Hess | PUMICE
IDAHO USA

MINING AND
REFINING THE
WORLD'S PUREST
COMMERCIAL
DEPOSIT OF
WHITE PUMICE

CONSISTENTLY ON SPEC AND ON TIME

For four generations we have been dedicated to assuring the Hess brand is known not only for consistent quality, but also for being honest, fair and straightforward—helping to make us the largest producer of processed pumice in the world.

The View from the Top

Mother Nature gifted our corner of the Rocky Mountains with the finest pumice on the planet—a natural advantage we never take for granted. For more than 50 years, Hess Pumice Products has been listening to customers and doing whatever it takes to be a good business partner. We consistently work to make sure we provide solid business benefits for our customers and give them good reason to choose us over our competitors.

Our customers expect us to consistently produce a superior product, to invest in our refinement technology, to develop high-end supply chain capability, to conduct consistent scientific research on our product, and to diversify our client base. All these investments have benefited us and our clients and assures we will be serving the market for a long time to come.

Mike Hess,
CEO

Our Wright Creek Area pumice mine in Southeast Idaho, USA has a confirmed yield in millions of tons.

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Specialized impurity extraction technologies allow for extremely high purity content (98% - 99.8%, depending on grade).

Technical Savvy & Quality without Excuse

Prove Us in Your Own Lab

Our lab is where we ensure the quality and on-spec promise we make to our customers. But we would be delighted to have the opportunity to step into your lab and let you test for yourself the quality and versatility of our pumice products.

It makes good business sense to work with suppliers who are as committed to excellence as you are. And when it comes to supplying high-quality pumice, nobody is more committed than Hess. Hess is capable of meeting your most demanding specifications.

Companies pay us the greatest compliment when they bring us face-to-face with their smartest engineers and scientists. We love to be in the laboratory, alongside your technicians, discussing and demonstrating how Hess pumice can contribute to making your product better or your process more efficient.

We produce more than 300 grades of pumice—refining pumice to sizes that range from one-inch nuggets to smoke (3 microns in size).

We employ the industry's most sophisticated machinery to deliver on our promise of always being "on spec, on time".

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We Get It There

Working with Hess gives you the added benefit of a tight supply chain—we mine, refine, package and ship pumice products all from our headquarters in Idaho. This integration is rare in the pumice industry and even rarer when you consider the volumes at which we produce.

We maintain a stock of all standard grades and in most cases can ship orders from our warehouses immediately, thus reducing order lead times.

Logistics Expertise

Your supply chain is crucial. It's no longer just about getting the products you need. It's about having suppliers sending product that precisely meet the ordered specs, arriving when needed, packaged conveniently for end use, and shipped by the most economical means possible. Hess is dedicated to being the most sophisticated producer and supplier of pumice in the world market. And quite honestly, we're very good at it.

Wherever you are, we'll get it there. Hess has successfully shipped pumice to just about every corner of the earth. We'll package and deliver pumice for shipment in small canisters (as small as 2 grams) or load it in bulk rail cars (100 tons each). We'll even air freight pumice at the customer's request when timing is critical.

We also have stocking distributors in 23 countries on every continent (except Antarctica), allowing us to deliver pumice quickly and economically worldwide.

Modes of transportation include truck (bulk, trailer, P.D., inter-modal, ocean container) and rail (boxcar, covered hopper, open hopper and P.D.)

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With over 50 years of proven commitment to quality control and timely production, you can depend of Hess Pumice Products.

A Reliable Pumice Source

You have a reliable and stable partner when you work with Hess. Other pumice suppliers have come and gone over the past decades, rising and falling with the fortunes of single industries and economic fluctuations. Hess has been continuously supplying pumice products since 1958 – more than half a century. This stability is a credit to the Hess family for consistently taking a long-term view of their industry.

Our stability is a product of our ability to efficiently mine, process, package, and ship pumice anywhere on the globe. It's a product of the confirmed reserves of our Wright Creek Area mine. And it's a product of our relentless pursuit of new industries and uses for our pumice.

It is also a credit to the customers who have made Hess the success it is today—customers with vision who consistently lead in new technologies and processes in their given industry.

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What else? That's the question that drives the innovators in our R&D department to relentlessly explore uses for our pumice.

Versatility *and* Innovation

Hess has been setting the pace of innovation in pumice products for decades. We have helped drive the discovery of better uses and processes for pumice in a truly diverse range of industries by funding research and pushing beyond the status quo. It's our desire to see customers succeed that drives this commitment.

The Ideal Filler

Pumice is a non-toxic, non-crystalline silica functional filler and extender for paints and industrial coatings, rubber compounds, plastics, epoxies.

And when it comes to a gentle abrasive for exfoliating soaps and cleansers, pumice is unrivaled.

Pumice is the ideal lightweight aggregate for concrete and concrete blocks.

Pumice Pozz for Well Cementing

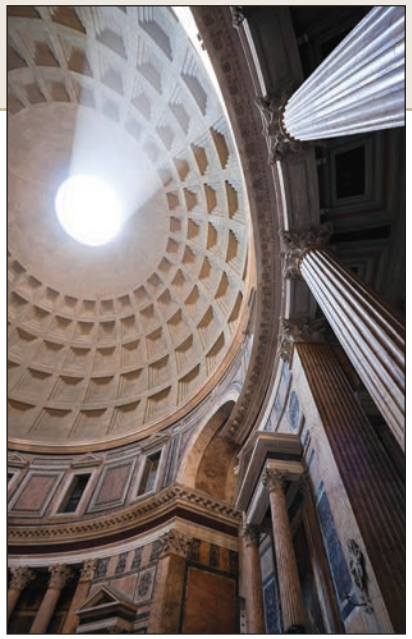
Oil and gas wells need to deliver under the harshest of conditions... and the well cement has to be equal to the challenge. Hess Pozz is used to formulate strong, lightweight, flexible, and enduring well annulus concrete.

We also produce a carefully refined pumice used to make a synthetic fracking sand.

Pumice as a Media for Soilless Grow Systems

Hess 'Ponics Grow Media products provide hydroponics and aquaponics growers with a natural, sustainable and highly-effective growing media.

A Difference That Can Be Seen; Strength That Endures.
We extract and refine the world's purest commercial deposit of white pumice.



Completed in 125 AD, the enduring Pantheon, and in particular, the dome, was constructed with pumice aggregate and pumice pozzolan-enhanced concrete. Almost 2000 years later, the Pantheon is still the world's largest unreinforced concrete dome.

Strength *and* Beauty

The Romans used pumice aggregate and fine-grained pumice (pozzolan) millennia ago to create strong and highly durable concrete structures that still stand...an impressive testament to their engineering prowess. Today's projects that call for high-performance, long-lasting concrete, spec HessPozz or Hess UltraPozz.

Our high-quality, white pumice is also used wherever visual appeal is important. Our pumice is the obvious choice for lightweight concrete applications like cast statuary, GFRC panels, and manufactured stone veneer.

Lightweight pumice aggregate is also used around the world to create a lightweight concrete with an R-value 4x that of normal concrete.

Even if your product or process doesn't specifically demand the whitest, purist pumice on the planet, it's great to know that for no extra cost, that's what you get from Hess.

For GFRC panels and manufactured stone applications, the white color of our pumice pozz is ideal.

Consistently Predictable

Lift after lift, mile after mile, span after span, modern high-performance concrete needs to meet the most stringent specifications, including long-term resistance to chemical attack such as ASR, Sulfate reaction, Chloride ingress, etc. Unlike some industrial by-products, Hess' naturally superior pumice pozzolan performs predictably, consistently, and effectively as an admixture to 'inoculate' the concrete against nearly every

form of chemical attack, and as a supplemental cementitious material (SCM) pumice pozzolan lowers the carbon footprint (pumice is naturally calcined)...and it is safe for the environment. Three major benefits in one great product

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HessPozz and Hess UltraPozz: Carefully refined natural pumice pozzolans that give standard concrete a serious performance boost.

Pumice: The Original Pozz

Today's standard concretes simply aren't as good as they could be. Almost as soon as it's placed, the process of degradation begins—thermal cracking, porosity that invites freeze-thaw damage, sulfate and chloride attacks, even alkali-silica reaction (ASR)—all of which severely shorten the usable life of the concrete structure.

Roman engineers discovered the secret to enduring concrete: pumice. When they mixed hydrated lime and water with a finely graded amorphous silica (known to the Romans as *pulvis puteolanus*, and referred to today as volcanic ash or pumice pozzolan) the result was a concrete that has endured for two millennia.

Research quantifying the pozzolanic performance of pumice in concrete has provided definitive data that Hess Pozz improves concrete performance in *every* key category. ASR flatlined? Check. Heat of hydration suppression? Check. Compressive strength-maturity targets? Check. Fresh state properties targets? Check. Drying shrinkage? Negligible. Resistance to chloride ion penetration? Less than 500 coulombs. Resistance to sulfate attack? Class 3.

Welcome to the renaissance of pumice pozzolan: truly a simple, natural solution to a vexing problem.

Instead of Fly Ash

With the tightening regulations and adverse market forces affecting the coal-fired power industry, Class F fly ash is getting harder and harder to source. Quantifying research finds pumice pozz to be the ideal performance replacement for fly ash in concrete.

Detailed Research

Research from the **University of Utah** and the **University of Texas-Austin** (and others) quantifies the significant performance boost pumice-blended cements give to concrete—in terms of density and impermeability, thermal cracking, resistivity to chemical attacks, ASR mitigation, and compressive strength.
See the research: **www.hesspozz.com**

hesspumice.com

Hess | POZZ
IDAHO USA

Call for a sample or to discuss your needs with an expert:
(208) **766-4777 x111**

The Pozzolanic Charge: Think of the pozzolanic reaction as a molecular reclaimation process: converting deleterious compounds into beneficial ones.

Winning Combo

When industry needs an injectable ultrafine grout to stabilize weak soils or seal microfractures in underground structures they turn to US Grout for a cementitious grout that flows where others can't (ultrafine particle size) and cures dense and strong (pozzolanic charge).

Our Pumice Powers a Unique Cementitious Grout

Unique among all cementitious grouts produced in the world today, US Grouts are strengthened and made exceptionally enduring with the same pumice-based pozzolan technology the Romans used in their concrete over 2000 years ago. Developed by the U.S. Department of Energy, US Grout products are typically superior in injectable performance and cured density to any cementitious grout available in the marketplace.

In the soil stabilization game, it is particle size and rheology, not viscosity, that determines a grout's ability to effectively penetrate and properly disperse in fine, dense soils. To that end, US Grout has developed a product specifically for soil permeation and stabilization projects.

That same minuscule particle size is the key to the ability of our grout to deeply penetrate and effectively seal microfractures in rock and concrete structures—fractures as small as 6 microns as deep as 3 meters. Standard OPC grouts can't even come close.

Sand column testing visually demonstrates the rapid and complete permeation achieved by US Grout Ultrafine and provides correlative data for grouting into fine, dense soils.

US GROUT

Core sample of grouted salt rock showing the successful penetration of our grout into fractures as small as 6 microns.

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Hess Pumice NCS Products: A non-crystalline silica with all the benefits of CS and none of the health risks.

Infinitely Useful

Pumice is a foamy volcanic glass (it has no crystal structure) made up of silica, alumina and small amounts of calcium, magnesium, potassium, etc. Basically, an amorphous silica, with the respirable portion (PM10) crystalline silica-free.

The Ideal Filler & Extender

Hess Pumice is infinitely useful, and one of the industrial applications where our pumice is ideal is as a premium filler and extender for paints, stains and industrial coatings as well as for plastics and rubber compounds.

Our pumice comes from the world's purest and whitest commercial deposit. It is then further purified and refined (micronized) to any spec you require—from an ultrafine average particle size of 3µ up to 15µ. And it's crystalline silicia free, making it chemically and environmentally inert—both safe to use and safe for the environment.

These non-crystalline silica (NCS) products have a lower density than crystalline silica (CS) and cannot replace CS on a drop-in basis, rather, NCS must replace CS—or any other filler—on a volume basis, rather than by weight. This results in higher bulking values and higher yields per pound of NCS product verses CS product while still providing excellent sheen control and hiding power.

Our pumice filler also has excellent scrub, burnish and stain resistance properties due to the 6.1 Mohs-scale hardness of the particles.

Fine-grade pumice is used as a tread enhancer for winter and all-weather tires to provide grip in snow and ice.

Call for a sample of the brightest and hardest Amorphous Aluminum Silica commercially available in the world. It is near-white in color, neutral in pH, non-hazardous and has great hardness for outstanding durability and low oil absorption.

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Pumice as a soil admendment: Pumice is an economical soil conditioner, imparting excellent water and air holding properties.

Pumice in the Soil

When it comes to growing vibrant plants and turf, it's all about the quality of the soil. The root systems of plants require a continual supply of oxygen, and the carbon dioxide respirated by the roots must be able to leave the root zone. This all-important exchange of gases is key to a good growing medium. That means the soil must resist compaction, yet be able to retain water and hold onto the nutrients necessary for plant growth.

That's easy enough when your needs can be met with a few bags of potting mix. But on a large scale, the only option is to improve the performance of the native soil. The unique and enduring properties inherient in every tiny pumice stone can help transform poor soil into soil that supports thriving vegetation while decreasing water demands.

And such improvement can be realized with as little as a ten-percent addition of pumice.

Economic Solution

Pumice is economical, effective, and enduring—ideal as a soil-performance booster for large-scale projects like brownfield reclamation, runoff mitigation, or repairing construction-damaged top soil.

Conditioning problematic soils by adding pumice will decrease irrigation and nutrient demands and increase turf resilience for sports fields, parks, and golf courses.

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Since the entire suite of pumice's useful properties are bestowed by nature, preparing pumice grow media for market is simple, sustainable, and green.

World-Renowned

While pumice is found abundantly across the globe, Mother Nature did not create all pumice as equal—the physical characteristics, chemical makeup, purity, and color vary widely. Hess Pumice enjoys a world-wide reputation for purity and ideal elemental composition. From this same deposit comes the pumice for our Hess 'Ponics Grow Media.

Soilless Growing Media

Ultra-Efficiency grow systems demand a high-performance soilless grow media that delivers results in the key areas detailed below—areas in which Hess pumice is ideally suited to deliver.

STABILITY: Pumice grow media is lightweight, yet substantial enough not to float away. The grippy surface of the pumice stones form a stable bedding matrix to support thriving plants.

NUTRIENT HOLDING CAPACITY: Hess 'Ponics grow media is entirely made up of pure, natural pumice. This foamed stone is riven with countless tiny pores that function as microscopic reservoirs to capture and store nutrient-rich moisture and give it back to the root system as needed.

GAS EXCHANGE: The highly porous, low-bulk nature of Hess pumice facilitates an effective and positive exchange of gases between the root zone and the environment.

DRAINAGE: The pores that perforate the pumice stones are (naturally) not the same size—and it is this natural variety in pore size and shape that provide the needed balance. The tiny, microscopic pore sizes hold water and make it available as demanded by the root system. The large pores drain quickly, shedding water and taking in air.

www.**hessponics.com**

Hess 'PONICS GROW MEDIA

hesspumice.com

Naturally white in color, Limestrong products are easily tinted and colored using natural oxide color pigments.

Limestrong: Old-World Savvy for Modern Buildings

Anciently, the Romans used a mixture of hydrated lime and fine-grained pumice to form strong and incredibly durable mortar, plaster, and concrete—and the evidence of that cementitious wisdom still stands some 2000 years later.

Under the guidance of Stan Petersen, the renowned expert in old-world masonry and lime plastering, Hess Pumice formulated natural mortar and plaster products that put the strength, durability and beauty of the old-world masters in the capable hands of today's masons and plasterers.

These simple water + lime + pumice pozzolan cementitious finishes not only out-perform modern Portland cement-based equivalents, they stand as environmentally sound alternatives to synthetic stucco and other Portland cement-based products.

Limestrong pozzolan lime plaster and mortar products are safe to use and simple to mix, handle and apply. They are ideal for both outside and inside finishes, and creativity with color and texture is unlimited: Limestrong plaster can be worked down to a glass-smooth finish or left rustically rough.

LimeStrong
A PRODUCT OF HESS PUMICE
POZZOLAN LIME PLASTER & MORTAR
www.limestrongpozz.com

Properly applied, our carefully-balanced old-world formulation of lime and pumice pozzolan creates an artistic, flexible, breathable plaster finish that withstands the relentless assault of time and weather.

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Lab Samples Available : Contact us at 1 (208) 766-4777 x147
to discuss your needs and/or to request a sample.

While we want you to know all the great business reasons for working with Hess, you're going to want hard technical information too. We also invite you to visit **www.hesspumice.com** for more extensive data and links to download a material data safety sheet and other publications.

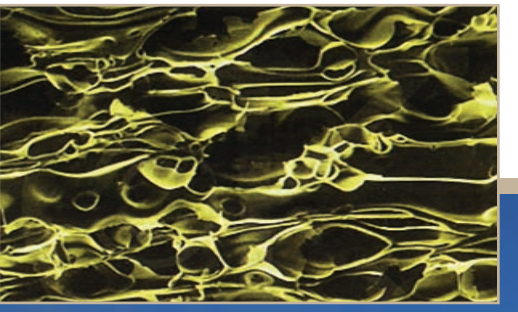
Typical Technical Properties

CHEMICAL ANALYSIS

- Silicon Dioxide: 76.2%
- Aluminum Oxide: 13.5%
- Ferric Oxide: 1.1%
- Ferrous Oxide: 0.1%
- Sodium Oxide: 1.6%
- Potassium Oxide: 1.8%
- Calcium Oxide: 0.8%
- Titanium Oxide: 0.2%
- Magnesium Oxide: .05%
- Moisture: <1.0%

PHYSICAL PROPERTIES of PUMICE

- Chem Name: Amorphous Aluminum Silicate
- Hardness (MOHS): 6
- pH: 7.2
- Radioactivity: None
- Softening Point: 900 degrees C
- Water Soluble Substances: 0.15%
- Reactivity: Inert
  (except in the presence of calcium hydroxide or hydrofluoric acid)
- Appearance: White powder
- GE Brightness: 84



Magnified view of pumice vesicles.

Info-rich Publications

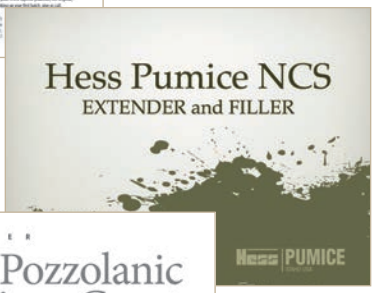
DOWNLOADABLE PDF FILES

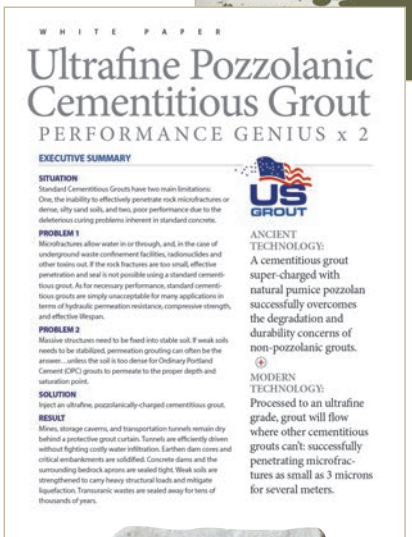
Not only do we actively research, develop, and refine industrial applications for our amazing pumice, we also publish a library of support information on those applications—whitepapers, research summaries, knowledge briefs, use guides, info-graphics, slide decks, and so on.

Available online as downloadable PDF files: **hesspumice.com/downloads/pumice-info-downloads.html**

WEBSITES

Hess Pumice also maintains a series of websites designed to educate industry on the various uses of pumice and the whys of Hess pumice in particular. These websites are all linked from the sitemaps page on the main pumice website—**hesspumice.com/sitemap.html**





We produce over 300 spec grades of pumice for industry—from one-inch nuggets to smoke (3 microns)—all made from pumice with a hardness and purity recognized as superior to any source worldwide.

Pumice: Born of Earth and Fire

Deep underground, in the fiery heart of a volcano, water mixes with molten rock, pressure builds...finally finding a violent, spectacular release. The trapped water in the viscous, super-heated rock flashes to steam, blasting the magma into a frothy stone that cools, hardens, and falls to the earth as pumice…a foamed-glass stone that is hard yet friable, non-crystalline in structure, and naturally calcined—a combination of characteristics that make pumice powders and aggregates incredibly useful to a variety of industries.

If the newly formed pumice falls in the water, it becomes saturated and sinks, then drifts and accumulates via the relentless action of waves. This centuries-long scrubbing by the water can result in a very pure pumice—this is the case with the pumice deposit in Southeast Idaho that is sourced by Hess Pumice—a vast reserve of white, pure pumice that is in demand all over the world.

Hess PUMICE
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