

**Mineral name:** Anthophyllite

**General Mineral formula:**  $(\text{Mg}, \text{Fe})_2(\text{Mg}, \text{Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$

**Mineral chemical class:** Inosilicate (Amphibole)

<b>Specific Gravity:</b> 2.85-3.57	<b>Crystal System:</b> Orthorhombic
<b>Hardness:</b> 5-6	<b>Crystal Class:</b> 2/m 2/m 2/m
<b>Cleavage:</b> 120 deg cleavage planes, total 3 planes	<b>Crystal description (common forms, habit, etc.):</b>
<b>Luster:</b> Greasy	<ul style="list-style-type: none"><li>Each plane sort of consists of radial fibers</li></ul>
<b>Streak:</b> Gray-whitish	<ul style="list-style-type: none"><li>Platy Planes</li><li>Exsolution lamellae</li><li>Anhedral</li></ul>
<b>Characteristic Color(s):</b> Clove Brown, white, gray	

<b>Environment (where you find the mineral):</b> <ul style="list-style-type: none"><li>Mg-rich environments</li><li>Metamorphic Mafic Rocks</li></ul>	<b>Common Mineral Associations (in samples; also consult text, notes):</b> <ul style="list-style-type: none"><li>Cordierite, garnet, aluminum silicates, plagioclase, staurolite</li></ul>
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<b>Scientific use/significance:</b> <ul style="list-style-type: none"><li></li></ul>	<b>Industrial or societal use/significance:</b> <ul style="list-style-type: none"><li>Asbestos</li><li>Insulation Products</li></ul>	<b>Environmental significance:</b> <ul style="list-style-type: none"><li></li></ul>
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**Mineral name:** Tremolite

**General Mineral formula:**  $\text{Ca}_2\text{Mg}_5\text{Si}_8\text{O}_{22}(\text{OH})_2$

**Mineral chemical class:** Inosilicate (Amphibole)

<b>Specific Gravity:</b> Medium-heavy (2.99-3.48)	<b>Crystal System:</b> Monoclinic	
<b>Hardness:</b> 5-6	<b>Crystal Class:</b> 2/m	
<b>Cleavage:</b> 2 cleavage planes that intersect at 120 degrees	<b>Crystal description (common forms, habit, etc.):</b>	
<b>Luster:</b> Vitreous Silky	<ul style="list-style-type: none"><li>Fibrous, Columnular</li></ul>	
<b>Streak:</b> White	<ul style="list-style-type: none"><li>Anhedral</li></ul>	
<b>Characteristic Color(s):</b> White	<ul style="list-style-type: none"><li>Rhombohedron</li></ul>	
<b>Environment (where you find the mineral):</b> <ul style="list-style-type: none"><li>Regionally metamorphized calcareous sediments</li><li>Blue shist</li><li>Low grade metamorphized mafic rocks.</li></ul>	<b>Common Mineral Associations (in samples; also consult text, notes):</b> <ul style="list-style-type: none"><li>calcite, dolomite, forsterite, garnet, diopside, wollastonite, talc,</li></ul>	
<b>Scientific use/significance:</b> <ul style="list-style-type: none"><li></li></ul>	<b>Industrial or societal use/significance:</b> <ul style="list-style-type: none"><li>Decorative stone</li><li>Asbestos mineral</li></ul>	<b>Environmental significance:</b> <ul style="list-style-type: none"><li></li></ul>



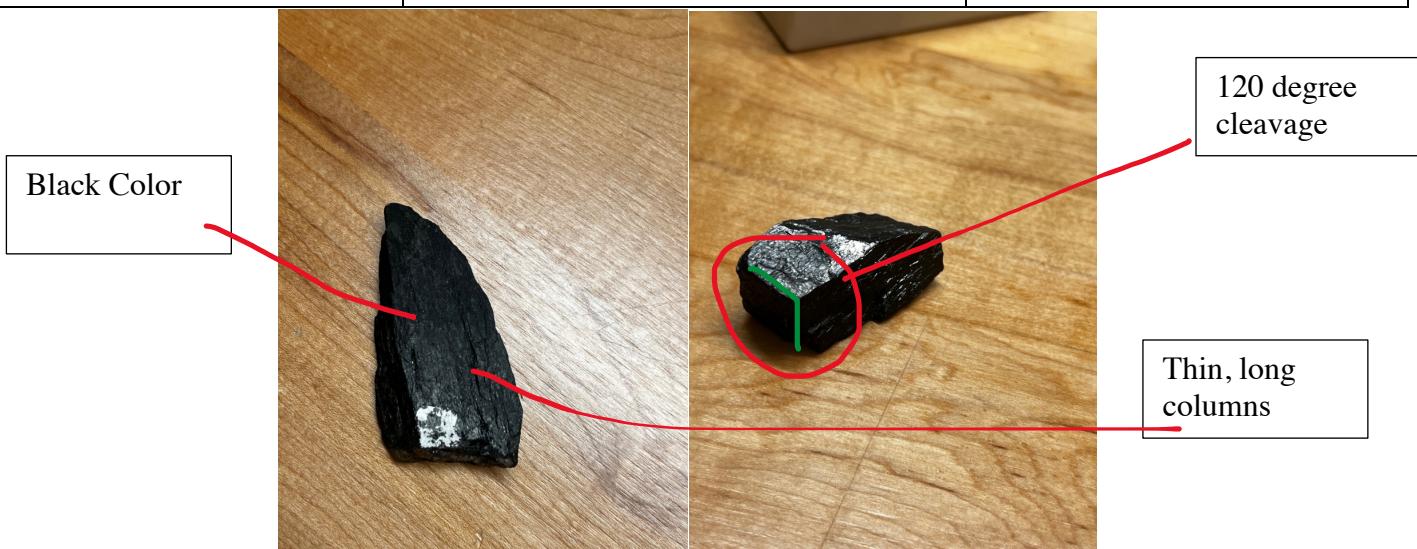
Silver/White Color

Fibrous

**Mineral name:** Hornblende(Hbl) **General Mineral formula:**  $(\text{Na},\text{K})_{0-1}\text{Ca}_2(\text{Mg},\text{Fe}^{2+},\text{Fe}^{3+},\text{Al})_5(\text{Si},\text{Al})_8\text{O}_{22}(\text{OH})_2$   
**Mineral chemical class:** Inosilicate (Amphibole)

<b>Specific Gravity:</b> 3.02-3.59	<b>Crystal System:</b> Monoclinic
<b>Hardness:</b> 5-6	<b>Crystal Class:</b> 2/m
<b>Cleavage:</b> 2 cleavage planes 120 degrees intersecting	<b>Crystal description (common forms, habit, etc.):</b>
<b>Luster:</b> Sub-metallic, glassy surface	<ul style="list-style-type: none"> <li>• Elongated Tabular shape / prismatic</li> <li>• Columnar</li> <li>• Long and Skinny</li> <li>• Subhedral</li> </ul>
<b>Streak:</b> Gray	
<b>Characteristic Color(s):</b> Black, Dark greenish	

<b>Environment (where you find the mineral):</b> <ul style="list-style-type: none"> <li>• Intermediate Igneous Rock</li> <li>• high-grade metamorphic terranes in metamorphosed mafic rocks</li> </ul>	<b>Common Mineral Associations (in samples; also consult text, notes):</b> <ul style="list-style-type: none"> <li>• </li> </ul>
<b>Scientific use/significance:</b> <ul style="list-style-type: none"> <li>• Pressure and temperature indicator</li> </ul>	<b>Industrial or societal use/significance:</b> <ul style="list-style-type: none"> <li>• Decorative Stone</li> </ul>
	<b>Environmental significance:</b> <ul style="list-style-type: none"> <li>• </li> </ul>



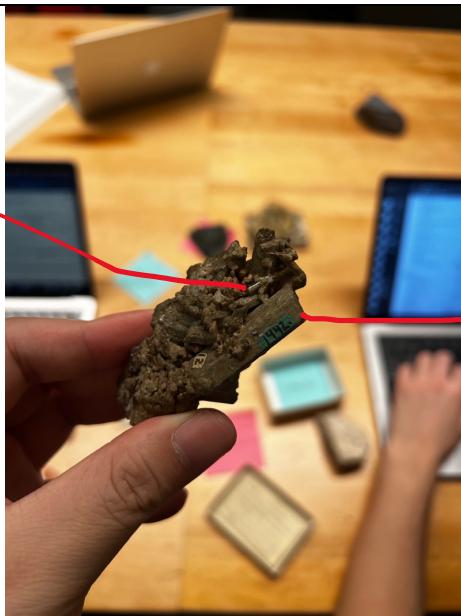
**Mineral name:** Clinopyroxene (Cpx)

**General Mineral formula:**  $(\text{Ca}, \text{Mg}, \text{Fe})_2\text{Si}_2\text{O}_6$

**Mineral chemical class:** Inosilicate (pyroxene)

<b>Specific Gravity:</b> 3.19-3.56	<b>Crystal System:</b> Monoclinic	
<b>Hardness:</b> 5-6	<b>Crystal Class:</b> 2/m	
<b>Cleavage:</b> 2 planes at 90 degrees	<b>Crystal description (common forms, habit, etc.):</b>	
<b>Luster:</b> Sub-Vitreous (sample looks dull)	<ul style="list-style-type: none"><li>Interlocked prismatic shape</li></ul>	
<b>Streak:</b> White	<ul style="list-style-type: none"><li>Euhedral/Subhedral</li></ul>	
<b>Characteristic Color(s):</b> Like dull gray with reddish hints		
<b>Environment (where you find the mineral):</b> <ul style="list-style-type: none"><li>Intrusive mafic igneous environments</li><li>regional and contact metamorphic rocks</li></ul>	<b>Common Mineral Associations (in samples; also consult text, notes):</b> <ul style="list-style-type: none"><li>Hedenbergite, Diopside, Augite, Pigeonite</li></ul>	
<b>Scientific use/significance:</b> <ul style="list-style-type: none"><li></li></ul>	<b>Industrial or societal use/significance:</b> <ul style="list-style-type: none"><li>Ceramic Products</li><li>Gemstones</li></ul>	<b>Environmental significance:</b> <ul style="list-style-type: none"><li></li></ul>

Interlocked,  
Prismatic  
Shapes



Dull Gray  
Color

**Mineral name:** Orthopyroxene (Opx)

**General Mineral formula:**  $(\text{Mg}, \text{Fe})_2\text{Si}_2\text{O}_6$

**Mineral chemical class:** Inosilicate (pyroxene)

<b>Specific Gravity:</b> 3.2-3.96	<b>Crystal System:</b> Orthorhombic
<b>Hardness:</b> 5-6	<b>Crystal Class:</b> 2/m 2/m 2/m
<b>Cleavage:</b> 2 cleavage planes at 90 degrees. Fibrous samples have splintery fractures	<b>Crystal description (common forms, habit, etc.):</b>
<b>Luster:</b> Vitreous	<ul style="list-style-type: none"><li>6 sided orthorhombic shape prismatic that are elongated. Euhedral</li><li>Fibrous samples in large anhedral rock sample.</li></ul>
<b>Streak:</b> Dark Gray	
<b>Characteristic Color(s):</b> Black	

<b>Environment (where you find the mineral):</b> <ul style="list-style-type: none"><li>mafic and ultramafic igneous rocks</li></ul>	<b>Common Mineral Associations (in samples; also consult text, notes):</b> <ul style="list-style-type: none"><li>Gabbro, pyroxenite</li><li>feldspars, Ca-clinopyroxene, hornblende, biotite, and garnet.</li></ul>	
<b>Scientific use/significance:</b> <ul style="list-style-type: none"><li>geothermobarometry</li></ul>	<b>Industrial or societal use/significance:</b> <ul style="list-style-type: none"><li>Minor Gemstone</li><li>Dimension Stone</li></ul>	<b>Environmental significance:</b> <ul style="list-style-type: none"><li>n/a</li></ul>



**Mineral name:** Omphacite

**General Mineral formula:**  $(\text{Ca},\text{Na})(\text{Mg},\text{Fe},\text{Al})\text{Si}_2\text{O}_6$

**Mineral chemical class:** Inosilicate (pyroxene)

<b>Specific Gravity:</b> Medium-Heavy(3.16-3.43)	<b>Crystal System:</b> Monoclinic
<b>Hardness:</b> 6	<b>Crystal Class:</b> 2/m
<b>Cleavage:</b> 2 cleavage planes at 90 degrees Sample appears Irregular Fracture	<b>Crystal description (common forms, habit, etc.):</b>
<b>Luster:</b> Vitreous	<ul style="list-style-type: none"><li>• Stubby prisms</li></ul>
<b>Streak:</b> White	<ul style="list-style-type: none"><li>• Generally Anhedral</li></ul>
<b>Characteristic Color(s):</b> Green	

<b>Environment (where you find the mineral):</b> <ul style="list-style-type: none"><li>• High pressure conditions like metamorphic rocks. Upper mantle</li></ul>	<b>Common Mineral Associations (in samples; also consult text, notes):</b> <ul style="list-style-type: none"><li>• Eclogite, Garnets</li></ul>	
<b>Scientific use/significance:</b> <ul style="list-style-type: none"><li>• Pressure Indicator</li></ul>	<b>Industrial or societal use/significance:</b> <ul style="list-style-type: none"><li>• n/a</li></ul>	<b>Environmental significance:</b> <ul style="list-style-type: none"><li>• Major component in eclogites</li></ul>



**Mineral name:** Actinolite (Act)

**General Mineral formula:**  $\text{Ca}_2(\text{Mg},\text{Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$

**Mineral chemical class:** Inosilicate (Amphibole)

<b>Specific Gravity:</b> Medium-heavy (2.99-3.48)	<b>Crystal System:</b> Monoclinic	
<b>Hardness:</b> 5-6	<b>Crystal Class:</b> 2/m	
<b>Cleavage:</b> 2 cleavage planes intersect at 120 degrees	<b>Crystal description (common forms, habit, etc.):</b>	
<b>Luster:</b> Silky Vitreous	<ul style="list-style-type: none"><li>Radial fibrous rock</li></ul>	
<b>Streak:</b> Gray	<ul style="list-style-type: none"><li>Subhedral</li></ul>	
<b>Characteristic Color(s):</b> Dark green		
<b>Environment (where you find the mineral):</b> <ul style="list-style-type: none"><li>Regionally metamorphized calcareous sediments</li><li>Blue shist</li><li>Low grade metamorphized mafic rocks.</li></ul>	<b>Common Mineral Associations (in samples; also consult text, notes):</b> <ul style="list-style-type: none"><li>calcite, dolomite, forsterite, garnet, diopside, wollastonite, talc,</li></ul>	
<b>Scientific use/significance:</b> <ul style="list-style-type: none"><li></li></ul>	<b>Industrial or societal use/significance:</b> <ul style="list-style-type: none"><li>Decorative stone</li><li>Asbestos mineral</li></ul>	<b>Environmental significance:</b> <ul style="list-style-type: none"><li></li></ul>



**Mineral name:** Wollastonite

**General Mineral formula:**  $\text{Ca}_2\text{Si}_2\text{O}_6$

**Mineral chemical class:** Inosilicate (Pyroxenoid)

<b>Specific Gravity:</b> 2.86 – 3.09	<b>Crystal System:</b> Triclinic	
<b>Hardness:</b> 5	<b>Crystal Class:</b> 1 bar	
<b>Cleavage:</b> Brittle Fractures, 1 perfect cleavage plane	<b>Crystal description (common forms, habit, etc.):</b>	
<b>Luster:</b> Vitreous	<ul style="list-style-type: none"><li>• Bladed / Fibrous white crystals</li></ul>	
<b>Streak:</b> White	<ul style="list-style-type: none"><li>• Columelar</li><li>• Subhedral</li></ul>	
<b>Characteristic Color(s):</b> White		
<b>Environment (where you find the mineral):</b> <ul style="list-style-type: none"><li>• metamorphism of Ca-rich protoliths, like limestone and dolomite</li></ul>	<b>Common Mineral Associations (in samples; also consult text, notes):</b> <ul style="list-style-type: none"><li>• Calcite, dolomite, tremolite</li><li>• Grossular, Diopside</li></ul>	
<b>Scientific use/significance:</b> <ul style="list-style-type: none"><li>• Reaction with carbonate <math>\text{CaCO}_3 + \text{SiO}_2 = \text{CaSiO}_3 + \text{CO}_2</math> <math>\text{SiO}_2</math></li></ul>	<b>Industrial or societal use/significance:</b> <ul style="list-style-type: none"><li>• Fire resistance material</li><li>• Asbestos</li><li>• Paints, and filler</li><li>• Ceramics</li><li>• Flux for welding</li></ul>	<b>Environmental significance:</b> <ul style="list-style-type: none"><li>• Climate tracking and CO<sub>2</sub></li></ul>



**Mineral name:** Glaucophane

**General Mineral formula:**  $\text{Na}_2\text{Mg}_3\text{Al}_2\text{Si}_8\text{O}_{22}(\text{OH})_2$

**Mineral chemical class:** Inosilicate (Amphibole)

<b>Specific Gravity:</b> 3.05-3.5	<b>Crystal System:</b> Monoclinic
<b>Hardness:</b> 5-6	<b>Crystal Class:</b> 2/m
<b>Cleavage:</b> 2 cleavage planes at 120degrees	<b>Crystal description (common forms, habit, etc.):</b>
<b>Luster:</b> Vitreous	<ul style="list-style-type: none"><li>Sporadic small crystals that are mildly fiberous</li><li>Anhedral</li></ul>
<b>Streak:</b> Gray (a bit bluish)	
<b>Characteristic Color(s):</b> Dark blue to Black(depends on iron)	

<b>Environment (where you find the mineral):</b> <ul style="list-style-type: none"><li>Basalt Schist</li><li>High pressure- low temperature regional rock</li></ul>	<b>Common Mineral Associations (in samples; also consult text, notes):</b> <ul style="list-style-type: none"><li>Crocidolite</li><li>lawsonite, pumpellyite, chlorite, albite, quartz, jadeite,</li></ul>	
<b>Scientific use/significance:</b> <ul style="list-style-type: none"><li></li></ul>	<b>Industrial or societal use/significance:</b> <ul style="list-style-type: none"><li>Tigers eye</li><li>Asbestos</li></ul>	<b>Environmental significance:</b> <ul style="list-style-type: none"><li>Subduction Zone Indicator</li></ul>

