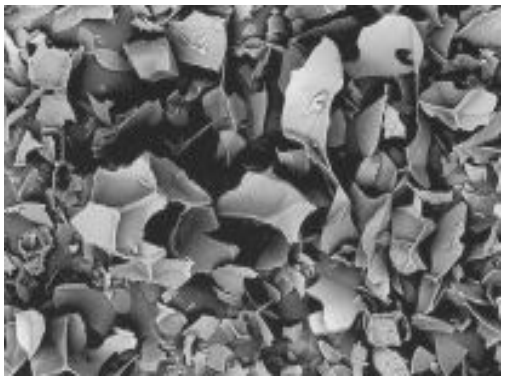
Auspearl

PERLITE FILTER AID

ENGINEERED MINERAL SOLUTIONS

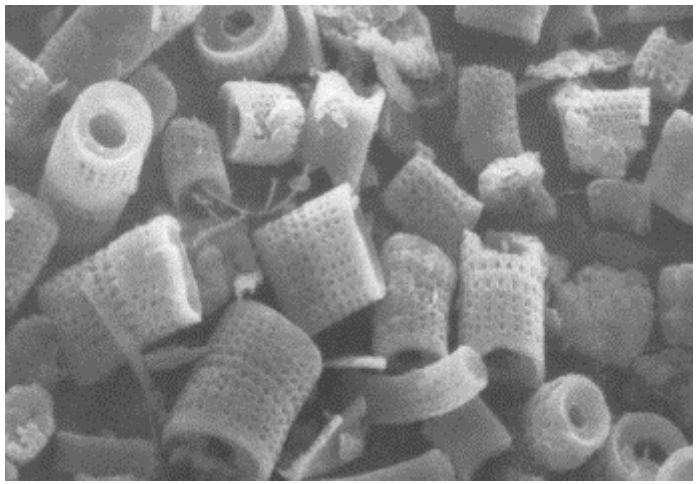
What is Perlite?

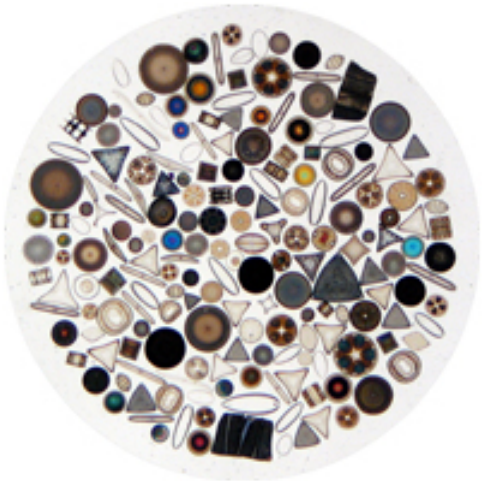
- Perlite is a generic term for naturally occurring siliceous rock.
- The distinguishing feature which sets perlite apart from other volcanic glasses is that when heated to a suitable point in its softening range, it expands from four to twenty times its original volume.
- This expansion is due to the presence of three to four percent combined water in the crude perlite rock.
- Expanded perlite is tiny clusters of minute, insulating glass bubbles.
- The bubbles create a porous surface area that traps air and water and makes a great horticultural and insulating media.



What is Diatomaceous Earth(DE)?

- Diatomaceous earth is made from the fossilized remains of tiny, aquatic organisms called diatoms.
- Their skeletons are made of a natural substance called silica. Over a long period of time, diatoms accumulate in the sediment of rivers, streams, lakes, and oceans.





Why is Perlite superior to DE?

- Perlite filter aids are functionally similar to DE filter aids. However they typically have bulk densities about half that of DE.
- Perlite filter aids can be used with both pressure and vacuum filtration equipment by merely replacing present DE material volumetrically.
- Perlite does not impart taste, odour or colour and is listed in the EU Food Chemicals Codex which is published by the National Academy of Sciences.

► Health & Safety:

- Microscopically DE is much harder than perlite and forms very sharp little particles.
- In EU, DE bags must be labelled "Dangerous to Human Beings"
- Perlite filter aids are amorphous in their structure, thereby not dangerous to human beings. There are no markings required for perlite products.

► Financial:

- As a GRAS (Generally Recognised as Safe) substance, spent perlite cake can be used as a stock feed.
- With less weight, less tonnes of perlite are used. For example, only 700kg of perlite will be used for 1000kg of DE.
- The reduced weight of perlite produces less pressure on the operating machinery, reducing maintenance costs.
- Productivity, clarity and flow rates may be increased.

Types of Filtration

Rotary Vacuum Filters

- Rotary vacuum filter drums consist of a drum rotating in a tub of liquid to be filtered.
- The technology is well suited to slurries, and liquids with a high solid content, which could clog other forms of filter.
- The drum is pre-coated with a filter aid, typically of DE or perlite.
- After a pre-coat has been applied, the liquid to be filtered is sent to the tub below the drum.
- The drum rotates through the liquid and the vacuum sucks liquid and solids onto the drum pre-coat surface. The liquid portion is “sucked” by the vacuum through the filter media to the internal portion of the drum, and the filtrate pumped away.
- The solids adhere to the outside of the drum which then passes a knife, cutting off the solids and a small portion of the filter media to reveal a fresh media surface that will enter the liquid as the drum rotates.
- The knife advances automatically as the surface is removed.

Leaf Filters

There are two types of vessel configuration:

- Vertical vessels
- Horizontal vessels

In most fine chemical processes the leaves are fitted into vertical vessels, whilst horizontal vessels are used in heavier process industries such as the preparation of sulfur in phosphoric acid plants. The leaves inside horizontal tanks may be positioned either along the tank axis or perpendicular to the axis.

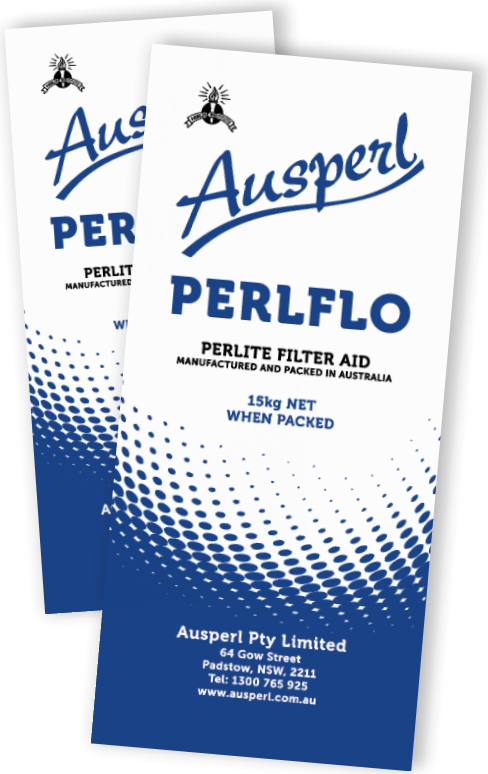
Filters

- A filter press is a tool used in separation processes, specifically in solid/liquid separation using the principle of pressure drive, provided by a slurry pump.
- The filter press is used in fixed-volume and batch operations, which means that the operation must be stopped to discharge the filter cake before the next batch can be started.
- The major components of a filter press are the skeleton and the filter pack.
- The skeleton holds the filter pack together while pressure is being developed inside the filtration chamber.
- The chamber can only hold a specific volume of solids.

AUSPERL Filter Grades

AUSPERL offers a wide range of AUSPERL filter aid grades for any filtration application. It is important to choose the grade that will give the lowest cost per unit volume cost of filtered product whilst maintaining an acceptable clarity level at maximum allowable throughput. When choosing perlite, consider wet bulk density differences for dosing precoat and bodyfeed addition rates. Please contact us for help in choosing the optimal perlite grade for your application.

		AP10	AP20	AP40	AP60	AP70	AP80
		Very Slow	Slow	Medium	Fast	Fast	Fast
Relative Flow Rate	Seconds	600-1200	100-230	50-80	25-35	15-25	7-15
Bulk Density	kg/m3	200-230	125-160	120-150	110-145	110-140	100-130
Wet Cake Density	kg/m3	300-360	250-336	210-290	200-280	180-250	170-230
Permeability	Darcies	0.04-0.08	0.21-0.27	064-1.02	1.46-2.04	2.04-3.41	3.45-7.38
Ph in 10% slurry	Ph	7-8	7-8	7-8	7-8	7-8	7-8
Average Particle Size	microns	25	43	51	78	85	98
Median Size	microns	10	28	34	55	68	84
90% passing	microns	40	87	106	162	166	180



DE Filter Equivalents

AUSPERL	DICALITE	CELITE	SHOWA	CELATOM	KENITE
Perlite	Diatomite	Diatomite	Diatomite	Diatomite	Diatomite
AP10	215	Filtercel/500	R100	FN-2	100
AP10	Super-Aid	505		FP-1	
AP10	UF	577	R200	FW-2	
AP20	Speed-flow	Std. Super-cell	R300	FP-4	200
AP20 or AP40	231	512	R400	FW-6	290/300
AP20 or AP40	341			FW-12	
AP40	Speed-plus	Hy-flo	R450	FW-14	297/700
AP40	375	501	R500	FW-18	900
AP60	Speed-ex	503	R600	FW-20	1000
AP70	2500	535	R700	FW-40	2000
AP70	4200	545		FW-50	2500
AP80	4500	550	R900S	FW-60	3000
AP80	5000	555		FW-70	5500
AP80	5000	560	R1100	FW-80	
AP80	6000	580			

Replacement of DE with Perlite

- Perlite is 30-40% lighter than diatomaceous earth. Accordingly, it should be replaced volumetrically and not on a weight basis.
- For example, if you are using 1 x 20kg bag of DE then substitute this with 1 x 15kg bag of perlite (assuming the volume is the same).
- It is quite common to use the same grade of filter aid for both pre-coat and body feed applications. When two different grades are used, the body feed will typically be the more “coarse” or “open” grade. (This does not refer to the grades in dual pre-coat applications).
- For suspended solids which are relatively non-compressible use a grade of perlite which has a median micron size comparable to the solids being filtered; i.e., for fine solids use a “fine” grade of filter aid; for coarse solids use a “coarse” grade of filter aid.

ABOUT OUR **COMPANY**

INPRO

- INPRO was formed in 1996.
- We operate from Auckland, New Zealand with quarrying operations in central North Island.
- We mine and process perlite ore for export throughout the Asia-Pacific region and we expand perlite for cryogenic, horticultural and industrial applications.
- We mine and process pumice and sand for local markets and for value-added applications.
- We act as the agent for AUSPERL, and distribute their vermiculite, perlite, filter aid, cellulose and diatomaceous earth.
- Our primary warehousing facilities are in Auckland and Blenheim allowing for nationwide supply and distribution of all products.

AUSPERL

- AUSPERL was purchased from ORICA in 2006.
- We operate from a 12,000m2 factory on a 2ha site in Sydney, Australia.
- We manufacture expanded perlite for filtration, cryogenic, horticultural and industrial applications and vermiculite for industrial and horticultural applications.
- We have warehousing throughout Australia allowing for nationwide supply and distribution of all products.

CRYOPERL

- CRYOPERL was established in 2011.
- We have designed and built twelve mobile perlite expansion furnaces with specific and unique capabilities for operations in remote locations.
- Our experienced engineering team has developed remote controlled vibration equipment to eliminate human entry into the annular space during works.
- We have completed the insulation works for a wide number of LNG and ASU units across the globe and our team has installed more than 450,000m³ of expanded perlite in the US, Australia, Poland, Canada, Indonesia, Singapore, Spain, to name a few locations.

AUSPERL CHEMICALS

- AUSPERL CHEMICALS was established in 2016.
- We are proud to represent principals supplying products to a range of industries including filtration, paint, ink and coatings, adhesives, construction, mining and drilling and pharmaceutical applications.
- The business is operated from our facilities in Sydney and Auckland, and 3PL partners in all major Australasian centres.
- Our integration within AUSPERL allows a deep distribution network and client portfolio.
- We have experienced and knowledgeable sales, customer support and administrative personnel.

CORE COMPETENCIES

► Experienced Operators

- Twenty years trading history with operating knowledge of quarries, primary, secondary and tertiary processing plants, local warehousing and distribution around the globe.
- 90 team members across Australia , New Zealand, Asia and Europe.

► Quality Accredited Systems

- AUSPERL is IS09001 accredited.

► International Relationships

- An active member of both the Perlite Institute and the Vermiculite Association.

► Raw Material Selection

- We select and process ore from NZ, Australia, Turkey, Greece, South Africa, Zimbabwe and the USA depending on the desired final product.

► Investment in Research & Development

- Continuing investment in successful and developing opportunities.

CONCLUSION

Inpro Ausperl Ausperl SPECIALTY CHEMICAL SOLUTIONS Cryoperl

- We are a leading a local miner, processor, procurer and supplier of industrial minerals and associated raw materials within Australia, New Zealand and the broader Asia-Pacific region.
- We have representatives based in Australia, New Zealand, USA, Spain and Thailand.
- Our team of technical personnel are specialists across a range of industries including cryogenics, filtration, horticulture and construction.
- Our industrial processing and wider operational expertise, combined with our established and growing relationships with principals and distributors, allows us to engineer complete mineral solutions to our valued clients.

CONTACT US

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PERLITE INSTITUTE

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