

New England U and Th Secondary Minerals
composition, color and fluorescence

Mineral	Composition (IMA)	Color (Fron del)	Fluorescence (Fron del)	Fluorescence (Robbins)	Comments
phosphuranylite	$(\text{H}_3\text{O})_3\text{KCa}(\text{UO}_2)_7(\text{PO}_4)_4\text{O}_4 \cdot 8\text{H}_2\text{O}$	deep golden-yellow to rich yellow	none	unverified orange-brown	
uranophane	$\text{Ca}(\text{UO}_2)_2(\text{SiO}_3\text{OH})_2 \cdot 5\text{H}_2\text{O}$	lemon-yellow to pale straw-yellow, honey-brown, greenish-yellow to yellowish-green, orange-yellow	none to weakly green for crystals	faint green to none	faint green fluorescence in SW common in New England
autunite	$\text{Ca}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 11\text{H}_2\text{O}$	lemon-yellow to sulfur-yellow, greenish-yellow to pale yellow-green	bright yellow-green; weathered surfaces weak fluorescence	bright yellow-green	
schoepite	$(\text{UO}_2)_8\text{O}_2(\text{OH})_{12} \cdot 12\text{H}_2\text{O}$	sulfur-yellow, lemon-yellow, brownish-yellow to amber	pale green	bright yellow-green	
rutherfordine	$(\text{UO}_2)\text{CO}_3$	yellow, straw-yellow to greenish-yellow	none	weak yellow-green to none	effervescent in dilute acid, slowly at first
soddyite	$(\text{UO}_2)_2\text{SiO}_4 \cdot 2\text{H}_2\text{O}$	dull-yellow to canary-yellow, amber-yellow, greenish-yellow to dull straw-yellow	weak orange-yellow to none	dull orange-brown to none	
becquerelite	$\text{Ca}(\text{UO}_2)_6\text{O}_4(\text{OH})_6 \cdot 8\text{H}_2\text{O}$	amber, brownish-yellow, yellow, orange	none	weak yellow-orange, dull brown	
dewindtite	$\text{H}_2\text{Pb}_3(\text{UO}_2)_2(\text{PO}_4)_4\text{O}_4 \cdot 12\text{H}_2\text{O}$	canary yellow	green	-	
kasolite	$\text{Pb}(\text{UO}_2)[\text{SiO}_4] \cdot \text{H}_2\text{O}$	ocher-yellow to brownish-yellow, amber-brown	none	-	
parsonite	$\text{Pb}_2(\text{UO}_2)(\text{PO}_4)_2$	pale citron-yellow, pale-yellow to honey brown, greenish brown	none	-	
masuyite	$\text{Pb}(\text{UO}_2)_3\text{O}_3(\text{OH})_2 \cdot 3\text{H}_2\text{O}$	orange-red to orange	none	-	
fourmarierite	$\text{Pb}(\text{UO}_2)_4\text{O}_3(\text{OH})_4 \cdot 4\text{H}_2\text{O}$	orange-red to golden-red, rarely reddish-brown to brown	none	-	resembles curite but not as deep red
curite	$\text{Pb}_3(\text{UO}_2)_8\text{O}_8(\text{OH})_6 \cdot 3\text{H}_2\text{O}$	deep orange-red, light orange-red to scarlet	none	-	darker red than fourmarierite
vandendriesscheite	$\text{PbU}_7\text{O}_{22} \cdot 12\text{H}_2\text{O}$	orange-amber to golden-brown, yellowish-brown	none	-	
clarkeite	$(\text{Na,Ca,Pb})(\text{UO}_2)\text{O}(\text{OH}) \cdot 0\text{-}1\text{H}_2\text{O}$	dark brown to mahogany-brown, chocolate-brown	none	-	
torbernite	$\text{Cu}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 12\text{H}_2\text{O}$	emerald-green to grass-green	none or weak	none to trace of green	visually indistinguishable with zeunerite
zeunerite	$\text{Cu}(\text{UO}_2)_2(\text{AsO}_4)_2 \cdot 12\text{H}_2\text{O}$	emerald-green to green	none	uncertain; sometimes very weak yellow in SW	visually indistinguishable with torbernite
thorogummite	$(\text{Th,U})(\text{SiO}_4)_{1-x}(\text{OH})_{4x}$	pale-cream to nearly white, yellowish-brown, greenish-gray,	none	-	discredited 2014 in IMA-14B

Sources: Frondell, C. 1958. Systematic Mineralogy of Uranium and Thorium. USGS Bulletin 1064