IQColour – Delta P

Function is written in VBA code.

Note that it requires differences in CIE XYZ

```
Function DeltaP(X1, Y1, Z1, X2, Y2, Z2)

Dim A1 As Variant, T1 As Variant, D1 As Variant, Q1 As Variant,
AT1 As Variant, AD1 As Variant
Dim A2 As Variant, T2 As Variant, D2 As Variant, Q2 As Variant,
AT2 As Variant, AD2 As Variant
Dim S1 As Variant, S2 As Variant, H1 As Variant, H2 As Variant
Dim RT1 As Variant, RT2 As Variant, DOT As Variant, CROSS As
Variant
Dim DeltaQ As Variant, DeltaS As Variant, DeltaH As Variant

Application.ScreenUpdating = False

A1 = Y1 / 100
T1 = (0.6265 * X1 - 0.5765 * Y1 - 0.0172 * Z1) / 100
D1 = (0.110675 * X1 + 0.1497 * Y1 - 0.23423 * Z1) / 100
If D1 > 0 Then
    Q1 = A1 + 0.5 * T1: T1 = T1 / Q1: D1 = D1 / Q1
Else
    Q1 = A1 + 0.5 * T1 - 0.75 * D1: T1 = T1 / Q1: D1 = D1 / Q1
End If
Q1 = 1.28 * Q1 / (28 + Q1)

A2 = Y2 / 100
T2 = (0.6265 * X2 - 0.5765 * Y2 - 0.0172 * Z2) / 100
D2 = (0.110675 * X2 + 0.1497 * Y2 - 0.23423 * Z2) / 100
If D2 > 0 Then
    Q2 = A2 + 0.5 * T2: T2 = T2 / Q2: D2 = D2 / Q2
Else
    Q2 = A2 + 0.5 * T2 - 0.75 * D2: T2 = T2 / Q2: D2 = D2 / Q2
End If
Q2 = 1.28 * Q2 / (28 + Q2)
DOT = T1 * T2 + D1 * D2
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CROSS = T1 * D2 - D1 * T2
v1v2 = Sqr(DOT ^ 2 + CROSS ^ 2)
DOT = DOT / v1v2
CROSS = CROSS / v1v2
AT1 = Abs(T1): AD1 = Abs(D1)
If AT1 > AD1 Then
    S1 = AT1
Else
    S1 = AD1
End If

AT2 = Abs(T2): AD2 = Abs(D2)
 If AT2 > AD2 Then
    S2 = AT2
Else
    S2 = AD2
End If
DeltaQ = (Q1 - Q2)
If S1 > S2 Then
DeltaS = S1 - S2 * DOT: DeltaH = S1 * CROSS
Else
DeltaS = S2 - S1 * DOT: DeltaH = S2 * CROSS
End If

 DeltaP = 120 * Abs(DeltaQ) + 40 * Abs(DeltaS) + 90 * Abs(DeltaH)

End Function
```