '  
StylesLoad = b'Slsd '  
StylesNew = b'SlsN '  
StylesReset = b'SlsR '  
StylesSave = b'Slsv '  
Subtract = b'Sbtr '  
SwatchesAppend = b'SwtA '  
SwatchesReplace = b'Swtp '  
SwatchesReset = b'SwtR '  
SwatchesSave = b'SwtS '  
SystemPicker = b'SysP '  
TIFF = b'TIFF '  
Tables = b'Tbl '  
Target = b'Trgt '  
TargetPath = b'Trgp '  
TexTypeBlocks = b'TxB1 '
```

```
TexTypeBrick = b'TxBr'  
TexTypeBurlap = b'TxBu'  
TexTypeCanvas = b'TxCa'  
TexTypeFrosted = b'TxFr'  
TexTypeSandstone = b'TxSt'  
TexTypeTinyLens = b'TxTL'  
Threshold = b'Thrh'  
Thumbnail = b'Thmb'  
Tile = b'Tile'  
Tile_PLUGIN = b'Tl '  
ToggleActionsPalette = b'TglA'  
ToggleBlackPreview = b'TgBP'  
ToggleBrushesPalette = b'TglB'  
ToggleCMYKPreview = b'TglC'  
ToggleCMYPreview = b'TgCM'  
ToggleChannelsPalette = b'Tglh'  
ToggleColorPalette = b'Tglc'  
ToggleCyanPreview = b'TgCP'  
ToggleDocumentPalette = b'TgDc'  
ToggleEdges = b'TglE'  
ToggleGamutWarning = b'TglG'  
ToggleGrid = b'TgGr'  
ToggleGuides = b'Tgld'  
ToggleHistoryPalette = b'TglH'  
ToggleInfoPalette = b'TglI'  
ToggleLayerMask = b'TglM'  
ToggleLayersPalette = b'Tgly'  
ToggleLockGuides = b'TglL'  
ToggleMagentaPreview = b'TgMP'  
ToggleNavigatorPalette = b'TglN'  
ToggleOptionsPalette = b'TglO'  
TogglePaths = b'TglP'  
TogglePathsPalette = b'Tglt'  
ToggleRGBMacPreview = b'TrMp'  
ToggleRGBUncompensatedPreview = b'TrUp'  
ToggleRGBWindowsPreview = b'TrWp'
```

```
ToggleRulers = b'TglR'  
ToggleSnapToGrid = b'TgSn'  
ToggleSnapToGuides = b'TglS'  
ToggleStatusBar = b'Tgls'  
ToggleStylesPalette = b'TgSl'  
ToggleSwatchesPalette = b'Tglw'  
ToggleToolsPalette = b'TglT'  
ToggleYellowPreview = b'TgYP'  
Top = b'Top '  
Transparency = b'Trsp'  
TransparencyGamutPreferences = b'TrnG'  
Transparent = b'Trns'  
Trinitron = b'Trnt'  
Tritone = b'Trtn'  
UIBitmap = b'UBtm'  
UICMYK = b'UCMY'  
UIDuotone = b'UDtn'  
UIGrayscale = b'UGry'  
UIIndexed = b'UInd'  
UILab = b'ULab'  
UIMultichannel = b'UMlt'  
UIRGB = b'URGB'  
Undo = b'Und '  
Uniform = b'Unfm'  
UniformDistribution = b'Unfr'  
UnitsRulersPreferences = b'UntrR'  
Upper = b'Upr '  
UserStop = b'UsrS'  
VMPreferences = b'VMPr'  
Vertical = b'Vrtc'  
VerticalOnly = b'VrtO'  
Violet = b'Vlt '  
WaveSine = b'WvSn'  
WaveSquare = b'WvSq'  
WaveTriangle = b'WvTr'  
Web = b'Web '
```

```
White = b'Wht '
Whites = b'Whts'
WideGamutRGB = b'WRGB'
WidePhosphors = b'Wide'
WinThumbnail = b'WnTh'
Wind = b'Wnd '
Windows = b'Win '
WindowsSystem = b'WndS'
WorkPath = b'WrkP'
Wrap = b'Wrp '
WrapAround = b'WrpA'
Yellow = b'Yllw'
YellowColor = b'Ylw '
Yellows = b'Ylws'
Yes = b'Ys '
Zip = b'ZpEn'
Zoom = b'Zm '
ZoomIn = b'ZmIn'
ZoomOut = b'ZmOt'
_16BitsPerPixel = b'16Bt'
_1BitPerPixel = b'OnBt'
_2BitsPerPixel = b'2Bts'
_32BitsPerPixel = b'32Bt'
_4BitsPerPixel = b'4Bts'
_5000 = b'5000'
_5500 = b'5500'
_6500 = b'6500'
_72Color = b'72Cl'
_72Gray = b'72Gr'
_7500 = b'7500'
_8BitsPerPixel = b'EghB'
_9300 = b'9300'
_None = b'None'
_generate_next_value_(start, count, last_values)
_member_map_ = {'A': <Enum.A: b'A '>, 'ADSBottoms': <Enum.ADSBottoms: b'AdBt'>, 'ADS'
_member_names_ = ['Add', 'AmountHigh', 'AmountLow', 'AmountMedium', 'AntiAliasNone', 'A
```

```

_member_type_
    alias of builtins.bytes
_value2member_map_ = {b'1565': <Enum.BitDepthA1R5G5B5: b'1565'>, b'16Bt': <Enum._16Bt: b'16Bt'>}

```

3.24.3 Event

class psd_tools.terminology.Event

Event definitions extracted from PITerminology.h.

See <https://www.adobe.com/devnet/photoshop/sdk.html>

```

AccentedEdges = b'AcceE'
Add = b'Add '
AddNoise = b'AdNs'
AddTo = b'AddT'
Align = b'Algn'
All = b'All '
AngledStrokes = b'AngS'
ApplyImage = b'AppI'
ApplyStyle = b'ASty'
Assert = b'Asrt'
Average = b'Avrg'
BackLight = b'BacL'
BasRelief = b'BsRl'
Batch = b'Btch'
BatchFromDroplet = b'Btcf'
Blur = b'Blr '
BlurMore = b'BlrM'
Border = b'Brdr'
Brightness = b'BrgC'
CanvasSize = b'CnvS'
ChalkCharcoal = b'ChlC'
ChannelMixer = b'ChnM'
Charcoal = b'Chrc'
Chrome = b'Chrm'
Clear = b'Cler'
Close = b'Cls '
Clouds = b'Clds'
ColorBalance = b'ClrB'
ColorCast = b'ColE'

```

ColorHalftone = b'ClrH'
ColorRange = b'ClrR'
ColoredPencil = b'ClrP'
ConteCrayon = b'CntC'
Contract = b'Cntc'
ConvertMode = b'CnvM'
Copy = b'copy'
CopyEffects = b'CpFX'
CopyMerged = b'CpyM'
CopyToLayer = b'CpTL'
Craquelure = b'Crql'
CreateDroplet = b'CrtD'
Crop = b'Crop'
Crosshatch = b'Crsh'
Crystallize = b'Crst'
Curves = b'Crvs'
Custom = b'Cstm'
Cut = b'cut '
CutToLayer = b'CtTL'
Cutout = b'Ct '
DarkStrokes = b'DrkS'
DeInterlace = b'Dntr'
DefinePattern = b'DfnP'
Defringe = b'Dfrg'
Delete = b'Dlt '
Desaturate = b'Dstt'
Deselect = b'Dslc'
Despeckle = b'Dspc'
DifferenceClouds = b'DfrC'
Diffuse = b'Dfs '
DiffuseGlow = b'DfsG'
DisableLayerFX = b'dlfx'
Displace = b'Dspl'
Distribute = b'Dstr'
Draw = b'Draw'
DryBrush = b'DryB'

```
Duplicate = b'Dplc'  
DustAndScratches = b'DstS'  
Emboss = b'Embs'  
Equalize = b'Eqlz'  
Exchange = b'Exch'  
Expand = b'Expn'  
Export = b'Expr'  
Extrude = b'Extr'  
Facet = b'Fct '  
Fade = b'Fade'  
Feather = b'Fthr'  
Fibers = b'Fbrs'  
Fill = b'Fl '  
FilmGrain = b'FlmG'  
Filter = b'Fltr'  
FindEdges = b'FndE'  
FlattenImage = b'FltI'  
Flip = b'Flip'  
Fragment = b'Frgm'  
Fresco = b'Frsc'  
GaussianBlur = b'GsnB'  
Get = b'getd'  
Glass = b'Gls '  
GlowingEdges = b'Glwe'  
Gradient = b'Grdn'  
GradientMap = b'GrMp'  
Grain = b'Grn '  
GraphicPen = b'GraP'  
Group = b'GrpL'  
Grow = b'Grow'  
HSBHS� = b'HsbP'  
HalftoneScreen = b'Hlfs'  
Hide = b'Hd '  
HighPass = b'HghP'  
HueSaturation = b'HStr'  
ImageSize = b'ImgS'
```

Import = b'Impr'
InkOutlines = b'InkO'
Intersect = b'Intr'
IntersectWith = b'IntW'
Inverse = b'Invs'
Invert = b'Invr'
LensFlare = b'LnsF'
Levels = b'Lvls'
LightingEffects = b'LghE'
Link = b'Lnk '
Make = b'Mk '
Maximum = b'Mxm '
Median = b'Mdn '
MergeLayers = b'Mrg2'
MergeLayersOld = b'MrgL'
MergeSpotChannel = b'MSpt '
MergeVisible = b'MrgV'
Mezzotint = b'Mztn'
Minimum = b'Mnm '
Mosaic = b'Msc '
Mosaic_PLUGIN = b'MscT'
MotionBlur = b'MtnB'
Move = b'move'
NTSCColors = b'NTSC'
NeonGlow = b'NGlw'
Next = b'Nxt '
NotePaper = b'NtPr'
Notify = b'Ntfy'
Null = b'null'
OceanRipple = b'OcnR'
Offset = b'Ofst'
Open = b'Opn '
OpenUntitled = b'OpnU'
PaintDaubs = b'PntD'
PaletteKnife = b'PltK'
Paste = b'past'

```
PasteEffects = b'PaFX'  
PasteInto = b'PstI'  
PasteOutside = b'PstO'  
Patchwork = b'Ptch'  
Photocopy = b'Phtc'  
Pinch = b'Pnch'  
Place = b'Plc '  
Plaster = b'Plst'  
PlasticWrap = b'PlsW'  
Play = b'Ply '  
Pointillize = b'Pntl'  
Polar = b'Plr '  
PosterEdges = b'PstE'  
Posterize = b'Pstr'  
Previous = b'Prvs'  
Print = b'Prnt'  
ProfileToProfile = b'PrfT'  
Purge = b'Prge'  
Quit = b'quit'  
RadialBlur = b'RdlB'  
Rasterize = b'Rstr'  
RasterizeTypeSheet = b'RstT'  
RemoveBlackMatte = b'RmvB'  
RemoveLayerMask = b'RmvL'  
RemoveWhiteMatte = b'RmvW'  
Rename = b'Rnm '  
ReplaceColor = b'RplC'  
Reset = b'Rset'  
Reticulation = b'Rtcl'  
Revert = b'Rvrt'  
Ripple = b'Rple'  
Rotate = b'Rtte'  
RoughPastels = b'RghP'  
Save = b'save'  
Select = b'slct'  
SelectiveColor = b'SlcC'
```

```
Set = b'setd'  
Sharpen = b'Shrp'  
SharpenEdges = b'ShrE'  
SharpenMore = b'ShrM'  
Shear = b'Shr '  
Show = b'Shw '  
Similar = b'Smlr'  
SmartBlur = b'SmrB'  
Smooth = b'Smth'  
SmudgeStick = b'SmdS'  
Solarize = b'Slrz'  
Spatter = b'Spt '  
Spherize = b'Sphr'  
SplitChannels = b'SplC'  
Sponge = b'Spng'  
SprayedStrokes = b'SprS'  
StainedGlass = b'StnG'  
Stamp = b'Stmp'  
Stop = b'Stop'  
Stroke = b'Strk'  
Subtract = b'Sbtr'  
SubtractFrom = b'SbtF'  
Sumie = b'Smie'  
TakeMergedSnapshot = b'TkMr'  
TakeSnapshot = b'TkSn'  
TextureFill = b'TxtF'  
Texturizer = b'Txtz'  
Threshold = b'Thrs'  
Tiles = b'Tls '  
TornEdges = b'TrnE'  
TraceContour = b'TrcC'  
Transform = b'Trnf'  
Trap = b'Trap'  
Twirl = b'Twrl'  
Underpainting = b'Undr'  
Undo = b'undo'
```

```

Ungroup = b'Ungr'
Unlink = b'Unlk'
UnsharpMask = b'UnsM'
Variations = b'Vrtn'
Wait = b'Wait'
WaterPaper = b'WtrP'
Watercolor = b'Wtrc'
Wave = b'Wave'
Wind = b'Wnd '
ZigZag = b'ZgZg'
_3DTransform = b'TdT '
_generate_next_value_(start, count, last_values)
_member_map_ = {'AccentedEdges': <Event.AccentedEdges: b'AcceE'>, 'Add': <Event.Add:
_member_names_ = ['_3DTransform', 'Average', 'ApplyStyle', 'Assert', 'AccentedEdges',
_member_type_
    alias of builtins.bytes
_value2member_map_ = {b'ASty': <Event.ApplyStyle: b'ASty'>, b'AcceE': <Event.Accented

```

3.24.4 Form

class psd_tools.terminology.**Form**

Form definitions extracted from PITerminology.h.

See <https://www.adobe.com/devnet/photoshop/sdk.html>

```

Class = b'Class'
Enumerated = b'Enmr'
Identifier = b'Idnt'
Index = b'indx'
Offset = b'rele'
Property = b'prop'
_generate_next_value_(start, count, last_values)
_member_map_ = {'Class': <Form.Class: b'Class'>, 'Enumerated': <Form.Enumerated: b'
_member_names_ = ['Class', 'Enumerated', 'Identifier', 'Index', 'Offset', 'Property']
_member_type_
    alias of builtins.bytes
_value2member_map_ = {b'Class': <Form.Class: b'Class'>, b'Enmr': <Form.Enumerated: b'

```

3.24.5 Key

class `psd_tools.terminology.Key`

Key definitions extracted from PITerminology.h.

See <https://www.adobe.com/devnet/photoshop/sdk.html>

```
A = b'A '  
Adjustment = b'Adjs'  
Aligned = b'Algd'  
Alignment = b'Algn'  
AllExcept = b'AllE'  
AllPS = b'All '  
AllToolOptions = b'AlTl'  
AlphaChannelOptions = b'ACHn'  
AlphaChannels = b'AlpC'  
AmbientBrightness = b'AmbB'  
AmbientColor = b'AmbC'  
Amount = b'Amnt'  
AmplitudeMax = b'AmMx'  
AmplitudeMin = b'AmMn'  
Anchor = b'Anch'  
Angle = b'Angl'  
Angle1 = b'Ang1'  
Angle2 = b'Ang2'  
Angle3 = b'Ang3'  
Angle4 = b'Ang4'  
AntiAlias = b'AntA'  
Append = b'Appe'  
Apply = b'Aply'  
Area = b'Ar '  
Arrowhead = b'Arrw'  
As = b'As '  
AssetBin = b'Asst'  
AssumedCMYK = b'AssC'  
AssumedGray = b'AssG'  
AssumedRGB = b'AssR'  
At = b'At '  
Auto = b'Auto'
```

AutoContrast = b'AuCo'
AutoErase = b'Atrs'
AutoKern = b'AtKr'
AutoUpdate = b'AtUp'
Axis = b'Axis'
B = b'B '
Background = b'Bckg'
BackgroundColor = b'BckC'
BackgroundLevel = b'BckL'
Backward = b'Bwd '
Balance = b'Blnc'
BaselineShift = b'Bsln'
BeepWhenDone = b'BpWh'
BeginRamp = b'BgnR'
BeginSustain = b'BgnS'
BevelDirection = b'bvld'
BevelEmboss = b'ebbl'
BevelStyle = b'bvls'
BevelTechnique = b'bvlt'
BigNudgeH = b'BgNH'
BigNudgeV = b'BgNV'
BitDepth = b'BtDp'
Black = b'Blck'
BlackClip = b'BlcC'
BlackGeneration = b'Blcn'
BlackGenerationCurve = b'BlcG'
BlackIntensity = b'BlcI'
BlackLevel = b'BlcL'
BlackLimit = b'BlcL'
Bleed = b'Bld '
BlendRange = b'Blnd'
Blue = b'Bl '
BlueBlackPoint = b'B1B1'
BlueGamma = b'B1Gm'
BlueWhitePoint = b'B1Wh'
BlueX = b'B1X '

```
BlueY = b'BLY '  
Blur = b'blur'  
BlurMethod = b'BlrM'  
BlurQuality = b'BlrQ'  
Book = b'Bk '  
BorderThickness = b'BrdT'  
Bottom = b'Btom'  
Brightness = b'Brgh'  
BrushDetail = b'BrsD'  
BrushSize = b'BrsS'  
BrushType = b'BrsT'  
Brushes = b'Brsh'  
BumpAmplitude = b'BmpA'  
BumpChannel = b'BmpC'  
By = b'By '  
Byline = b'Byln'  
BylineTitle = b'BylT'  
ByteOrder = b'BytO'  
CMYKSetup = b'CMYS'  
CachePrefs = b'CchP'  
Calculation = b'Clcl'  
CalibrationBars = b'Clbr'  
Caption = b'Cptn'  
CaptionWriter = b'CptW'  
Category = b'Ctgr'  
CellSize = b'ClSz'  
Center = b'Cntr'  
CenterCropMarks = b'CntC'  
ChalkArea = b'ChlA'  
Channel = b'Chnl'  
ChannelMatrix = b'ChMx'  
ChannelName = b'ChnN'  
Channels = b'Chns'  
ChannelsInterleaved = b'ChnI'  
CharcoalAmount = b'ChAm'  
CharcoalArea = b'ChrA'
```


ChokeMatte = b'Ckmt'
ChromeFX = b'ChFX'
City = b'City'
ClearAmount = b'ClrA'
ClippingPath = b'ClPt'
ClippingPathEPS = b'ClpP'
ClippingPathFlatness = b'ClpF'
ClippingPathIndex = b'ClpI'
ClippingPathInfo = b'Clpg'
CloneSource = b'ClnS'
ClosedSubpath = b'Clsp'
Color = b'Clr '
ColorChannels = b'Clrh'
ColorCorrection = b'ClrC'
ColorIndicates = b'ClrI'
ColorManagement = b'ClMg'
ColorPickerPrefs = b'Clrr'
ColorSpace = b'ClrS'
ColorTable = b'ClrT'
Colorize = b'Clrz'
Colors = b'Clrs'
ColorsList = b'ClrL'
ColumnWidth = b'ClmW'
CommandKey = b'CmdK'
Compensation = b'Cmpn'
Compression = b'Cmpr'
Concavity = b'Cncv'
Condition = b'Cndt'
Constant = b'Cnst'
Constrain = b'Cnst'
ConstrainProportions = b'CnsP'
ConstructionFOV = b'Cfov'
Contiguous = b'Cntg'
Continue = b'Cntn'
Continuity = b'Cnty'
ContourType = b'ShpC'

Contrast = b'Cnt'r'
Convert = b'Cnvr'
Copy = b'Cpy '
Copyright = b'Cpyr'
CopyrightNotice = b'CprN'
CornerCropMarks = b'CrnC'
Count = b'Cnt '
CountryName = b'CntN'
CrackBrightness = b'CrcB'
CrackDepth = b'CrcD'
CrackSpacing = b'CrcS'
CreateLayersFromLayerFX = b'blfl'
Credit = b'Crdt'
Crossover = b'Crss'
Current = b'Crnt'
CurrentHistoryState = b'CrnH'
CurrentLight = b'CrnL'
CurrentToolOptions = b'CrnT'
Curve = b'Crv '
CurveFile = b'CrvF'
Custom = b'Cstm'
CustomForced = b'CstF'
CustomMatte = b'CstM'
CustomPalette = b'CstP'
Cyan = b'Cyn '
DCS = b'DCS '
DPXFormat = b'DPXf'
DarkIntensity = b'DrkI'
Darkness = b'Drkn'
DateCreated = b'DtCr'
Datum = b'Dt '
Definition = b'Dfnt'
Density = b'Dnst'
Depth = b'Dpth'
DestBlackMax = b'Dstl'
DestBlackMin = b'DstB'

```
DestWhiteMax = b'Dstt'  
DestWhiteMin = b'DstW'  
DestinationMode = b'DstM'  
Detail = b'Dtl '  
Diameter = b'Dmtr'  
DiffusionDither = b'Dffd'  
Direction = b'Drct'  
DirectionBalance = b'DrcB'  
DisplaceFile = b'DspF'  
DisplacementMap = b'DspM'  
DisplayPrefs = b'DspP'  
Distance = b'Dstn'  
Distortion = b'Dstr'  
Distribution = b'Dstr'  
Dither = b'Dthr'  
DitherAmount = b'DthA'  
DitherPreserve = b'Dthp'  
DitherQuality = b'Dthq'  
DocumentID = b'DocI'  
DotGain = b'DtGn'  
DotGainCurves = b'DtGC'  
DropShadow = b'DrSh'  
Duplicate = b'Dplc'  
DynamicColorSliders = b'DnmC'  
Edge = b'Edg '  
EdgeBrightness = b'EdgB'  
EdgeFidelity = b'EdgF'  
EdgeIntensity = b'EdgI'  
EdgeSimplicity = b'EdgS'  
EdgeThickness = b'EdgT'  
EdgeWidth = b'EdgW'  
Effect = b'Effc'  
EmbedCMYK = b'EmbC'  
EmbedGray = b'EmbG'  
EmbedLab = b'EmbL'  
EmbedProfiles = b'EmbP'
```

```
EmbedRGB = b'Embr'  
EmulsionDown = b'EmlD'  
EnableGestures = b'EGst'  
Enabled = b'enab'  
Encoding = b'Encd'  
End = b'End '  
EndArrowhead = b'EndA'  
EndRamp = b'EndR'  
EndSustain = b'EndS'  
Engine = b'Engn'  
EraseToHistory = b'ErsT'  
EraserKind = b'ErsK'  
ExactPoints = b'ExcP'  
Export = b'Expr'  
ExportClipboard = b'ExpC'  
Exposure = b'Exps'  
Extend = b'Extd'  
ExtendedQuality = b'EQlt'  
Extension = b'Extn'  
ExtensionsQuery = b'ExtQ'  
ExtrudeDepth = b'ExtD'  
ExtrudeMaskIncomplete = b'ExtM'  
ExtrudeRandom = b'ExtR'  
ExtrudeSize = b'ExtS'  
ExtrudeSolidFace = b'ExtF'  
ExtrudeType = b'ExtT'  
EyeDropperSample = b'EyDr'  
FPXCompress = b'FxCm'  
FPXQuality = b'FxQl'  
FPXSize = b'FxFz'  
FPXView = b'FxFv'  
FadeTo = b'FdT '  
FadeoutSteps = b'FdtS'  
Falloff = b'FlOf'  
Feather = b'Fthr'  
FiberLength = b'FbrL'
```

```
File = b'File'  
FileCreator = b'FlCr'  
FileInfo = b'FlIn'  
FileReference = b'FlR'  
FileSavePrefs = b'FlSP'  
FileType = b'FlTy'  
FilesList = b'flst'  
Fill = b'Fl '  
FillColor = b'FlCl'  
FillNeutral = b'FlNt'  
FilterLayerPersistentData = b'FlPd'  
FilterLayerRandomSeed = b'FlRs'  
Fingerpainting = b'Fngr'  
FlareCenter = b'FlrC'  
Flatness = b'Fltn'  
Flatten = b'Fltt'  
FlipVertical = b'FlpV'  
Focus = b'Fcs '  
Folders = b'Fldr'  
FontDesignAxes = b'FntD'  
FontDesignAxesVectors = b'FntV'  
FontName = b'FntN'  
FontScript = b'Scrp'  
FontStyleName = b'FntS'  
FontTechnology = b'FntT'  
ForcedColors = b'FrcC'  
ForegroundColor = b'FrgC'  
ForegroundLevel = b'FrgL'  
Format = b'Fmt '  
Forward = b'Fwd '  
FrameFX = b'FrFX'  
FrameWidth = b'FrmW'  
FreeTransformCenterState = b'FTcs'  
Frequency = b'Frqn'  
From = b'From'  
FromBuiltin = b'FrmB'
```

```
FromMode = b'FrmM'  
FunctionKey = b'FncK'  
Fuzziness = b'Fzns'  
GCR = b'GCR '  
GIFColorFileType = b'GFPT'  
GIFColorLimit = b'GFCL'  
GIFExportCaption = b'GFEC'  
GIFMaskChannelIndex = b'GFMI'  
GIFMaskChannelInverted = b'GFMV'  
GIFPaletteFile = b'GFPP'  
GIFPaletteType = b'GFPL'  
GIFRequiredColorSpaceType = b'GFCS'  
GIFRowOrderType = b'GFIT'  
GIFTransparentColor = b'GFTC'  
GIFTransparentColorBlue = b'GFTB'  
GIFTransparentColorGreen = b'GFTG'  
GIFTransparentColorRed = b'GFTR'  
GIFUseBestMatch = b'GFBM'  
Gamma = b'Gmm '  
GamutWarning = b'GmtW'  
GeneralPrefs = b'GnrP'  
GlobalAngle = b'gblA'  
GlobalLightingAngle = b'gagl'  
Gloss = b'Glos'  
GlowAmount = b'GlwA'  
GlowTechnique = b'GlwT'  
Gradient = b'Grad'  
GradientFill = b'Grdf'  
Grain = b'Grn '  
GrainType = b'Grnt'  
Graininess = b'Grns'  
Gray = b'Gry '  
GrayBehavior = b'GrBh'  
GraySetup = b'GrSt'  
Green = b'Grn '  
GreenBlackPoint = b'GrnB'
```

```
GreenGamma = b'GrnG'  
GreenWhitePoint = b'GrnW'  
GreenX = b'GrnX'  
GreenY = b'GrnY'  
GridColor = b'GrdC'  
GridCustomColor = b'Grds'  
GridMajor = b'GrdM'  
GridMinor = b'Grdn'  
GridStyle = b'GrdS'  
GridUnits = b'Grdt'  
Group = b'Grup'  
GroutWidth = b'GrtW'  
GrowSelection = b'GrwS'  
Guides = b'Gdes'  
GuidesColor = b'GdsC'  
GuidesCustomColor = b'Gdss'  
GuidesPrefs = b'GdPr'  
GuidesStyle = b'GdsS'  
GutterWidth = b'GttW'  
HalftoneFile = b'Hlff'  
HalftoneScreen = b'Hlfs'  
HalftoneSize = b'HlSz'  
HalftoneSpec = b'Hlfp'  
Hardness = b'Hrdn'  
HasCmdHPreference = b'HCdH'  
Header = b'Hdr '  
Headline = b'Hdln'  
Height = b'Hght'  
HighlightArea = b'HghA'  
HighlightColor = b'hglC'  
HighlightLevels = b'HghL'  
HighlightMode = b'hglM'  
HighlightOpacity = b'hglO'  
HighlightStrength = b'HghS'  
HistoryBrushSource = b'HstB'  
HistoryPrefs = b'HstP'
```

```
HistoryStateSource = b'HsSS'  
HistoryStates = b'HsSt'  
Horizontal = b'Hrzn'  
HorizontalScale = b'HrzS'  
HostName = b'HstN'  
HostVersion = b'HstV'  
Hue = b'H '  
ICCEngine = b'ICCE'  
ICCSetupName = b'ICCT'  
ID = b'Idnt'  
Idle = b'Idle'  
ImageBalance = b'ImgB'  
Import = b'Impr'  
Impressionist = b'Imps'  
In = b'In '  
Inherits = b'c@#^'  
InkColors = b'InkC'  
Inks = b'Inks'  
InnerGlow = b'IrGl'  
InnerGlowSource = b'glwS'  
InnerShadow = b'IrSh'  
Input = b'Inpt'  
InputBlackPoint = b'kIBP'  
InputMapRange = b'Inmr'  
InputRange = b'Inpr'  
InputWhitePoint = b'kIWP'  
Intensity = b'Intn'  
Intent = b'Inte'  
InterfaceBevelHighlight = b'IntH'  
InterfaceBevelShadow = b'Intv'  
InterfaceBlack = b'IntB'  
InterfaceBorder = b'Intd'  
InterfaceButtonDarkShadow = b'Intk'  
InterfaceButtonDownFill = b'Intt'  
InterfaceButtonUpFill = b'InBF'  
InterfaceColorBlue2 = b'ICBL'
```



```
InterfaceColorBlue32 = b'ICBH'  
InterfaceColorGreen2 = b'ICGL'  
InterfaceColorGreen32 = b'ICGH'  
InterfaceColorRed2 = b'ICRL'  
InterfaceColorRed32 = b'ICRH'  
InterfaceIconFillActive = b'IntI'  
InterfaceIconFillDimmed = b'IntF'  
InterfaceIconFillSelected = b'Intc'  
InterfaceIconFrameActive = b'Intm'  
InterfaceIconFrameDimmed = b'Intr'  
InterfaceIconFrameSelected = b'Ints'  
InterfacePaletteFill = b'IntP'  
InterfaceRed = b'Intr'  
InterfaceToolTipBackground = b'IntT'  
InterfaceToolTipText = b'ITTT'  
InterfaceTransparencyBackground = b'ITBg'  
InterfaceTransparencyForeground = b'ITFg'  
InterfaceWhite = b'IntW'  
Interlace = b'Intr'  
InterlaceCreateType = b'IntC'  
InterlaceEliminateType = b'IntE'  
Interpolation = b'Intr'  
InterpolationMethod = b'IntM'  
Invert = b'Invr'  
InvertMask = b'InvM'  
InvertSource2 = b'InvS'  
InvertTexture = b'InvT'  
IsDirty = b'IsDr'  
ItemIndex = b'ItmI'  
JPEGQuality = b'JPEQ'  
Kerning = b'Krng'  
Keywords = b'Kywd'  
Kind = b'Knd '  
LUTAnimation = b'LTnm'  
LZWCompression = b'LZWC'  
Labels = b'LbIs'
```

Landscape = b'Lnds'
LastTransform = b'LstT'
Layer = b'Lyr '
LayerEffects = b'Lefx'
LayerFXVisible = b'lfxv'
LayerID = b'LyrI'
LayerName = b'LyrN'
Layers = b'Lyrs'
Leading = b'Ldng'
Left = b'Left'
LegacySerialString = b'lSNs'
Length = b'Lngt'
Lens = b'Lns '
Level = b'Lvl '
Levels = b'Lvls'
LightDark = b'LgDr'
LightDirection = b'LghD'
LightIntensity = b'LghI'
LightPosition = b'LghP'
LightSource = b'LghS'
LightType = b'LghT'
LightenGrout = b'LghG'
Lightness = b'Lght'
Line = b'Line'
LinkEnable = b'lnkE'
LinkedLayerIDs = b'LnkL'
LocalLightingAltitude = b'Lald'
LocalLightingAngle = b'lagl'
LocalRange = b'LclR'
Location = b'Lctn'
Log = b'Log '
Logarithmic = b'kLog'
LowerCase = b'LwCs'
Luminance = b'Lmnc'
Magenta = b'Mgnt'
MakeVisible = b'MkVs'

ManipulationFOV = b'Mfov'
MapBlack = b'MpBl'
Mapping = b'Mpng'
MappingShape = b'MpgS'
Material = b'Mtrl'
Matrix = b'Mtrx'
MatteColor = b'MttC'
Maximum = b'Mxm '
MaximumStates = b'MxmS'
MemoryUsagePercent = b'MmrU'
Merge = b'Mrge'
Merged = b'Mrgd'
Message = b'Msge'
Method = b'Mthd'
MezzotintType = b'MztT'
Midpoint = b'Mdpn'
MidtoneLevels = b'MdtL'
Minimum = b'Mnm '
MismatchCMYK = b'MsmC'
MismatchGray = b'MsmG'
MismatchRGB = b'MsmR'
Mode = b'Md '
Monochromatic = b'Mnch'
MoveTo = b'MvT '
Name = b'Nm '
Negative = b'Ngtv'
New = b'Nw '
Noise = b'Nose'
NonImageData = b'NnIm'
NonLinear = b'NnLn'
Null = b'null'
NumLights = b'Nm L'
Number = b'Nmbr'
NumberOfCacheLevels = b'NCch'
NumberOfCacheLevels64 = b'NC64'
NumberOfChannels = b'NmbO'

NumberOfChildren = b'NmbC'
NumberOfDocuments = b'NmbD'
NumberOfGenerators = b'NmbG'
NumberOfLayers = b'NmbL'
NumberOfLevels = b'NmbL'
NumberOfPaths = b'NmbP'
NumberOfRipples = b'NmbR'
NumberOfSiblings = b'NmbS'
ObjectName = b'ObjN'
Offset = b'Ofst'
OldSmallFontType = b'Sftt'
On = b'On '
Opacity = b'Opct'
Optimized = b'Optm'
Orientation = b'Ornt'
OriginalHeader = b'OrgH'
OriginalTransmissionReference = b'OrgT'
OtherCursors = b'OthC'
OuterGlow = b'OrGl'
Output = b'Otpt'
OutputBlackPoint = b'kOBP'
OutputWhitePoint = b'kOWP'
OverprintColors = b'OvrC'
OverrideOpen = b'OvrO'
OverridePrinter = b'ObrP'
OverrideSave = b'Ovrd'
PNGFilter = b'PNGf'
PNGInterlaceType = b'PGIT'
PageFormat = b'PMpf'
PageNumber = b'PgNm'
PagePosition = b'PgPs'
PageSetup = b'PgSt'
PaintCursorKind = b'PnCK'
PaintType = b'PntT'
PaintingCursors = b'PntC'
Palette = b'Plt '

PaletteFile = b'PltF'
PaperBrightness = b'PprB'
ParentIndex = b'PrIn'
ParentName = b'PrNm'
Path = b'Path'
PathContents = b'PthC'
PathName = b'PthN'
Pattern = b'Pttn'
PencilWidth = b'Pncl'
PerspectiveIndex = b'Prsp'
Phosphors = b'Phsp'
PickerID = b'PckI'
PickerKind = b'Pckr'
PixelPaintSize = b'PPSz'
Platform = b'Pltf'
PluginFolder = b'PlgF'
PluginPrefs = b'PlgP'
Points = b'Pts '
Position = b'Pstn'
PostScriptColor = b'PstS'
Posterization = b'Pstr'
PredefinedColors = b'PrdC'
PreferBuiltin = b'PrfB'
Preferences = b'Prfr'
PreserveAdditional = b'PrsA'
PreserveLuminosity = b'PrsL'
PreserveTransparency = b'PrsT'
Pressure = b'Prs '
Preview = b'Prvw'
PreviewCMYK = b'PrvK'
PreviewFullSize = b'PrvF'
PreviewIcon = b'PrvI'
PreviewMacThumbnail = b'PrvM'
PreviewWinThumbnail = b'PrvW'
PreviewsQuery = b'PrvQ'
PrintSettings = b'PMps'

```
ProfileSetup = b'PrfS'  
ProvinceState = b'PrvS'  
Quality = b'Qlty'  
QuickMask = b'QucM'  
RGBSetup = b'RGBS'  
Radius = b'Rds '  
RandomSeed = b'RndS'  
Ratio = b'Rt '  
RecentFiles = b'Rcnf'  
Red = b'Rd '  
RedBlackPoint = b'RdB1'  
RedGamma = b'RdGm'  
RedWhitePoint = b'RdWh'  
RedX = b'RdX '  
RedY = b'RdY '  
RegistrationMarks = b'RgsM'  
Relative = b'Rltv'  
Relief = b'Rlf '  
RenderFidelity = b'Rfid'  
Resample = b'Rsmpl'  
ResizeWindowsOnZoom = b'RWOZ'  
Resolution = b'Rslt'  
ResourceID = b'RsrI'  
Response = b'Rspn'  
RetainHeader = b'RtnH'  
Reverse = b'Rvrs'  
Right = b'Rght'  
RippleMagnitude = b'RplM'  
RippleSize = b'RplS'  
Rotate = b'Rtt '  
Roundness = b'Rndn'  
RulerOriginH = b'RlrH'  
RulerOriginV = b'RlrV'  
RulerUnits = b'RlrU'  
Saturation = b'Strt'  
SaveAndClose = b'SvAn'
```

```
SaveComposite = b'SvCm'  
SavePaletteLocations = b'PltL'  
SavePaths = b'SvPt'  
SavePyramids = b'SvPy'  
Saving = b'Svng'  
Scale = b'Scl '  
ScaleHorizontal = b'SclH'  
ScaleVertical = b'SclV'  
Scaling = b'Scln'  
Scans = b'Scns'  
ScratchDisks = b'ScrD'  
ScreenFile = b'ScrF'  
ScreenType = b'ScrT'  
Separations = b'Sprt'  
SerialString = b'Sr1S'  
ShadingIntensity = b'ShdI'  
ShadingNoise = b'ShdN'  
ShadingShape = b'ShdS'  
ShadowColor = b'sdwC'  
ShadowIntensity = b'ShdI'  
ShadowLevels = b'ShdL'  
ShadowMode = b'sdwM'  
ShadowOpacity = b'sdwO'  
Shape = b'Shp '  
Sharpness = b'Shrp'  
ShearEd = b'ShrE'  
ShearPoints = b'ShrP'  
ShearSt = b'ShrS'  
ShiftKey = b'ShfK'  
ShiftKeyToolSwitch = b'ShKT'  
ShortNames = b'ShrN'  
ShowEnglishFontNames = b'ShWE'  
ShowMenuColors = b'SwMC'  
ShowToolTips = b'ShwT'  
ShowTransparency = b'ShTr'  
SizeKey = b'Sz '
```

```
Skew = b'Skew'  
SmallFontType = b'Sfts'  
SmartBlurMode = b'SmBM'  
SmartBlurQuality = b'SmBQ'  
Smooth = b'Smoo'  
Smoothness = b'Smth'  
SnapshotInitial = b'SnpI'  
SoftClip = b'SfCl'  
Softness = b'Sftn'  
SolidFill = b'SoFi'  
Source = b'Srce'  
Source2 = b'Src2'  
SourceMode = b'SrcM'  
Spacing = b'Spcn'  
SpecialInstructions = b'SpcI'  
SpherizeMode = b'SphM'  
Spot = b'Spot'  
SprayRadius = b'SprR'  
SquareSize = b'SqrS'  
SrcBlackMax = b'Srcl'  
SrcBlackMin = b'SrcB'  
SrcWhiteMax = b'Srcm'  
SrcWhiteMin = b'SrcW'  
Start = b'Strt'  
StartArrowhead = b'StrA'  
State = b'Stte'  
Strength = b'srgh'  
StrengthRatio = b'srgR'  
Strength_PLUGIN = b'Strg'  
StrokeDetail = b'StDt'  
StrokeDirection = b'SDir'  
StrokeLength = b'StrL'  
StrokePressure = b'StrP'  
StrokeSize = b'StrS'  
StrokeWidth = b'StrW'  
Style = b'Styl'
```



```
Styles = b'Stys'  
StylusIsColor = b'St1C'  
StylusIsOpacity = b'St1O'  
StylusIsPressure = b'St1P'  
StylusIsSize = b'St1S'  
SubPathList = b'SbpL'  
SupplementalCategories = b'SplC'  
SystemInfo = b'SstI'  
SystemPalette = b'SstP'  
Target = b'null'  
TargetPath = b'Trgp'  
TargetPathIndex = b'TrgP'  
TermLength = b'Lngt'  
Text = b'Txt '  
TextClickPoint = b'TxtC'  
TextData = b'TxtD'  
TextStyle = b'TxtS'  
TextStyleRange = b'Txtt'  
Texture = b'Txtr'  
TextureCoverage = b'TxtC'  
TextureFile = b'TxtF'  
TextureType = b'TxtT'  
Threshold = b'Thsh'  
TileNumber = b'TlNm'  
TileOffset = b'TlOf'  
TileSize = b'TlSz'  
Title = b'Ttl '  
To = b'T '  
ToBuiltin = b'TBl '  
ToLinked = b'ToLk'  
ToMode = b'TMd '  
ToggleOthers = b'TglO'  
Tolerance = b'Tlrn'  
Top = b'Top '  
TotalLimit = b'TtLL'  
Tracking = b'Trck'
```

TransferFunction = b'TrnF'
TransferSpec = b'TrnS'
Transparency = b'Trns'
TransparencyGrid = b'TrnG'
TransparencyGridColors = b'TrnC'
TransparencyGridSize = b'TrnG'
TransparencyPrefs = b'TrnP'
TransparencyShape = b'TrnS'
TransparentIndex = b'TrnI'
TransparentWhites = b'TrnW'
Twist = b'Twst'
Type = b'Type'
UCA = b'UC '
URL = b'URL '
UndefinedArea = b'UndA'
Underline = b'Undl'
UnitsPrefs = b'UntP'
Untitled = b'Untl'
UpperY = b'UppY'
Urgency = b'Urgn'
UseAccurateScreens = b'AcrS'
UseAdditionalPlugins = b'AdPl'
UseCacheForHistograms = b'UsCc'
UseCurves = b'UsCr'
UseDefault = b'UsDf'
UseGlobalAngle = b'uglg'
UseICCPprofile = b'UsIC'
UseMask = b'UsMs'
UserMaskEnabled = b'UsrM'
UserMaskLinked = b'Usrs'
Using = b'Usng'
Value = b'Vl '
Variance = b'Vrnc'
Vector0 = b'Vct0'
Vector1 = b'Vct1'
VectorColor = b'VctC'

```

VersionFix = b'VrsF'
VersionMajor = b'VrsM'
VersionMinor = b'VrsN'
Vertical = b'Vrtc'
VerticalScale = b'VrtS'
VideoAlpha = b'Vdlp'
Visible = b'Vsbl'
WatchSuspension = b'WtcS'
Watermark = b'watr'
WaveType = b'Wvtp'
WavelengthMax = b'WLMx'
WavelengthMin = b'WLMn'
WebdavPrefs = b'WbdP'
WetEdges = b'Wtdg'
What = b'What'
WhiteClip = b'WhtC'
WhiteIntensity = b'WhtI'
WhiteIsHigh = b'WhHi'
WhiteLevel = b'WhL'
WhitePoint = b'WhPt'
WholePath = b'WhPt'
Width = b'Wdth'
WindMethod = b'WndM'
With = b'With'
WorkPath = b'WrPt'
WorkPathIndex = b'WrkP'
X = b'X '
Y = b'Y '
Yellow = b'Ylw '
ZigZagType = b'ZZTy'
_3DAntiAlias = b'Alis'
_generate_next_value_(start, count, last_values)
_member_map_ = {'A': <Key.A: b'A '>, 'Adjustment': <Key.Adjustment: b'Adjs'>, 'Align
_member_names_ = ['_3DAntiAlias', 'A', 'Adjustment', 'Aligned', 'Alignment', 'AllPS',
_member_type_
    alias of builtins.bytes

```

```
_value2member_map_ = {b'A ': <Key.A: b'A '>, b'AChn': <Key.AlphaChannelOptions: b'AC
```

3.24.6 Type

class psd_tools.terminology.Type

Type definitions extracted from PITerminology.h.

See <https://www.adobe.com/devnet/photoshop/sdk.html>

ActionData = b'ActD'

ActionReference = b'#Act'

AlignDistributeSelector = b'ADSt'

Alignment = b'Alg '

Amount = b'Amnt'

AntiAlias = b'Annt'

AreaSelector = b'ArSl'

AssumeOptions = b'AssO'

BevelEmbossStampStyle = b'BESs'

BevelEmbossStyle = b'BESl'

BitDepth = b'BtDp'

BlackGeneration = b'BlcG'

BlendMode = b'BlmM'

BlurMethod = b'BlrM'

BlurQuality = b'BlrQ'

BrushType = b'BrsT'

BuiltInContour = b'Bltc'

BuiltinProfile = b'Bltp'

CMYKSetupEngine = b'CMYE'

Calculation = b'Clcn'

Channel = b'Chnl'

ChannelReference = b'#ChR'

CheckerboardSize = b'Chck'

ClassColor = b'#Clr'

ClassElement = b'#ClE'

ClassExport = b'#Cle'

ClassFormat = b'#ClF'

ClassHueSatHueSatV2 = b'#HsV'

ClassImport = b'#ClI'

ClassMode = b'#ClM'

```
ClassStringFormat = b'#ClS'  
ClassTextExport = b'#CTE'  
ClassTextImport = b'#ClT'  
Color = b'Clr '  
ColorChannel = b'#ClC'  
ColorPalette = b'ClrP'  
ColorSpace = b'ClrS'  
ColorStopType = b'Clry'  
Colors = b'Clrs'  
Compensation = b'Cmpn'  
ContourEdge = b'CntE'  
Convert = b'Cnvr'  
CorrectionMethod = b'CrcM'  
CursorKind = b'Crsk'  
DCS = b'DCS '  
DeepDepth = b'DpDp'  
Depth = b'Dpth'  
DiffuseMode = b'DfsM'  
Direction = b'Drct'  
DisplacementMap = b'DspM'  
Distribution = b'Dstr'  
Dither = b'Dthr'  
DitherQuality = b'Dthq'  
DocumentReference = b'#DcR'  
EPSPreview = b'EPSP'  
ElementReference = b'#ElR'  
Encoding = b'Encd'  
EraserKind = b'ErsK'  
ExtrudeRandom = b'ExtR'  
ExtrudeType = b'ExtT'  
EyeDropperSample = b'EyDp'  
FPXCompress = b'FxCm'  
Fill = b'Fl '  
FillColor = b'FlCl'  
FillContents = b'FlCn'  
FillMode = b'FlMd'
```

```
ForcedColors = b'FrcC'  
FrameFill = b'FrFl'  
FrameStyle = b'FStl'  
GIFColorFileType = b'GFPT'  
GIFPaletteType = b'GFPL'  
GIFRequiredColorSpaceType = b'GFCS'  
GIFRowOrderType = b'GFIT'  
GlobalClass = b'GlbC'  
GlobalObject = b'GlbO'  
GradientForm = b'GrdF'  
GradientType = b'GrdT'  
GrainType = b'Grnt'  
GrayBehavior = b'GrBh'  
GuideGridColor = b'GdGr'  
GuideGridStyle = b'GdGS'  
HistoryStateSource = b'HstS'  
HorizontalLocation = b'HrzL'  
ImageReference = b'#ImR'  
InnerGlowSource = b'IGSr'  
IntegerChannel = b'#inC'  
Intent = b'Inte'  
InterlaceCreateType = b'IntC'  
InterlaceEliminateType = b'IntE'  
Interpolation = b'Intp'  
Kelvin = b'Klvn'  
KelvinCustomWhitePoint = b'#Klv'  
Lens = b'Lns '  
LightDirection = b'LghD'  
LightPosition = b'LghP'  
LightType = b'LghT'  
LocationReference = b'#Lct'  
MaskIndicator = b'MskI'  
MatteColor = b'MttC'  
MatteTechnique = b'BETE'  
MenuItem = b'MnIt'  
Method = b'Mthd'
```

```
MezzotintType = b'MztT'  
Mode = b'Md '  
Notify = b'Ntfy'  
Object = b'Objc'  
ObjectReference = b'obj '  
OnOff = b'OnOf'  
Ordinal = b'Ordn'  
Orientation = b'Ornt '  
PNGFilter = b'PNGf'  
PNGInterlaceType = b'PGIT'  
PagePosition = b'PgPs '  
PathKind = b'PthK'  
PathReference = b'#PtR'  
Phosphors = b'Phsp'  
PhosphorsCustomPhosphors = b'#Phs '  
PickerKind = b'PckK'  
PixelPaintSize = b'PPSz '  
Platform = b'Pltf '  
Preview = b'Prvw '  
PreviewCMYK = b'Prvt '  
ProfileMismatch = b'PrfM '  
PurgeItem = b'PrgI '  
QuadCenterState = b'QCSt '  
Quality = b'Qlty '  
QueryState = b'QurS '  
RGBSetupSource = b'RGBS '  
RawData = b'tdta '  
RippleSize = b'Rpls '  
RulerUnits = b'RlrU '  
ScreenType = b'ScrT '  
Shape = b'Shp '  
SmartBlurMode = b'SmBM '  
SmartBlurQuality = b'SmBQ '  
SourceMode = b'Cndn '  
SpherizeMode = b'SphM '  
State = b'Stte '
```

```
StringChannel = b'#sth'  
StringClassFormat = b'#StC'  
StringCompensation = b'#Stm'  
StringFSS = b'#Stf'  
StringInteger = b'#StI'  
StrokeDirection = b'StrD'  
StrokeLocation = b'StrL'  
TextureType = b'TxtT'  
TransparencyGridColors = b'Trnl'  
TransparencyGridSize = b'TrnG'  
TypeClassModeOrClassMode = b'#TyM'  
UndefinedArea = b'UndA'  
UnitFloat = b'UntF'  
Urgency = b'Urgn'  
UserMaskOptions = b'UsrM'  
ValueList = b'VlLs'  
VerticalLocation = b'VrtL'  
WaveType = b'Wvtp'  
WindMethod = b'WndM'  
YesNo = b'YsN '  
ZigZagType = b'ZZTy'  
_generate_next_value_(start, count, last_values)  
_member_map_ = {'ActionData': <Type.ActionData: b'ActD'>, 'ActionReference': <Type.  
_member_names_ = ['ActionReference', 'ActionData', 'AlignDistributeSelector', 'Alignme  
_member_type_  
    alias of builtins.bytes  
_value2member_map_ = {b'#Act': <Type.ActionReference: b'#Act'>, b'#CTE': <Type.Class
```

3.24.7 Unit

```
class psd_tools.terminology.Unit
```

Unit definitions extracted from PITerminology.h.

See <https://www.adobe.com/devnet/photoshop/sdk.html>

```
Angle = b'#Ang'  
Density = b'#Rsl'  
Distance = b'#Rlt'  
Millimeters = b'#Mlm'  
Percent = b'#Prc'
```



```
Pixels = b'#Pxl'  
Points = b'#Pnt'  
_None = b'#Nne'  
_generate_next_value_(start, count, last_values)  
_member_map_ = {'Angle': <Unit.Angle: b'#Ang'>, 'Density': <Unit.Density: b'#Rsl'>  
_member_names_ = ['Angle', 'Density', 'Distance', '_None', 'Percent', 'Pixels', 'Milli  
_member_type_  
    alias of builtins.bytes  
_value2member_map_ = {b'#Ang': <Unit.Angle: b'#Ang'>, b'#Mlm': <Unit.Millimeters: 1
```


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