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Chromite – Mtoroshanga, Makonde Province, Mashonaland West, ZimbabweChromite – Mtoroshanga, Makonde Province, Mashonaland West, Zimbabwe chromium is a mineral oxide that iron chromium oxide with formula: FeCr2O4. It belongs to the spinella group. Chromium is the most important ore of chromium. Crystals are unusual, but when they are found, they are octaed. Chromitis is usually massive either in the form of lenses and tabular bodies, or can be distributed as granules. Sometimes it occurs as a crystal inclusion in a diamond. Chromitis is dark brown to black in color and may contain little magnesium and aluminum. Chromitis is most often found as a mineral accessory in iron-rich and magnesium magma rocks or concentrated in sediments derived from them. It occurs as layers in several magna rocks, which are especially rich in iron and magnesium. Almost pure chromitis is found in similar layers in sedimentary rocks. The layers are preserved when the sedimentary rocks turn into serpentinite. Further chromium ranges, these rocks are the most important ranges. The wind of chromium ores can also lead to its concentration in sticks. Name: For its contents in CHROMium. Association: Olivin, enstatitis, plagioclase, serpentines, magnetite, ilmenite, pyromite, penlandius, ulvospiel. Polymorphism & series: Forms series with magnesichromite and hercinitis. Chromite composition: FeCr2O 4, FeO = 32.0%, Cr2O 3 = 68.0%. Iron can be replaced with magnesium, and chromium with aluminum and iron. Diagnostic features: Submetal shine usually distinguishes chromium, but green borax is the diagnostic mineral group: Spinel group. Crystallography: isometric; hextoctadrial. Habit octaedric. Crystals are small and rare. Usually massive, grainy to compact. Environment: in metamorphic serpentine deposits, and also in ultra-magma rocks, and in weeping deposits. It could happen in meteorites. Chemical properties Chemical classification Oxide minerals. Spinel group Formula (Fe, Mg) Cr2O4 General impurities Mg, Mn, Zn, Al, Ti Chromite physical properties Crystal hack oscedotal rare; solid to granular color Black to brown black; brown to brown black on thin edges with permeable brown luster, oily, metallic, undertone, Boring Celery not observed transparency transparency translucent, Opacity Mohs hardness 5,5 crystal system isometric tenacity brittle density 4.5 – 4.0 8 g/cm3 (measured) 5,12 g/cm3 (calculated) Fracture Irregular/uneven, hashed, sub-congo-shaped separation may develop along {111} Other features Slightly magnetic Chromium optical properties Type IsotropE Color of pleochromism/ Pleochroyal core values: n = 2,08 – 2,16 Fold of {111} Double refraction 0.0 Relief Very high occurrence of chromite A cumuli mineral in ultramaphic parts of the layer magma rocks; accessory mineral in alpine type peridotites; also detrital. All meteorites, except carbon wires, and the basalites of the moon mare. Chromite is a common ingredient of the peridot scales and serpentines derived from them. One of the first minerals separated from the cooling magma; large chromium ores are thought to have been obtained by such a magma differentiation. The most important countries for its production are New Caledonia, Southern Rhodesia, Greece, usa, and Canada. Found only sparingly in the United States, Pennsylvania, Maryland, North Carolina and Wyoming have produced it in the past. California is the only major productive state at the moment (1940). He was also found in the Philippine islands. Chromium uses the only ore area of chromium. Chromium is used with various other metals to give steel hardness, just like smooth materials due to its non-corrosive nature. Chromite bricks are used to a significant extent as cladding for metallurgical furnaces due to their neutral and refractory nature. The bricks are usually made of raw chromium and coal tar, but sometimes from chromite with kaolin, bauxite or other materials. Chromium is an ingredient of certain green, yellow, orange and red pigments and with a similar color dyes. The spread is widespread. From Gassin, Var, France. Large crystals from Hangha, Sierra Leone. In Thiebagi, New Caledonia. As an economic deposit in: Bushveld Complex, Transvalen, South Africa. From the Great Daika, Zimbabwe. From many settlements in Turkey. In Saranay and elsewhere in the Urals, Russia. From the Moa region, northern Cuba. Luzon, Philippines. Stillwater Complex, Montana, USA. Home » Minerals » Chromite chromite: Chromite from the transval region of South Africa. The sample is about 10 cm. Chromium is a mineral oxide composed of chromium, iron and oxygen (FeCr2O4). It is dark gray to black in color with metallic to submetal shine and high specific weight. It is found in the main and ultra-magma rocks and in the metamorphic and sedimentary rocks, which are produced when chromium-bearing rocks change by heat or weathering. Chromium is important because it is the only economic ore of chromium, an essential element for a wide variety of metal, chemical and manufactured products. Many other minerals contain chromium, but none of them are found in deposits that can be economically extracted to produce chromium. Chemical classification Color of oxide Dark gray to black, rare brownish black stretch Dark brown shine Metallic to submetal Diaphaneity Opaque Cleavage no Moish Hardness 5.5 to 6 Relative weight 4.0 to 5.1 (variable) Diagnostic properties Luster, steep chemical composition FeCr2O4 with magnesium iron substitute in significant amounts Crystal system Isometric uses An opening Chrome Chrome can be challenging to identify. It should be considered that several properties distinguish it from other metal ores. The identification of the chromatograph by hand requires taking into account: color, specific weight, shine and characteristic brown streak. The most important idea for identifying chromium is its connection to ultra-magma rocks and metamorphic rocks such as serpentinite. Chromitis is sometimes slightly magnetic. This can lead to confusion with magnetite. Chromitis and ilmenitis have very similar properties. In order to distinguish these minerals in manual specimens, careful monitoring of hardness, sting and specific weight is required. Did you know? The color of many gemstones is obtained from traces of chromium. The red color of the rubies, the pink of some sapphires, and the green color of the emeralds are derived from chromium. Image copyright iStockphoto / ProArtWork. Magnesium often replaces iron in chromite. A series of solid solutions exists between mineral chromium (FeCr2O4) and isomorphic mineral magnesichromite (MgCr2O4). Intermediate samples may be rich in iron ((Fe,Mg)Cr2O4) or magnesium (Mg, Fe) Cr2O4). For convenience in communication, these minerals are often called chromitis. Some mineralogists give a total chemical composition of (Mg, Fe)(Cr, Al)2O4 for chromite. This composition recognizes multiple solid pathways of the solution between chromite and hercitus (FeAl2O4), spinel (MgAl2O4), magnesichromite (MgCr2O4), magnetite (Fe3O4), and magnesium (MgFe2O4). Due to the many different compositions in these series of solid solutions, geologists and metallurgists often consider that chromite is each member of the series of solid solutions, which has a significant Cr2O3 content. Bushphile layeriform chromite deposition: field photo of the seam of Bushveld LG6 chromite. This clearly shows the stratiform nature of the deposit. USGS photo by Klaus Schultz. Small amounts of chrome are found in many types of rocks. However, deposits of chromates large enough for yield are usually found in: 1) stratiform deposits (large masses of magma rocks such as norite or peridot, which are slowly crystallized by sub-superseded magma); 2) podiform deposits (serpentines and other metamorphic rocks resulting from a change in norite and peridot); and (3) beach sands (derived from the weather of chromati-bearing rocks). Chromite from South Africa: Chromite from the Transvaal region of South Africa. This specimen is approximately 9 cm (3.5 inches) between. Stratiform DEPOSITS Stratiform Deposits are large masses of magma rocks that cool very slowly in underground chambers of magma. During this slow cooling, chromitis and related minerals crystallized early, while magma was still at a very high temperature. Their crystals settle to the bottom of the magma chamber form layers of deposits. Some of the layers in these deposits may contain 50 % or more of chromite based on weight. Most of the world's known chromites are found in two layers of deposits: the Bushveld complex in South Africa and the Great Date in Zimbabwe. Other important layers include the Stillwater complex in Montana, the Kemi complex of Finland, the Orissa complex of India, the Goas in Brazil, the Mishaba complex of Zimbabwe and small deposits in Madagascar. Almost all of these have been precambrian for years. Chromite from Zimbabwe: Chromite from Suruguvi, Zimbabwe. The sample is about 10 cm. PODIFORM DEPOSITS Podiform deposits are large slabs of ocean lithosphere that have been throw up on a continental plate. These slabs of rock, also known as opiods, can contain significant amounts of chromite. In these deposits, chromite spreads through the rock and is not highly concentrated in easy-to-wash layers. Podiform deposits are known in Kazakhstan, Russia, the Philippines, Zimbabwe, Cyprus and Greece. The first discoveries of the podiform chromium deposits were made near Baltimore, Maryland in the early 1800s. These deposits were small and no longer in production. The best way to learn about minerals is to learn with a collection of small specimens that you can process, explore and monitor their properties. Cheap mineral collections are available at Geology.com Store. BEACH SANDS Chromite is located in beach sands, derived from the weather of chrome rocks and lateral soils that develop on the peridotites. Beach sand, rich in chrome and other heavy minerals, is sometimes extracted, processed to remove heavy minerals and returned to the environment. Two facts allow these chromium sands sometimes to contain economic deposits of chromite. First, chromitis is one of the most weather-resistant minerals of peridotitis. This makes it concentrated in residual soils that form in the verbatin zone above the chromati-rich rocks. Secondly, chromitis has a higher specificity than other minerals in peridotitis. This leads to it being selectively transported and deposited by wave and ongoing action, concentrating on certain places of streams and beaches. These deposits are sometimes rich enough and large enough that they can be dug for chromium. Did you know? School buses and yellow lines on highways are often painted with chrome yellow paint. Chromium is used as an ingredient. Image copyright iStockphoto / 2windspa. Chromium is a metal used to induce hardness, hardness, and chemical resistance in steel. The manufactured alloy is known as stainless steel. When alloyed with iron and nickel, it produces an alloy known as nichrome, which is resistant to high temperatures used for heating, ovens and other appliances. Thin coatings of chrome alloys are used as stenings of auto parts, appliances, and other products. They are given the name chrome. It is also used to perform superplates that can perform well in hot, corrosive, and high stress environments of jet engines. Chromium's name comes from the Greek word chromium, which means color. Chromium is used as a pigment in the paint. The familiar yellow lines painted in the center of the highways and the yellow paint used in school buses are often chrome yellow - a color made of chromium pigment. Chromium is an important pigment in many types of paint, ink, paint and cosmetics. After that, chromium produces color in many minerals and gemstones. The red color of the ruby, the pink of some sapphires and the green color of the emerald are caused by small amounts of chromium. Country 2011 Mining 2012 Mining (estimated) Reserves India 3,850 3,800 54,000 Kazakhstan 3 800 3 800 210 000 South Africa 3 800 3 800 000 3 800 210 000 South Africa 3 800 3 800 210 000 South Africa 3 800 3 800 210 000 Bulgaria 3 800 3 800 3 800 3 800 54 000 Kazakhstan 3 80 10,200 11,000 200,000 Other countries 5,450 5,300 NA The United States 0 0 620 The values above are estimated to produce chromates and reserves in thousands of metric tons. Data from USGS mineral summaries. [2] Chromium is not mined in the UNITED States. Chromium consumed by the American industry comes from: A) and other countries in the form of chromium ores, ferrochromic or chromium metals; or B) chromium recovered from recycled metals. Over half of the chromium used in the United States today is from recycling. Since chromium is essential for the protection and prosperity of the United States, the federal government maintains stocks of chromium ores, ferrochromium and chromium for use in a national emergency. This type of emergency can occur if the United States has engaged in war and the enemy has prevented the supply of chrome and chrome products by sea. In addition, small deposits of chromium have been located in the United States, which can be harvested if necessary. Chromite Information [1] Stratiform Chromite Model: Ruth F. Schulte, Ryan D. Taylor, Nadine M. Piatak and Robert R. Seal II; Chapter E of the Resource Assessment Mineral Storage Model; Research Report 2010-5070-E; 131 pages; 2012 [2] Chrome: John F. Papp, U.S. Geological Survey, Mineral Summaries, January 2013 [3] Chromium: John F. Papp, U.S. Geological Survey, 2011 Year of Minerals, April 2013. [4] Chromium makes stainless steel: S. J. Kropshott and Jeff Dobrich, U.S. Geological Survey, factsheet 2010-3089, September 2010. [5] How an antler geologist discovered a diamond poison in the Canadian Arctic: Carl Hoffman, Wired magazine, issue june 2016. Kimberley, from the rock that holds many of the world's most important diamonds usually contains small amounts of chromitis, ilmenitis and certain types of garat. Although these minerals are found in very small amounts, they are much more common in the rock than in diamonds. Since these minerals are not found together in most other types of rocks, they can be a valuable indicator of a near kimberley body if they are found in a stream of sediments, glacial troughs, residual soils, core samples, or well-cut. Some of the largest diamond deposits on Earth have been discovered using the geology of indicator minerals. Find other themes of Geology.com: Rocks: galleries of magma, sedimentary and metamorphic rock photographs with descriptions. Minerals: Information about ore minerals, precious materials and rock minerals. Volcanoes: Products for volcanoes, volcanic disasters and eruptions past and present. Gems: Colorful images and articles about diamonds and colored stones. General geology: Articles about geysers, maars, delta, reefs, salt domes, water, and much more! Geology Shop: Hammers, field bags, hand lenses, cards, books, hardness pickaxes, golden pans. Diamonds: Learn more about diamond properties, many applications, and diamond discoveries. © 2005-2020 Geology.com. All rights reserved. The images, code and content of this website are owned Geology.com and are protected by copyright law. Geology.com does not grant permission to use, reallocate or reallocate. Redistribution.

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