

“NATURAL RESOURCES AND RECYCLING MATERIAL”

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INTRODUCTION:

We at **Elsons Corporation** supply raw material to various mega projects and builders throughout Pakistan. Our strong logistic network support makes Elsons a reliable partner for your business. Our resources division deals in natural resources, minerals and processing of by-products from industry and power plants.



Our primary focus is on exploring the vast potential of variety of Natural Resources available throughout Pakistan. We specialize in processing, transporting and supplying various natural resources for domestic industry and construction projects. Each of our business function is dedicated to facilitating our customers with top of the line products and highly effective services.

In addition to our reputation, we hold a sound financial structure and a chain of highly efficient suppliers resulting in a wide range of high quality products available in large quantities.



PUMICE STONE:

Pumice stone is a lightweight, porous igneous rock that forms during explosive volcanic eruptions. It has long been used as an abrasive in cleaning, polishing, cosmetic, skin care products and scouring compounds. It is also employed as a lightweight aggregate in precast masonry units, poured concrete, insulation, acoustic tile, and plasters. Due to its non-availability in Pakistan previously it was importing from other countries, due to that It was not feasible economically to use in many products manufactured in Pakistan. Good news for manufacturer now they can produce products base on pumice stone. Because its huge deposits found in Pakistan and mining process has been already started, now it is available in local market in very economical prices.

Application of Pumice Stone:

Pumice can be used in construction industry to produce lightweight concrete and other concrete products For example: lightweight blocks, panels, wall, bricks, and floors. Pumice Concrete is a low density, lightweight, low-rise structural concrete using 3/8 pumice aggregate, Portland cement, and water. (a pozzolan lime plaster is ideal), further improving the thermal performance of the structure.

Pumice stone utilization in agriculture farming gives great results, it is very beneficial for the growth, health and productivity of the plants.



Pumice Stone Cement Grade:

Pumice and cement enjoy a very dynamic relationship—a relationship Roman engineers and builders relied on completely. A relationship that worked so well that much of their empire of concrete endures to this day—some 2000 years later. Fact is, the hydrated lime cement they used made a poor concrete by itself. It was only after they added fine -grained pumice [01] (what they called pozzolana), did their concrete achieve its impressive millennia-spanning chemistry.

Pumice Stone Textile Grade:

Pumice has long been used for washing of denim and other hosiery garments, leather garments and goods.

Pumice Harticulture Grade:

It is a perfect soil amendment agent, this airy rock ideal for use cacti and succulents as well as other plants that required excellent drainage and air circulation. Plus the porosity of pumice allows microbial life to thrive while maintaining the soil structure better. Pumice in agriculture also has the advantage of natural PH along with a variety of trace materials. Pumice considered to be one of the best fertilizer, advantages to grow plants with pumice, it reduces water runoff, and fertilization by increasing soil absorption in sandy soil.

Perlite Alternate:

It is the extension of Pumice stone, it absorbs excess moisture, so roots don't rot, additionally perlite improves aeration and simulates the growth of mycorrhiza, perlite doesn't decomposed or compact over time like other soil amendments which means it help to maintain soil structure.

Pumice Stone Medical & Health Care Grade:

Pumice been used in production of dental and skin care products.

Pumice Stone Polishing Grade:

Pumice stone has been used in cleaning and polishing product for example it can be used in industrial hand wash, floor and toilets cleaning and polishing, car wax and polishing chemicals.

Demand in Market:

There is a huge demand in the market of lightweight blocks and wall panels by the civil consultants, engineers, contractors and builders. One of the lightest aggregate available in the market for production of concrete and lightweight blocks are pumice stone and Fly Ash.

Mix Design:

with the combination of Pumice Stone and Fly Ash can produced economically affordable lightweight blocks and other concrete products. Pavers, tuff tile and concrete blocks manufacture has an opportunity to produce lightweight products by using pumice stone and Fly Ash as an aggregate in the production of concrete.



FLY ASH:

Fly Ash is a by-product of burning pulverized coal in an electrical generating station. Specifically, it is the unburned residue that is carried away from the burning zone in the boiler by the flue gases and then collected by either mechanical or electrostatic precipitators.

Fly Ash is used as a supplementary cementations material (SCM) in the production of Portland cement concrete. A supplementary cementations material when used in conjunction with Portland cement contributes to the properties of the hardened concrete through hydraulic or pozzolanic activity or both.



Advantages:

The classified Fly Ash substantially reduced the volume of unburnt specks resulting in an almost carbon free substance. Supreme reactivity is accomplished by eliminating the low reactive crystalline Fly Ash specks and by maximizing the specific exterior of the ultimate product. The utilization of the advance Fly Ash substance ensures a remarkable decrease in the requirments of water for mixing and allows for advance improvement of strength, resulting in higher replacement ratios that are never possible with the inclusion of ordinary cement. Some of the advantages are:

1. Enhanced workability
2. Better stability
3. Low heat of hydration
4. Cost effectiveness
5. Fly Ash mixed cement structure lasts 150 years.



Workability:

The use of good quality fly ash with high fineness and low carbon content reduces the water demand of concrete and consequently, The use of fly ash should permit the concrete to be produced at a lower water content when compared to a Portland cement concrete of the same workability.

Heat of Hydration:

The reduction in the rate of the heat produced and the internal temperature rise of the concrete has long been an incentive for using fly ash in mass concrete construction.

Bleeding:

Generally fly ash will reduce the rate and amount of bleeding primarily due to the reduced water demand.

Strength Development:

By replacing a certain amount of Portland cement with the same amount of fly ash and maintaining a constant w/c. As the level of replacement increases the early-age strength decreases. However, long-term strength development is improved when fly ash is used as against Portland cement concrete

Resistance to the Penetration of Chlorides:

Fly ash reduces the permeability of concrete to water and gas provided the concrete is adequately cured (Thomas 2002). This has been attributed to a refinement in the pore structure.

Sulphate Resistance:

Studies have demonstrated that the use of sufficient quantities of low-calcium Class F fly ash can increase the resistance of concrete to chemical attack when the concrete is exposed to sulphate-bearing soils or groundwater

Alkali-Silica Reaction:

It is well established that low-calcium (Class F) fly ash is capable of controlling damaging alkali-silica reaction (ASR) in concrete at moderate levels of replacement (20% to 30%) and the effect has been ascribed to the reduced concentration of alkali hydroxides in the pore solution when fly ash is present.

LIME STONE:

Limestone is widely distributed in Pakistan. It is found in abundance in all four provinces. In Punjab Limestone is found in the Potwar plateau and salt range mainly near Khewra, Dandot, Dandkhel, Rawalpindi and DG Khan. In Khyber Pakhtunkhwa limestone is found near Nowshera and Kohat. In Baluchistan it is found in Harnai.

Limestone has numerous uses: as a building material, an essential component of concrete (Portland cement), a greening agent in coal Power Plants, as aggregate for the base of roads, as white pigment or filler in products such as toothpaste or paints, as a chemical feedstock for the production of lime, as a soil conditioner, and as a popular decorative addition to rock gardens.





SILICA SAND:

Silica is one of the most common minerals in the earth's crust. Glass, beach sand, silicone, and granite are all silica materials. The most common form of crystalline silica is quartz, which is found in sand, gravel, clay, granite, diatomaceous earth, and many other forms of rock.

Silica sand (often called industrial sand when used for this purpose) is the main structural component in a number of construction products. Flooring, mortars, cement, roofing shingles, asphalt, abrasive blasting and other industrial materials all use silica to improve durability and structural integrity. Found most commonly in the crystalline state, it also occurs in an amorphous form resulting from weathering or plankton fossilization.

Silica sand deposits are most commonly surface-mined in open pit operations, but dredging and underground mining are also employed



CONSTRUCTION AGGREGATE:

Aggregate, in building and construction, material used for mixing with cement, bitumen, lime, gypsum, or other adhesive to form concrete or mortar. The aggregate gives volume, stability, resistance to wear or erosion, and other desired physical properties to the finished product.



Aggregates make up 60-80% of the volume of concrete and 70-85% of the mass of concrete. Aggregate is also very important for strength, thermal and elastic properties of concrete, dimensional stability and volume stability.

The shape and texture of aggregate affects the properties of fresh concrete more than hardened concrete. A smooth surface can improve workability, yet a rougher surface generates a stronger bond between the paste and the aggregate creating a higher strength.



The Different Types of Aggregate. The categories of aggregates include gravel, sand, recycled concrete, slag, topsoil, ballast, Type 1 MOT, and geosynthetic aggregates (synthetic products commonly used in civil engineering projects used to stabilize terrain)

GGBFS SLAG:

Elsons Corporation is highly organized channel partner with leading producers of GGBFS. We at Elsons Corporation supply the raw material to various mega infrastructure projects and builders. With strong international and local logistic support we make Elsons a reliable partner for any project we work.

Advantages:

When used in Portland cement, GGBFS offers the following advantages over unmodified Portland cement.

- Increased sulfate resistance.
- Increased alkali silica reaction resistance.
- Increased pore refinement.
- Decreased water demand.
- Decreased permeability.
- Increased long-term strength
- Less heat generated during hydration.
- Produces white cement.



Typical Specification of GGBFS:

Loss on Ignition (LOI)	0.5	Sulphur Tri-Oxide (SO ₃)	0.3
Silicon Dioxide (SiO ₂)	36.5	Potassium Oxide (K ₂ O)	0.8
Aluminum Oxide (Al ₂ O ₃)	11.0	Sodium Oxide (Na ₂ O)	0.65
Ferric Oxide (Fe ₂ O ₃)	1.0	Chloride Ion Content (Cl ⁻)	0.03
Calcium Oxide (CaO)	38.5	Residue on 45 microns (%)	4.0
Magnesium Oxide (MgO)	7.8	Blaine (m ² /kg)	440
Sulfur as Sulphide (S)	1.0	Initial Setting Time.	210

TRANSPORTATION & LOGISTICS:

Supply chain efficiency is the key competitive factor in fast moving projects throughout Pakistan. It is always a priority at Elsons to set in hands with the best solution partner in transportation. Covering road and railway transport we design the most reliable and economically balanced solution for our logistic needs.

We assure nationwide coverage, reliable service and a responsive organization.



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