

LEGEND

ERA	PERIOD	Epoch, Age	ROCKS		
			Sedimentary	Volcanogenic	
CEANOZOIC - CZ	Quaternary - Q	Late Q ₁ Modern Q	Alluvial-proluvial diluvial pebble beds, sands, loams, sandy loams (20m)	Basalts, andesite basalts, andesites (110m) Travertines (20m)	
		Mede Q ₁	Lacustrine-alluvial, fluvio-glacial, proluvial sediments, pebbles, sands, clay sands (350m)	Basalts, andesite basalts, andesites (80m) Travertines (25m)	
		Early Q ₁	Lacustrine-alluvial, proluvial, pebble beds, sands, clays, diatomites, coquinas (20m)	Basalts, andesite basalts, andesites, dacites, tuffs (160m)	
			Fluvio-glacial, proluvial pebble beds, pebble block formations (Nubarashen and Aghavndzor) (130m)	Basalts, andesite basalts, andesites, dacites (2000m)	
	Neogene - N	Pliocene - N ₃	Late	Diatomite clays, diatomites, clays, sands, gravels, breccias, pebble beds (120m)	Basalts, andesite basalts, andesites, dacites, related tuff breccias, lava breccias, volcanic Pumice sands (1000m) Doleritic basalts (350m) Travertines (120m)
			Early	Andesite basalts, andesites, dacites, rhyodacites (300m) Obsidians, perlites, rhyolites, rhyodacites and related pyroclasts, pumice sands, ashes (200m)	
		Miocene - N ₂	Late	Tuff breccias, tuff sandstones, andesite dacite with interformational lava flows of basalts, andesites, rhyolites (400m) Rhyolites, rhyodacites, their tuff-breccias, lava breccias, tuff sandstones (360m)	
			Early	Sandstones, clays, marls, limestones with slate intercalations (1000m) Tuff breccias, tuff conglomerates, tuff sandstones with beds of augitic Amygdaloidal basalts (250m)	
		Miocene - N ₁	Late	Limestones, coquinas, sandstones (150m)	
			Early	Clays, siltstones, sandstones, conglomerates, marls with intercalated coquinas and beds of rock salt, gypsum, anhydrite (1200m)	
			Mede	Speckled red clays, sandstones, siltstones, conglomerates with intercalated brown coal (550m)	
				Andesites, sanidine andesites, andesite dacites, trachytes and related lava breccias, tuff breccias (hydrothermally altered and ore-bearing) (800m)	
Paleogene - P	Oligocene - P ₃	Late	Sandstones, siltstones, clays, marls, reef limestones (1500m)		
		Early	Clays, sandstones, siltstones, marls, nummulitic limestones (600m) Andesites, andesite dacites, their tuffs, tuff conglomerates with lenses of reef limestones (1500m)		
	Eocene - P ₂	Middle	Andesites, andesite basalts and related pyroclastics (2000m) Tuffs, tuff siltstones, tuff sandstones, tuff breccias, tuff conglomerates with lava flows of andesites and andesite dacites (volcanogenic flysch) (1500m) Clays, sandstones, siltstones, limestones (terrigenen flysch) (2000m)		
		Early	Limestones, sandy siltstones (250m)		
	Paleocene - P ₁	Late	Alternating marls, limestones, sandstones, siltstones, clays, gravels (700m)		
		Early			
MEZOZOIC - MZ	Cretaceous - K	Late - K ₃	K ₃₋₁ - ₃₋₂ - ₃₋₃ - ₃₋₄	Conglomerates, sandstones, siltstones, marls, limestones, tuff breccias, tuff conglomerates, lava flows of basalts and andesite basalts (3500m)	
		Early - K ₁	K ₁₋₁ - ₁₋₂ - ₁₋₃ - ₁₋₄	Metamorphised schistose limestones, with intercalated siltstones, sandstones, tuff sandstones, greenstone altered diabase porphyrites, andesites and related volcanic tuffs (1200m)	
	Jurassic - J	Late - J ₃	J ₃₋₁ - ₃₋₂ - ₃₋₃	Amygdaloidal basalts, andesite basalts, andesites and related volcanic tuffs, lenses of limestones, dolomites, sandstones, gravel clay shales (2600m)	
		Middle - J ₂	J ₂₋₁ - ₂₋₂ - ₂₋₃ - ₂₋₄	Argillites, siltstones (sometimes coaly), sandstones, andesitic lava flows, andesite dacites, rhyolites, spilites and related volcanic tuffs (3500m)	
		Early - J ₁	J ₁₋₁ - ₁₋₂ - ₁₋₃	Limestones, marls, sandstones, argillites, clays, with coal and coaly shale intercalations (700m)	
	Triassic - T	Late	T ₃ - ₃₋₁ - ₃₋₂	Limestones, clay shales, dolomites, sandstones (750m)	
		Early			
	Paleozoic - PZ	Carboniferous - C	Late	C ₃	Limestones, sandstones, quartzites, clay shales (650m)
			Early		
	Devonian - D	Late	D ₃	Limestones, sandstones, quartzites, clay shales (1000m)	
Early					
Proterozoic - PR	Late - PR ₂		Upper greenstone slate complex: phyllite, chlorite-actinolite, quartz-feldspar-sericite and other shales, marbles, metavolcanics (1300m)		
	Early - PR ₁		Lower polymetamorphic gneiss-crystalline parashistic complex: gneiss, quartz-muscovite, graphite and other shales, amphibolites with lenses of marble and dolomite (1150m)		

* The Triassic deposits are conditional and categorized with Paleozoic platform formations, because of the general similarity of their structural tectonic Parameters

INTRUSIVE ROCKS

- 1 Oligocene-Miocene porphyroid granodiorites, granites, adamellites (quartz monzonite), granosyenites
- 2 Eocene-Oligocene monzonites, granites, alkaline and nepheline syenites, granosyenites, monzodiorites, gabbrodiorites, gabbros
- 3 Pre-Late-Eocene gabbros, gabbro-diorites, quartz diorites, granodiorites, plagiogranites, migmatites
- 4 Cretaceous-Eocene gabbro, troctolites, gabbro-anorthosites (ophiolitic type), intrusions and extrusions
- 5 Cretaceous-Eocene ultrabasites, peridotites, dunites, pyroxenites, lherzolites, serpentinites, intrusions and extrusions
- 6 Post Jurassic and Pre-Late Coniacian quartz diorites, tonalites, gabbrodiorites, diorite-porphyrates, trondhjemites
- 7 Middle Jurassic - Pre-Late Jurassic plagiogranites, leucocratic granites
- 8 Late-Proterozoic leucocratic granites, granite gneisses, migmatites

OTHER SYMBOLS

- * Quaternary volcanic centers
- Central crater of Late Pliocene-Quaternary polygenic volcano Aragatz.
- Faults: Observed (1), Inferred (2)

Conditional marks in the legend

- Conformable bedding
- Unconformable erosional bedding
- Unconformable angular bedding
- Unconformable azimuthal bedding
- Non bedded (tectonic or nonobservable)

DEPOSITS

- Ferrous Metal Deposits
 - 1.Hrazdansky (skarn-type) (Fe₂O₃)
 - 2.Aboviansky (magmatic-type) (Fe₂O₃, apatite)
- Copper-Pyrite Deposits
 - 3.Alaverdsky (Cu, Au, Ag, Bi, Se, Te, sincerely)
 - 4.Shamlugsky (Cu, Pb, Zn, Au, Ag, Se, Te, sincerely)
 - 5.Kapansky (Cu, Au, Ag, Se, Te, S)
- Polimetal Deposits
 - 6.Ahtalsku barite-polymetalic (Cu, Pb, Zn, Au, Ag, Cd, Se, Te, Ge, Ti, In, BaSO₄)
 - 7.Gladzorsky polymetalic (Cu, Pb, Zn, Ag)
- Copper-Molibdenum Porphyry Depositsa.
 - a.Copper-Molibdenum
 - 8.Kadjaransky (Cu, Mo, Re, Au, Ag, Se, Te, Bi, sincerely)
 - 9.Agarasky (Cu, Mo, Re, Au, Ag, Se, Te, Bi, sincerely)
 - 10.Tekhutsky (Cu, Mo, Re, Au, Ag)
 - 11.Dastakertsky (Cu, Mo, Re, Au, Ag)
 - 12.Ankavansky(Cu, Mo, Au)
 - 13.Aygedzosky (Cu, Mo, Au) - Prefessibility Study
 - b.Copper-Porphyry
 - 14.Lichksky (Cu, Mo, Au, Ag, Se, Te, S)
- Gold Deposits
 - 15.Sotsky (Au, Ag, Se, Te)
 - 16.Megradzorsky (Au, Ag, Se)
 - 17.Mgartsky (Au, Ag)
- Gold-Polimetal Deposits
 - 18.Shaumyansky (Cu, Pb, Zn, Au, Ag, Cd, Se, Te, Ga,In, sincerely)
 - 19.Lichvaz-Teysky (Cu, Au, Ag, Bi, Te)
 - 20.Terterasarsky (Cu, Au, Ag, Bi, Te)
 - 21.Azateksky (Cu,Pb, Zn, Sb, Au, Ag, Gd, Bi, Se, Te, sincerely)
 - 22.Armanissky (Cu,Pb, Zn, Au, Ag, Gd, Bi, Se, sincerely)
 - 23.Mardjansky (Cu,Pb, Zn, Au, Ag)-Prefessibility Study
 - 24.Martsigetky (Cu,Pb, Zn, Au, Ag)-Prefessibility Study
- Nepheline Syenite
 - 25.Tegsarsky (Al)

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List of Mineral Deposits in Armenia

(as of 01.01.2003)

No	Mineral Type	Deposit Name	District	Component	Reserves	Unit	Grade	Unit	Category	B+C1	C2	Low-grade Off-balance	P1	P2
1	Copper-pyrite	Alaverdi	Lori	Cu	171.7	thn t	3.43	%	B+C1+C2	125.0	46.7		150.0	
				Au	0.66	t	0.12	g/t	C2		0.7		~100.0	
2	Copper-pyrite	Shamloukh		Cu	154.4	thn t	3.53	%	A+B+C1+C2	126.1	28.3			
				Pb	4.9	thn t	1.7	%		4.9				
				Zn	14.2	thn t	4.96	%		14.2				
				Au	1.8	t	1.03	g/t			1.8			
				Ag	29.8	t	8.1	g/t			29.8			
3	Polymetallic	Akhtala		Cu	7.1	thn t	0.58	%	A+B+C1+C2	6.7	0.4			
				Pb	20.5	thn t	1.67	%		19.1	1.4			
				Zn	55.0	thn t	4.48	%		51.3	3.7			
			Au	1.5	t	1.3	g/t			1.5				
			Ag	119.4	t	104	g/t			119.4				
4	Au-Polymetallic	Armanis	Cu	158.6	thn t	1.09	%	C1+C2	118.2	40.4		~100.0		
			Pb	178.8	thn t	1.21	%		131.9	46.9		115.0		
			Zn	388.0	thn t	2.65	%		288.3	99.7		240.0		
			Au	12.3	t	0.97	g/t		10.5	1.8		8.0		
			Ag	161.2	t	11.30	g/t		123.2	38.0		100.0		
5	Copper-Molybdenum (Teghut)	Tekhut	Cu	1,630.0	thn t	0.35	%	B+C1+C2	1610.0	20.0		~800.0		
			Mo	99.1	thn t	0.022	%		97.9	1.2		50.0		
			Au	4.7	t	0.01	g/t				4.7			
6	Copper-pyrite	Kapan	Cu	209.2	thn t	0.99	%	B+C1+C2	149.1	57.8	2.3	~100.0		
			Au	0.6	t	0.2	g/t		0.5	0.1				
			Ag	39.4	t	5.3			24.6	14.8				
7	Au-Polymetallic	Shahumyan	Cu	91.3	thn t	0.61	%	C1+C2	88.1	2.6	0.6	~45.0		
			Pb	24.2	thn t	0.15	%		22.2	1.8	0.2	12.0		
			Zn	384.6	thn t	2.45	%		352.4	32.2		190.0		
			Au	39.8	t	2.5	g/t		37.6	2.2		20.0		
			Ag	776.5	t	49.8	g/t		724.0	46.9	5.6	400.0		
8	Copper-Molybdenum	Kajaran	Cu	4,355.1	thn t	0.27	%	B+C1+C2	4,303.3	51.8	2,654.0			
			Mo	673.2	thn t	0.055	%		666.8	6.4	397.9			
			Au	49.3	t	0.03	g/t		49.0	0.3				
9	Copper-Molybdenum	Agarak	Cu	203.0	thn t	0.46	%	B+C1	203.0			307.0		
			Mo	12.1	thn t	0.027	%		12.1			17.1		
			Au	1.1	t	0.025	g/t		1.1			1.7		
10	Copper-Molybdenum	Aygedzor	Cu	385.4	thn t	0.16	%	C1+C2	167.9	217.5	90.9	214.0		
			Mo	76.9	thn t	0.03	%		39.2	37.7	14.1	43.9		
			Au	11.8	t	0.05	g/t			11.8	0.4			
			Ag	261.0	t	0.11	g/t			261.0	0.8			
11	Copper-porphry	Lichk	Cu	214.2	thn t	0.63	%	B+C1	214.2			105.4		
			Mo	0.5	thn t	0.033	%		0.5			0.2		
			Au	1.7	t	0.05	g/t		0.6	0.9				
12	Gold-Polymetallic	Lichqvaz-tey	Au	17.9	t	5.61	g/t	C1+C2	16.0	1.9				
			Ag	115.5	t	34.3	g/t		98.0	17.5				
			Cu	14.6	thn t	0.45	%		13.0	1.6				
13	Gold-Polymetallic	Terterasar	Au	2.08	t	11.00	g/t	C1+C2	0.9	1.18	0.17	2.5		
			Ag	16.9	t	74.80	g/t		4.8	12.1	1.0	20.0		
			Cu	1.0	thn t	0.45	%		0.2	0.8				
14	Au-Polymetallic	Marjan	Cu	7.2	thn t	0.2	%	C2		7.2		10.0		
			Pb	57.5	thn t	1.60	%			57.5		70.0		
			Zn	46.3	thn t	1.28	%			46.3		65.0		
			Au	12.2	t	3.39	g/t			12.2		15.0		
			Ag	436.4	t	71.30	g/t			436.4		550.0		
15	Gold	Zod (Sotk)	Gegharkunik	Au	122.3	t	8.0	g/t	C1+C2	83.2	39.1	3.1		
			Ag	177.4	t	8.5	g/t		100.1	77.3	4.6			
16	Gold	Megradzor	Kotayk	Au	21.3	t	15.90	g/t	A+B+C1+C2	19.0	2.3			
			Ag	25.2	t	18.40	g/t		22.2	3.0				
17	Au-Polymetallic	Azatek	Vayots Dzor	Cu	13.2	thn t	0.19	%	C1+C2	5.3	7.9			
				Pb	37.2	thn t	0.55	%			37.2	13.0		
				Zn	18.8	thn t	0.28	%			18.8	5.3		
				Au	17.5	t	2.67	g/t		7.6	9.9	2.0		
				Ag	393.6	t	55.40	g/t		157.6	236.0	40.0		
18	Polymetallic	Gladzor	Cu	43.9	thn t	0.53	%	C1+C2			43.9	38.0	97.0	
			Pb	272.3	thn t	3.30	%				272.3	255.0	626.0	
			Zn	252.4	thn t	3.05	%				252.4	228.0	561.0	
			Cd	1.4	thn t	0.02	%				1.4	1.1	3.3	
			Ag	491.4	t	60.00	g/t				491.4	444.0	1,080.0	
19	Iron skarn	Hrazdan	Kotayk	Fe	50.0	mln t			B+C1	50.0		23.1		
20	Iron magmatic	Abovian		Fe	244.0	mln t				244.0		17.0		
Total				Cu	7,659.9	thn t				7,130.1	483.0	3,204.1	~1,457.0	97.0
				Mo	861.8	thn t				816.5	45.3	429.1	93.9	0.0
				Pb	595.4	thn t				178.1	144.8	285.5	452.0	626.0
				Zn	1,159.3	thn t				706.2	200.7	257.7	723.0	561.0
				Au	318.6	t				226.0	87.6	12.3	~145.5	0.0
				Ag	3,043.7	t				1,254.5	1,292.2	543.4	1,514.0	1,080.0

(Reference: Ministry of Nature Protection)