

Equations: colorimetric transfer from CIELAB hue angle h_{ab} to elementary hue number e^* **Given: CIELAB hue angle h_{ab} ($0 \leq h_{ab} \leq 360$)****CIELAB hue angles $h_{ab,eX}$ of four elementary colours $eX = RJGB$** **Aim: Elementary hue number e^* of the given colour ($0 \leq e^* \leq 1$)**Calculate elementary hue angle $h_{ab,e}$ in one of five possible cases for h_{ab} ($0 \leq h_{ab} \leq 360$):

$$\text{If } 0 \leq h_{ab} < h_{ab,eR} \quad h_{ab,e} = 270 + 90 [360 + h_{ab} - h_{ab,eB}] / [360 + h_{ab,eR} - h_{ab,eB}] \quad (1)$$

$$\text{If } h_{ab,eR} \leq h_{ab} < h_{ab,eJ} \quad h_{ab,e} = 0 + 90 [h_{ab} - h_{ab,eR}] / [h_{ab,eJ} - h_{ab,eR}] \quad (2)$$

$$\text{If } h_{ab,eJ} \leq h_{ab} < h_{ab,eG} \quad h_{ab,e} = 90 + 90 [h_{ab} - h_{ab,eJ}] / [h_{ab,eG} - h_{ab,eJ}] \quad (3)$$

$$\text{If } h_{ab,eG} \leq h_{ab} < h_{ab,eB} \quad h_{ab,e} = 180 + 90 [h_{ab} - h_{ab,eG}] / [h_{ab,eB} - h_{ab,eG}] \quad (4)$$

$$\text{If } h_{ab,eB} \leq h_{ab} < 360 \quad h_{ab,e} = 270 + 90 [h_{ab} - h_{ab,eB}] / [360 + h_{ab,eR} - h_{ab,eB}] \quad (5)$$

$$\text{Elementary hue number} \quad e^* = h_{ab,e} / 360 \quad (0 \leq e^* \leq 1) \quad (6)$$

Inverse equations: transfer from elementary hue number e^* to CIELAB hue angle h_{ab} **Given: elementary hue number e^* ($0 \leq e^* \leq 1$)****CIELAB hue angles $h_{ab,eX}$ of four elementary colours $eX = RJGB$** **Aim: CIELAB hue angle h_{ab} of the given colour ($0 \leq h_{ab} \leq 360$)**

$$\text{Elementary hue angle} \quad h_{ab,e} = 360 e^* \quad (0 \leq e^* \leq 1) \quad (1i)$$

Calculate CIELAB hue angle h_{ab} in one of four possible cases for e^* ($0 \leq e^* < 1$):

$$\text{If } 0,00 \leq e^* < 0,25 \quad h_{ab} = h_{ab,eR} + [h_{ab,e} / 90] [h_{ab,eJ} - h_{ab,eR}] \quad (2i)$$

$$\text{If } 0,25 \leq e^* < 0,50 \quad h_{ab} = h_{ab,eJ} + [h_{ab,e} / 90 - 1,00] [h_{ab,eG} - h_{ab,eJ}] \quad (3i)$$

$$\text{If } 0,50 \leq e^* < 0,75 \quad h_{ab} = h_{ab,eJ} + [h_{ab,e} / 90 - 2,00] [h_{ab,eG} - h_{ab,eJ}] \quad (4i)$$

$$\text{If } 0,75 \leq e^* < 1,00 \quad h_{ab} = h_{ab,eJ} + [h_{ab,e} / 90 - 3,00] [h_{ab,eG} - h_{ab,eJ}] \quad (5i)$$

$$\text{only if } h_{ab} \geq 360 \text{ then:} \quad h_{ab} = h_{ab} - 360 \quad 0 \leq h_{ab} \leq 360 \quad (6i)$$