A Value-adding Tradition Leads to a High-tech Future

OLYMPUS
Industrial Minerals

Company Presentation
January 2022

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The qualified person for running the Company as well as its projects, Dr. George Georgiadis, the Company's Chairman and Chief Executive Officer, Past President of the Greek Mining Enterprises Association, Member of the Hellenic Society of Mining and Metallurgical Engineers and of the Technical Chamber of Greece, recent recipient of the Honorary Boussias Mining Award 2021, has reviewed and verified the contents of this release.

Company Overview

OLYMPUS SA – Industrial Minerals (Olympus) is an established company with a great future, hence the motto "A value-adding tradition leads to a high-tech future". The firm's name is inspired by Mount Olympus, the highest mountain in Greece and legendary home of the ancient gods. Olympus is a Greek private company focused on the discovery and commercialization of key industrial minerals. With the recent market emphasis in new applications of specific industrial minerals in the energy/climate debate, Olympus is positioned to deliver value for all stakeholders.

OLYMPUS SA – Industrial Minerals is a continuation of MEVIOR SA that had been also established by Dr George Georgiadis, Mining Engineer. Olympus owns and uses MEVIOR's plant, following extensive additions, refurbishment and modernization. Olympus itself has been also founded by Dr Georgiadis -- in 2013, with long-standing activity in Industrial Minerals Research and Development, especially in industrial minerals first explored and exploited in Greece (Feldspars, Quartz) and internationally (huntite-hydromagnesite), but also on deposits not previously exploited -- the pozzolan of Pella Prefecture was the first exploitation of pozzolan outside the islands area and meets the needs of the cement industry until today.

Currently, the Olympus plant processes and produces five industrial minerals: quartz, quartzite, zeolite, pozzolan, diatomite. These are mined in officially licensed quarries in the prefectures of Kilkis, Evros, Pella, Larissa.
Olympus also processes pumice stone, which it buys from the island of Yali, producing dry and fine grains, precisely sized.

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- Jurisdiction: Greece
- Financial Year - End: December 31

Quartz and Quartzite

Quartz and Quartzite

Quartz, or quartz sand by Olympus (SiO_2 99.50%, per typical analysis below) is used in construction material such as special construction mortars wherever white color is needed, in pool filters, in artificial granite, epoxy resins, artificial stones eg slabs for kitchen countertops but could go to 3N, industrial floors, ceramics, steel industry and other applications. Furthermore, Quartz (SiO_2) has enjoyed a multitude of other industrial uses, see 'Industrial Minerals and Rocks, AI of MM and PE.', including high-end, high-tech uses such as electronics, optics, semiconductors and lighting*. 'Fused silica', or 'fused quartz', is the common term that applies to silica in most of these high-tech markets.

Quartzite, or silica sand by Olympus (SiO_2 95.00%, per typical analysis below) is used in special construction mortars, in pool filters, epoxy resins, industrial floors, in the steel industry etc. As well, quartzite can be used [ibid] in the production of metallurgy, acid refractories, production of elemental phosphorus and ferrophosphorus at electric furnace facilities, for filtration rock, for chemical uses and other industrial and construction applications.
Olympus is the only vertically concatenated producer in Greece of quartz and quartzite. The company operates a fully integrated unit comprising a complete processing plant and two quarries (quartz and quartzite) in a short distance from the plant.

Olympus has long term (40 years) mining rights for one quartz and one quartzite quarries in the Kilkis Prefecture.
The distances of the quarries from the plant are 70 and 5 km respectively.
Both deposits are high quality regarding their chemical and mechanical characteristics, their quality is homogeneous and their reserves are sufficient for a sustainable development of the complex Quarries Plant.

*Note: Olympus has an ambitious project to produce High Purity Quartz from its existing quarry, and in particular High Tech Quartz 5N. On this, see Item 9 below: Olympus – Development project 2

Typical Chemical Analysis of Quartz and Quartzite is:

QUATZ		**QUARTZITE**	
SiO_2	99,50%	SiO_2	min 95,00%
Fe_2O_3	max 0,05%	Fe_2O_3	max 0,5%
Al_2O_3	0,10%	Al_2O_3	2,5%
CaO	0,02%	CaO	0,02%
Na_2O	0,01%	Na_2O	0,01%
K_2O	0,01%	K_2O	max 1,00%
TiO_2	0,00%	TiO_2	0,00%
L.O.I	max 0,25%	L.O.I	max 0,25%

The extracted minerals are transported to Olympus' facilities where ore is crushed, washed, handpicked, dried, screened and milled.
Screening produces various quartz granular and sand sizes (0.1-3mm, 0.3-1.2mm, 1.2-2.4mm, 0.3-0.8mm, 0.4-2.4mm, 3-7mm, etc.) and quartzite (0.1-0.3mm, 0.3-1.2mm, 0.3-2.4mm, 3-7mm, etc.)
The company's product range includes quartz flour -75µm, milled in iron-free pebble mills to prevent product contamination from iron and chromium.

Quartz and quartzite are available in 25kg bags and 1200kg Big-Bags in various sizes.

Diatomite

The clayey Diatomites of Olympus are mined from selected areas in Thessaly and constitute a natural mixture of diatomites and clays in a proportion of about 50-50. They are completely natural, non-toxic, non-corrosive, acid-resistant, absolutely harmless products, with most of them being amorphous silicon dioxide. They are similar in geological terms and composition to the Danish well known worldwide (Moller) clayey diatomites, for their multiple uses in industry, agriculture and livestock due to their high absorptive capacity (mined in the Danish islands of Fur, Mors and Nordsalling).
It is the structure of the diatomite that gives the properties that make it valuable. It has a large granule surface area, high porosity, absorbent and heat-insulating properties.

The criterion for absorbance is the particle surface area, which is 53.4m^2/gr, slightly higher than the Danish Diatomites, which is about 50m^2/gr (determination by National Center for Technology and Development, CERTH).
More specifically, the uses of the clayey diatomite of Olympus are the following:

- As carrier of active ingredients in the animal feed industry
- For the absorption and composting of sewage
- As waste absorptive of chemical industry
- For production Light Weight Aggregate (LWA) after calcination
- Litter material for deodorization-Hygiene

It is hereby emphasized that Olympus diatomite is has not yet been authorized for use as a plant protection product. As well, once the appropriate license is obtained, the clayey diatomite of Olympus could be used

- as insecticide in the plants
- as insecticide in wheat, barley etc. silo*

*Note: Olympus has an advanced project to produce clayey diatomite as insecticide in wheat, barley. On this, see Item 8 below: Olympus – Development project 1

Livestock use

Absorbent for all types of liquids, waste-water for their safe removal while simultaneously deodorizing

The mixture of diatomites and clays is worldwide tested for their very high absorption capacity (e.g Danish Moller)

As bedding material in stalls where it absorbs odors and moisture while maintaining a healthy environment

Also, for mixing animal feces and their hygienic removal

In the animal feed industry or even in individual farmers as a carrier for absorption of fats, molasses, vitamins, liquid additives, etc.

It is especially useful where the environment is acidic and no carbonate powders can be used.

In animal feed silos to avoid clumps

In both the latter cases, clay diatomites are completely natural products mined in certain parts of the world (such as the Fur, Mors and Nordsalling islands of Denmark) and have proven their usefulness when added to animal feed, where they improve the function of their gastrointestinal tract

Zeolite

Zeolites are hydrated crystalline aluminosilicate minerals created millions of years ago after the volcanic eruptions of large quantities of aluminosilicate ash deposited in environments, where there was alkaline water. The interaction of this aluminosilicate ash with alkaline water and the existence of suitable conditions of pressure and temperature have resulted in the creation of zeolites.

The significance of the zeolite for various uses is in the function of its crystalline structure. The structure is tetrahedral and in three-dimensional imaging is celled with the creation of large cavities. These cavities are filled with water molecules and cations. The cations are having the ability to move within these cavities and to be exchanged with other cations without affecting the crystal structure of zeolite. This property is characterized as ion exchange capacity and is very important for the quality of zeolite.
Generally, the amount of water that zeolite can absorb is 60% of its weight.

In nature are found more than 40 species of zeolite (volcanic and sedimentary rocks) from which 20 are located in sedimentary deposits. The zeolites that occur most frequently are: clinoptilolite, mordenite, chabazite, analcime, phillipsite, erionite and heulandite. The most important of these is clinoptilolite, an Olympus exclusivity.

Olympus' zeolite products are mainly targeted for agricultural and livestock uses. In livestock farming there are three basic uses of zeolite. As feed additive, as livestock bedding and in mixture with manure.
Zeolite is a 100% natural and inert product which has the approval of the European Union as feed additive for livestock (Regulation EU 651/2013).

Concisely, the use of zeolite in animal feeding has the following results:

- Binding of food toxins and removal from the digestive tract and blood circulation
- Ammonia binding and stomach pH balancing and digestion improvement as well as functioning of microorganisms in the digestive tract of animals.
- Binding of allergen substances
- Combating diarrhea and watery stools (better functioning of the digestive tract)
- Reduction of product feed up to 20%
- Protection to the food mix from growth of fungi and toxins and no microbial load occurs
- Better quality in the produced animal products as it binds toxins, mycotoxins, aflatoxins etc.
- Reduction of use of antibiotics
- Better staging conditions
- Improvement of the immune animal system
- Removal of heavy metals
- Increase in milk production and body weight
- Improvement in the quality of meat
- Better economic results in farming, etc

Other zeolite applications include: softening systems (ion exchange filters) and water filtration, pet litter, neutralization of radioactive wastes, soil decontamination from toxic heavy metals, building materials, wastewater treatment, in the paper industry and in solar energy storage.

Pozzolan

Natural Pozzolan is one of the main components of the historical mortars together with lime and tile flour. It was used in the construction of monuments in Ancient Greece, in Rome's Pantheon, in Byzantine monuments, but also in neoclassic buildings of 19th century and gave them considerable resistance to wear of time, resistance to earthquakes and maintained in the centuries until nowadays.

The licensed pozzolan quarry owned and exploited by Olympus in Pella Prefecture, is providing an excellent quality of pozzolan. We have to notice that quarries of pozzolan in the prefecture of Pella is operating without interruption from 1971 until today and is fulfilling the needs of TITAN Cement SA, Thessaloniki plant.

The quarried material is transferred to the company's processing plant in Assiros Thessaloniki where is handled in two sections. In the first, the material is crushed. In the second, the material is dried, sieved and milled in an iron-free stone-mill in order to avoid material contamination from iron and primarily chromium oxides in the final product that can differentiate the final product in color and other characteristics.

For mortars Pozzolan – 45μ

The Pozzolan of Olympus is a volcanic tuff, which is an amorphous aluminosilicate material.
According to research made by Aristotle University of Thessaloniki, Pozzolan -45μ. has a specific surface of 8920cm^2/g (with maximum percentage of the grains rated between 2-40μm) and a content of reactive silica greater than 50%.

Superfine Pozzolan -10μm

The Olympus Superfine Pozzolan from -10μm up to -20μm (q.v Laser particle size analysis-compared to the known 'Super-pozz') is suitable for specialized uses such as special mortars, for precision seals and repairs for dams, tunnels, sewage systems and generally microcracks seals for soil sealing (www.usgrout.com). The pozzolanic properties, ie the ability to capture $Ca(OH)_2$, increase in proportion to the specific surface area and inverse proportion to the particle size.

More generally, natural pozzolan is mainly used in Greece as a key ingredient for cement production and by archaeological services for the restoration of important monuments such as the archeological site of Nikopolis, the National Library of Athens, many monasteries in the Holy Mountain of Athos, the Benaki Museum, the Panathenaic Stadium and others.

It is also used in the external and internal decoration of modern constructions, but also as building material providing constructions time durability and an aesthetic effect that is harmonious with natural environment.

Advantages of pozzolan use

In fresh mortars: The fresh mortars which tend to exudate or segregate, it is well known that the introduction of fine particles, improves the workability by reducing the size and the volume of voids. As thinner the granulometry of the added material is, the less percentage required to improve the consistency and the workability of the fresh mortar.

In the hardened form: The use of pozzolan as mortars ingredient or cement-lime mortars, helps to capture the released calcium oxide during the hydration of cement, reduces porosity, prevents the release of water and the destruction of the mortar from the frost, contributing to the long life of the mortar, which is confirmed by the surviving constructions of the antiquity.

Graded Dry Pumice

Noting the lack in the market of dry and graded pumice in different particle size fractions, but also grinded (-45 micron), Olympus is already offering in the market the above-mentioned products, using as raw material pumice from Yali of Nisyros island. The product range offered from the above-mentioned pumice are covering construction purposes, as well as many other well-known uses, such as treatment of drinking water primarily, wastewater purification, the pretreatment for reverse osmosis desalination of seawater (SWRO), in filtering water in fish farms in cosmetics etc.

AVAILABILITY OF DRY GRADED PUMICE

The grain sizes available on demand are:

Powder	**Granural**
0 – 200 μ	0,1 – 0,3 mm
-45 μ	0,1 – 0,4 mm
-20 μ	0,2 – 0,5 mm
	0,4 – 1,0 mm
	0,8 – 1,3 mm
	1,2 – 2,4 mm
	2,0 – 3,5 mm

Development Projects

One of the main reasons for the establishment of Olympus and the acquisition of the MEBIOR factory were the opportunities provided for further Research and Development on industrial minerals towards innovative applications. This has always been a favorite field for the founder and sole shareholder of Olympus, together with R&D on other minerals and sub-products that have not yet been exploited in Greece.

A wide portfolio of such projects is being developed by Olympus.

Two of them require specific mention for their outstanding commercial prospects and are presented below as Development Projects 1 and 2.

Development Project 1

Quartzite 99.9%, low Fe

- high purity quartz (HPQ)
- high value filler applications
- (solar) silicon metal production

The current Olympus quarry routinely produces quartz with SiO_2 99.5%.
Using a strict selection process, it also yields 99.9% [3N].

In order to investigate whether a mechanized and standardized production of 3N, Olympus has very recently run a series of successful drillings in a new part of the quarry and sent samples to Mineral Lab in the USA for High-Purity Quartz. There, XRF analyses showed a SiO_2 content of 99.9% [3N] and workable levels of trace elements. Furthermore, a 250 kgs sample has been sent to Germany from a particular location of this operating quartz quarry (selected after drilling and trenching) following sorting. This sample had previously undergone our own XRF analysis and found mechanically, mineralogically and chemically eligible in principle for upgrading to yield High Purity – High Tech Quartz, especially for photovoltaics.
The drilling campaign, together with 2-3 trial trenches in appropriate places, will be continued so as to have a denser grid and thus achieve standardization. Samples will be sent to the US for High-Purity Quartz, this time by ICP-MS analysis.

Olympus has also drafted the next step in the development process: In order to convert its hoped for 3N product to a technically and commercially successful **5N product**, it is contemplated to carry out mineral processing tests **for high purity quartz (HPQ)** and **high value filler applications** and processing tests for **(solar) silicon metal production**. These tests will include detailed characterization of mineral phases and inclusions in the quartz, followed by beneficiation via mechanical, physical [eg attrition, magnetic separation, flotation], chemical [eg leaching and hot chlorination] and thermal refinement at max 2,100°C in an atmosphere of helium and hydrogen.

Products will be evaluated with regard to potential applications in the different high value (e.g. EMC filler) and high purity quartz markets and an expert advice will be given. Finally the use of the material in the production of (solar) silicon metal will be evaluated. Reduction furnaces used for silicon production typically require lump material as feedstock. In order to determine whether a quartz material is potentially suitable as a feedstock for silicon production besides the chemical purity, quartz lumps need to be evaluated regarding thermal and mechanical stability, since decrepitation of lumpy quartz is critical for stable operation of submerged arc furnaces. This will include an assessment of thermal stability including cohesion index (CI) and thermal strength index (TI).

It should be also mentioned that new, simpler methods of producing quartz from quartzite are currently available and might prove appropriate.

Handsorting for 5N producers

Low alpha filler applications will require testing for low uranium and thorium contents. Application of ground quartz for the production of EMC fillers will need further testing of parameters such as soluble cation/anion content, pH value and conductivity.

In solar grade silicon production (SoG-Si) using the direct reduction process very low impurity levels, especially with regard to boron and phosphorous are required. Besides the chemical purity, quartz lumps for silicon metal production have to provide high thermal stability, since decrepitation of lumpy quartz is critical for stable operation of submerged arc furnaces. Since stability towards decrepitation varies between different quartz types, assessment of thermal stability including heat index (HI) and thermal strength index (TSI) will be carried out.

After each processing step the improvement in product quality will be verified by chemical or microscopic analyses.

Other potential applications:

Storing wind, solar power with silica sands, 01 September 2021: Scientists from the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) have proposed to use silica sands – a stable and inexpensive material with prices ranging from $30 to $50/ton – as a medium to store excess wind and solar power.

Development Project 2

Development Project 2: Diatomite, Processed, for Insecticides

Concerning the use of Diatomite as an ecological, non-chemical insecticide in cereal silos, following the necessary licensing:

- Relevant tests have been carried out in Canada by Diatomite Institute on non-concentrated material for fighting the grown-up walking insects.
- Tests Detachment of various categories of Greek Diatomite in relation to an MN51 (a well-known product in the market) as reference sample on insect mortality commonly occurring within silo cereals (sitophilus ozyzae, Tribolium castaneum). Granulometry of the resulting -20μ product is shown in a LASER granulometry table by CERTH.
- Currently, tests for use as insecticide on concentrated material in the Entomology Lab of University of Thessaly funded by an Olympus contract are almost completed. Concentration has been achieved in these tests by combining heat and air flow (advanced stage of research; the Diatomite content of this product is 76% according to XRD by the University of Athens). The material produced has given results equal to or even better than competitive products imported into Greece.
- License for the marketing of enriched Diatomite for the addition as organic insecticide in silo of cereals and other agricultural products: The Licensing procedure is quite involved and time consuming, especially for products that come in contact with human food. The creation of the relevant dossier of supporting documents has been assigned to a German Company.
- Recent reference: 'Evaluation of a Greek Diatomaceous Earth for Stored Product Insect Control and Techniques That Maximize Its Insecticidal Efficacy'

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The Investment Opportunity

The Investment Proposal summarized

- Olympus SA: A diversified industrial minerals development, mining, processing and commercialization company, based in a SE European country.
- With the current and future uses of its resources, Olympus is structured for success, offering exposure for investors to a unique spectrum of industrial minerals in South East Europe.
- In the absence of new mines opening, the only way to keep up with demand is for miners to expand the size of their operations, to mine and process more ore, across a larger area.
- Five industrial minerals, comprising the largest spectrum in the country
- Mineral rights secured
- Complete processing plant for the main minerals quartzite, quartz, diatomite, zeolite, but also pozzolane and pumice stone. For quartzite comprises screening, iron-free natural pebble milling in a recently added closed-circuit unit to select superfine materials -20 μ;
- No environmental problems: licenses √, public acceptance √
- Olympus has not been affected by the pandemic
- Sales are continuously growing: fast approaching €1mi ex-works…
  …in the following markets: construction materials [mortars and other], agriculture, steel etc

Strong Points

- Consistently profitable
- Increases in Energy cost are already dealt with via surcharges
- No bank debts
- Very good reputation
- Experienced personnel
- A successful R&D program on new uses of the 'Company's industrial minerals – some with immediate application others for the medium-term. New uses focus on energy/climate-related solutions

Future Prospects and Projects

- The Olympus Management has a track record of discovery and development.
- The team is now very advanced in the search for additional exciting diatomite uses and quartz deposits as well as applications.
- Excellent new discovery opportunities, especially for high-quality quartz. Quartzite drill permit is in place and a drilling campaign has started, with very positive initial results
- The international and EU finance environment looks favorably upon such projects. For example ERMA Cluster 2 draft report "Materials for Energy Storage and Conversion. A European Call for Action" of Feb '21.

Opportunities for the Investor

- Having completed the consolidation phase, Olympus is ready to scale up production of current products esp quartzite, quartz, diatomite

plus launch new uses: esp of quartz/ zeolites/ diatomites for use in green energy eg photovoltaics/ agriculture/ construction.

- Olympus stands to profit from two game-changers

1. On the Policy front: EU emphasis on Materials for Energy Storage and Conversion, eg ERMA Cluster 2 draft report". A European Call for Action".
2. Commercially: Due to the recent energy crisis, coupled with erratic deliveries from China and sky-rocketing ocean freights, the most demanding customers are already returning to Europe, seeking the quality, response speed, service personalization and overall security-of-supply that EU suppliers can provide.
   https://elpais.com/extra/grandes-empresas/2021-09-26/el-regreso-a-europa-para-los-clientes-mas-exigentes.html

- Olympus' increasing of scale of operations will lead to a turnover of over X3 in 3 years, **plus** some sales from new products
- This will all lead to higher profits...just by working a second shift ...and with almost no investment [~155k€]
- **Further greatly increased sales of new products** could be achieved within Years 1-3 with an extra investment ~€3million

Olympus Industrial Minerals SA has completed a major consolidation phase

ie secured mineral deposits, validated & established production/uses as well as current & new clients

The project has been de-risked and is ready for take-off

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