Source: http://www.easyrgb.com/?X=MATH

RGB -> XYZ

```
var_R = ( R / 255 )        //R from 0 to 255
var_G = ( G / 255 )        //G from 0 to 255
var_B = ( B / 255 )        //B from 0 to 255

if ( var_R > 0.04045 ) var_R = ( ( var_R + 0.055 ) / 1.055 ) ^ 2.4
else                   var_R = var_R / 12.92
if ( var_G > 0.04045 ) var_G = ( ( var_G + 0.055 ) / 1.055 ) ^ 2.4
else                   var_G = var_G / 12.92
if ( var_B > 0.04045 ) var_B = ( ( var_B + 0.055 ) / 1.055 ) ^ 2.4
else                   var_B = var_B / 12.92

var_R = var_R * 100
var_G = var_G * 100
var_B = var_B * 100

//Observer. = 2°, Illuminant = D65
X = var_R * 0.4124 + var_G * 0.3576 + var_B * 0.1805
Y = var_R * 0.2126 + var_G * 0.7152 + var_B * 0.0722
Z = var_R * 0.0193 + var_G * 0.1192 + var_B * 0.9505
```

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XYZ -> Hunter-LAB

```
(H)L = 10 * sqrt( Y )
(H)a = 17.5 * ( ( ( 1.02 * X ) - Y ) / sqrt( Y ) )
(H)b = 7 * ( ( Y - ( 0.847 * Z ) ) / sqrt( Y ) )
```

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Difference = Delta E1994

```
CIE-L*1, CIE-a*1, CIE-b*1          //Color #1 CIE-L*ab values
CIE-L*2, CIE-a*2, CIE-b*2          //Color #2 CIE-L*ab values
WHT-L, WHT-C, WHT-H                //Weighting factors depending
                                   //on the application (1 = default)

xC1 = sqrt( ( CIE-a*1 ^ 2 ) + ( CIE-b*1 ^ 2 ) )
xC2 = sqrt( ( CIE-a*2 ^ 2 ) + ( CIE-b*2 ^ 2 ) )
xDL = CIE-L*2 - CIE-L*1
xDC = xC2 - xC1
xDE = sqrt( ( ( CIE-L*1 - CIE-L*2 ) * ( CIE-L*1 - CIE-L*2 ) )
          + ( ( CIE-a*1 - CIE-a*2 ) * ( CIE-a*1 - CIE-a*2 ) )
          + ( ( CIE-b*1 - CIE-b*2 ) * ( CIE-b*1 - CIE-b*2 ) ) )
if ( sqrt( xDE ) > ( sqrt( abs( xDL ) ) + sqrt( abs( xDC ) ) ) ) {
   xDH = sqrt( ( xDE * xDE ) - ( xDL * xDL ) - ( xDC * xDC ) )
}
else {
   xDH = 0
}
xSC = 1 + ( 0.045 * xC1 )
xSH = 1 + ( 0.015 * xC1 )
xDL /= WHT-L
xDC /= WHT-C * xSC
xDH /= WHT-H * xSH
Delta E94 = sqrt( xDL ^ 2 + xDC ^ 2 + xDH ^ 2 )
```

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