

SVG - FILTERS

http://www.tutorialspoint.com/svg/svg_filters.htm

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SVG uses <filter> element to define filters. <filter> element uses an id attribute to uniquely identify it. Filters are defined within <def> elements and then are referenced by graphics elements by their ids.

SVG provides a rich set of filters. Following is the list of the commonly used filters.

- feBlend
- feColorMatrix
- feComponentTransfer
- feComposite
- feConvolveMatrix
- feDiffuseLighting
- feDisplacementMap
- feFlood
- feGaussianBlur
- feImage
- feMerge
- feMorphology
- feOffset - filter for drop shadows
- feSpecularLighting
- feTile
- feTurbulence
- feDistantLight
- fePointLight
- feSpotLight

Declaration

Following is the syntax declaration of <filter> element. We've shown main attributes only.

```
<filter
  filterUnits="units to define filter effect region"
  primitiveUnits="units to define primitive filter subregion"

  x="x-axis co-ordinate"
  y="y-axis co-ordinate"

  width="length"
  height="length"

  filterRes="numbers for filter region"
  xlink:href="reference to another filter" >
</filter>
```

Attributes

Sr.No.	Name & Description
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- 1 **filterUnits** – units to define filter effect region. It specifies the coordinate system for the various length values within the filter and for the attributes defining the filter subregion. If filterUnits="userSpaceOnUse", values represent values in the current user coordinate system in place at the time when the 'filter' element is used. If filterUnits="objectBoundingBox", values represent values in fractions or percentages of the bounding box on the referencing element in place at the time when the 'filter' element is used. Default is userSpaceOnUse.
- 2 **primitiveUnits** – units to define filter effect region. It specifies the coordinate system for the various length values within the filter and for the attributes defining the filter subregion. If filterUnits="userSpaceOnUse", values represent values in the current user coordinate system in place at the time when the 'filter' element is used. If filterUnits="objectBoundingBox", values represent values in fractions or percentages of the bounding box on the referencing element in place at the time when the 'filter' element is used. Default is userSpaceOnUse.
- 3 **x** – x-axis co-ordinate of the filter bounding box. Default is 0.
- 4 **y** – y-axis co-ordinate of the filter bounding box. Default is 0.
- 5 **width** – width of the filter bounding box. Default is 0.
- 6 **height** – height of the filter bounding box. Default is 0.
- 7 **filterRes** – numbers representing filter regions.
- 8 **xlink:href** – used to refer to another filter.

Example

testSVG.htm

```
<html>
  <title>SVG Filter</title>
  <body>

    <h1>Sample SVG Filter</h1>

    <svg width="800" height="800">

      <defs>
        <filter >
          <feGaussianBlur in="SourceGraphic" stdDeviation="8" />
        </filter>

        <filter >
          <feOffset result="offOut" in="SourceAlpha" dx="20" dy="20" />
          <feGaussianBlur result="blurOut" in="offOut" stdDeviation="10" />
          <feBlend in="SourceGraphic" in2="blurOut" mode="normal" />
        </filter>
      </defs>

      <g>
        <text x="30" y="50" >Using Filters (Blur Effect): </text>
        <rect x="100" y="100" width="90" height="90" stroke="green" stroke-
width="3"
          fill="green" filter="url(#filter1)" />
        </g>

    </svg>

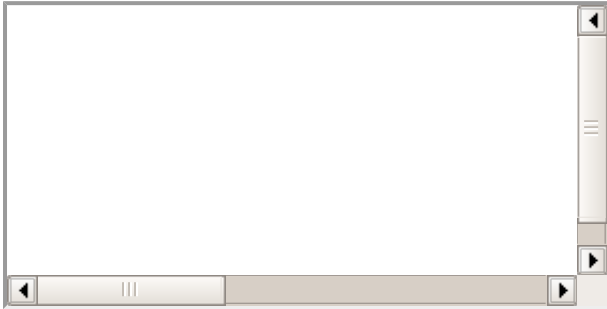
  </body>
</html>
```

- Two <filter> elements defined as filter1 and filter2.

- feGaussianBlur filter effect defines the blur effect with the amount of blur using stdDeviation.
- in="SourceGraphic" defines that the effect is applicable for the entire element.
- feOffset filter effect is used to create shadow effect. in="SourceAlpha" defines that the effect is applicable for the alpha part of RGBA graphics.
- <rect> elements linked the filters using filter attribute.

Output

Open textSVG.htm in Chrome web browser. You can use Chrome/Firefox/Opera to view SVG image directly without any plugin. Internet Explorer 9 and higher also supports SVG image rendering.



Filter with Shadow effect

```
<html>
  <title>SVG Filter</title>
  <body>

    <h1>Sample SVG Filter</h1>

    <svg width="800" height="800">

      <defs>
        <filter >
          <feGaussianBlur in="SourceGraphic" stdDeviation="8" />
        </filter>

        <filter >
          <feOffset result="offOut" in="SourceAlpha" dx="20" dy="20" />
          <feGaussianBlur result="blurOut" in="offOut" stdDeviation="10" />
          <feBlend in="SourceGraphic" in2="blurOut" mode="normal" />
        </filter>
      </defs>

      <g>
        <text x="30" y="50" >Using Filters (Shadow Effect): </text>
        <rect x="100" y="100" width="90" height="90" stroke="green" stroke-
width="3"
          fill="green" filter="url(#filter2)" />
      </g>

    </svg>

  </body>
</html>
```

Output

Open textSVG.htm in Chrome web browser. You can use Chrome/Firefox/Opera to view SVG image directly without any plugin. Internet Explorer 9 and higher also supports SVG image rendering.

