

**Weir Minerals Africa**

Excellent  
Minerals  
Solutions

Critical slurry and classification equipment  
solutions for mining & minerals

**WEIR**  
MINERALS



# Meeting the needs of the mining & minerals sector worldwide.

Weir Minerals is committed to delivering market leading products and services across the full spectrum of mining and minerals processing activities.

## **Mine dewatering and process water applications**



Most mining and quarrying operations the world over require some form of dewatering system to keep their operations running. As water becomes even scarcer, this precious resource is often being reclaimed, used, cleaned, re-used and recycled throughout the process.

Whether deep mine, opencast or in a quarry, Weir Minerals has an extensive portfolio of products including submersible, self priming, end-suction, split-case, multistage ring section, vertical turbine and both crankshaft and hydraulically driven piston and diaphragm pumps, making Weir Minerals a single source for all your mine dewatering and process water handling equipment.

## **Critical process plant slurry equipment**



At the heart of every process, the grinding circuit represents the most abrasive applications that process equipment ever encounters. Weir Minerals' abrasion and corrosion resistant materials technology is among the most advanced in the industry.

With reliability, performance and durability of such key importance, an experienced supplier with innovative and trusted solutions is paramount. Weir Minerals' range of pumps, valves, hydrocyclones, mill liners and services can be relied upon to meet your critical needs.

## **Transportation and waste management**



Whilst conveniently located reserves are becoming exhausted, the efficient movement of ore from more distant sites to and from existing processing plants is an increasingly vital element in the minerals processing industry. Weir Minerals has the product and service capabilities to meet this need, replacing conveyor, road and rail infrastructure with cost effective pumping solutions.

Customers and society on the whole expect sustainability and environmental responsibility. Improving valuable fines recovery, recycling tailings water, and developing technology to increase slurry densities are all areas where Weir Minerals' vast expertise coupled with its product range provides added value to our customers.

## **Mining, sand and aggregates**



Weir Minerals has been a global leader in the design, manufacture, installation and servicing of equipment and solutions for the mining, sand and aggregates industries for almost a century.

Linatex® vibrating screens have a reputation of being quality machines providing exceptional screen process performance for our customers in a wide range of applications. All Linatex® vibrating screens are supplied as linear motion units. Linear motion allows for screens with a low headroom requirement and less pegging of screen media when compared with circular or elliptical motion screens. Using linear motion vibrating screens almost always results in a lower cost once installed, as well as the ability to control the travel rate across the screen, resulting in an improved screen efficiency.





## Our strength Your advantage

Focusing on what we do best,  
to deliver on what matters to you most.

Weir Minerals are specialists in delivering and supporting slurry and mine dewatering equipment solutions, including pumps, hydrocyclones, valves, screens, hoses and wear resistant linings for global mining and mineral processing.

Focusing on what we do best, Weir Minerals delivers on what matters to you most. This simple philosophy combined with being part of the global Weir Group provides you with added benefits over alternative suppliers.

Weir Minerals brings together an extensive global service and manufacturing presence combined with an investment capability able to develop, support and sustain market leading technologies that deliver enhanced performance in your process critical applications.

Through a customer focused strategy, Weir Minerals has used its unique technologies to develop an unrivalled range of mine dewatering, process water and specialist slurry processing equipment for some of your most critical processes. This means that today's Weir Minerals is much more than a pump business.

### Capability

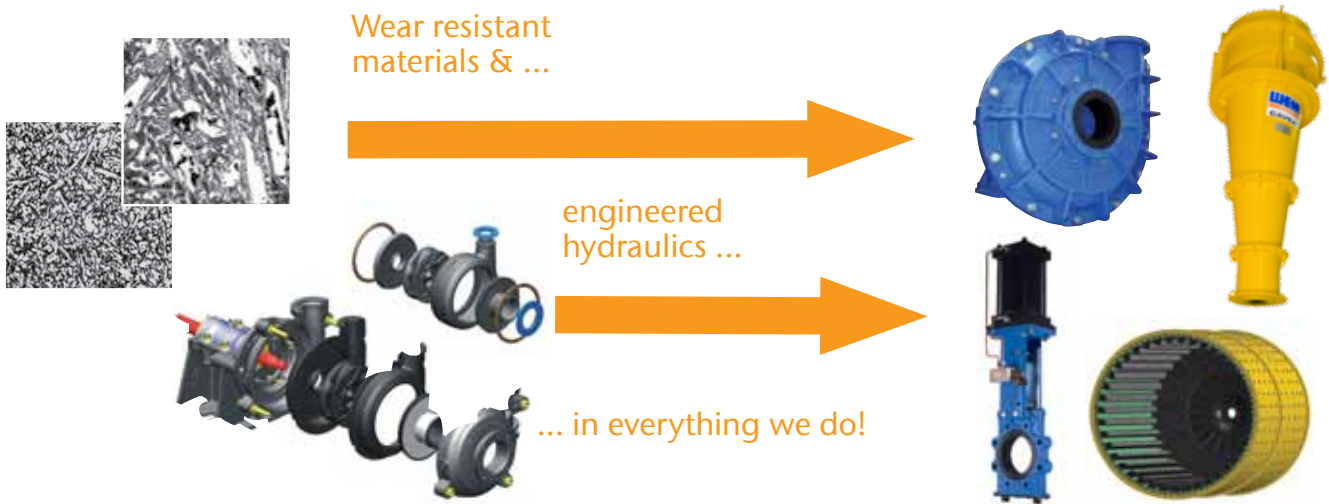
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Weir Minerals is a specialist provider of high performance processing equipment, which includes ranges of slurry, process and dewatering pumps, hydrocyclones, high pressure grinding rolls, valves, screens, hoses mill liners and wear resistant linings.

# Our advanced technologies transfer



Today the Warman®, Envirotech® and Geho® brands are instantly recognisable around the world for setting the standard in slurry pump performance. Now these benefits are available in a range of products that deliver the same high performance you have come to expect from our pumps. In other words, the Weir Minerals name stands for world class performance in a range of customer critical slurry and process applications.

What is less recognised is that the Weir Minerals offering includes a range of world leading products built around an unrivalled capability in materials technology and engineered hydraulics. Slurry pumps, hydrocyclones, slurry valves, screens, hoses, high pressure grinding rolls, mill liners and wear resistant linings are often critical to the success of a process plant, and frequently represent the difference between a successful and failing operation. Combined, they can enable you to reduce the downtime in your highest wear applications, ensure maximum recovery of material and ensure the highest levels of operational efficiency.

Our chosen product offering is part of a deliberate customer focused strategy to ensure that we develop products that remove the pain from where it hurts you most, whilst delivering it with low total lifetime cost. This ensures that you receive both the

performance benefits in your everyday operations whilst maximising your return on investment.

A further significant benefit is that unlike turnkey project suppliers, our focus upon the areas that matter to you most ensure that you do not compromise the overall performance of your plants in some of the most critical areas.

Concentrating upon customer critical applications requires a large amount of dedicated resources to ensure the continuous development of materials and product innovations. This is where being part of a world leading global operation really counts and enables us to invest millions of dollars in our four global Centres of Excellence for research and development. This, combined with a people development programme to ensure that we recruit and retain some of the keenest minds in process and slurry technology, ensures that the products you receive today are unrivalled.

So, if you are looking to extend the wear life in severe applications like your mill circuit, make efficiency gains with your process pumps, dewater your mine or transfer slurries by long distance pipeline, our Warman®, Envirotech®, Geho®, Floway® and Multiflo® pump brands provide you with unsurpassed performance. Remember the same level of world class performance you have

Geoff Moore, Divisional Marketing Director

*"We view our products in the same way as our customers, seeing them not in isolation, but as part of a chain. In doing this we recognise that a chain - the customers' process - is only as strong as its weakest link. This philosophy ensures we address the areas that cost the customer time and money. Our specialist approach to these critical applications means that all our development time and effort ensures that we deliver maximum performance where it counts most."*

*This is something that a turnkey provider just cannot deliver. With their focus and resource diluted across a plant's entire process, it inevitably limits their ability to target key areas. This is why today so many of the world's major operators specify our high performance equipment in their project briefs to provide them with the competitive edge."*

# across into everything we do

come to expect from our pumps is also available across our Cavex® hydrocyclones, Vulco® mill liners and wear resistant linings, Linatex® screens, Linatex® hoses and Isogate® slurry valves. Together our ranges work to ensure that we deliver some of the most efficient and effective slurry equipment solutions available anywhere in the world today.

## Mining

Mining is one of the oldest activities of mankind. It requires the selective extraction of ore from the earth. Effectively and efficiently extracting small quantities of minerals from large volumes of ore and rock requires a high level of expertise. Whilst people have been mining for thousands of years, through continuous innovation and ingenuity, extraction processes have evolved beyond recognition.

Weir Minerals is at the forefront of that innovation. We work to ensure that our expertise helps you achieve a high grade and low cost per ton for your mining operation by focusing on process critical applications. Whilst extraction processes vary from mineral to mineral, Weir Minerals remains consistent in helping you achieve high performance.

The processes involved in minerals extraction can vary from simple crushing and classifying to requiring additional chemical or metallurgical

processes to complete their production. One common theme is that all these processes involve handling abrasive and corrosive materials.

Weir Minerals strives to offer you solutions for a range of process critical applications, helping to solve the slurry and water handling problems in the mining and minerals processing environment using our process expertise and innovation in materials and hydraulics.

From mine dewatering to mill circuit pumps, hydrocyclones, screens, hoses through to mill liners and slurry valves, Weir Minerals products, services and expertise help mining companies all over the world to achieve high production and low operating costs.

To help you understand how Weir Minerals fits into your mining and minerals process, the following sections examine five process critical areas where we focus our expertise:

Dewatering & process water

Mill circuit

Ore processing and classification

Hydraulic mining & dredging

Hydraulic ore lifting, transportation & waste management



1. Linatex® hoses
2. Warman® slurry pumps
3. Geho® PD slurry pumps
4. Floway® turbine pumps
5. Isogate® slurry valves
6. Cavex® hydrocyclones
7. Vulco® mill liners
8. Linatex® screening equipment



Weir Minerals offers the convenience of one of the most extensive mine dewatering and process water pump range available today.

# Dewatering and process water

The total solution for your dewatering and process water applications

## Opencast mine dewatering

Weir Minerals offers a range of pumps to overcome high heads and flows to ensure that we keep your operations moving and production on time in an opencast mining operation through a reliable and structured dewatering system.

## Underground mine dewatering

We offer a vast range of pumps, including conventional and customised underground arrangements. These include submersible, multistage ring section and horizontal split case designs to address conventional systems, which pass water from the stopes down to the lowest point of the individual stopes or mine, allowing heavier solids to settle in settling dams utilising abandoned stopes.

We also offer alternatives to multistage pumping and the elimination of settling ponds in dirty water systems. Using a Geho® crankshaft or hydraulic driven diaphragm pump can raise both water and suspended solids to the surface in one single pumping stage.

## Quarry dewatering

Normally, on a smaller scale than the large mineral ore opencast mines, quarries require pumps to handle much lower heads. Warman® submersible

and Multiflo® horizontal self-priming centrifugal pump ranges are well suited to these types of applications.

## Process water

Water can be both an expensive and scarce resource used both within the process and also increasingly to transport the ore or product over long distances. It often has to be cleaned and recycled. To address this, Weir Minerals offers its Warman® submersible pumps, Multiflo® floating pump units, Floway® vertical turbine pumps or a combination of all three.

Linatex® hoses and bends are recognised for long wear life and are a cost effective solution for transporting water, process water and slurries to the point of discharge.

## Speciality pumps

We have a range of speciality pumps which can be used in the following applications:

- a) High pressure cleaning
- b) Desalination
- c) Boiler feed
- d) High pressure underground drilling



1. Warman® SJ Submersible mine dewatering pump
2. Envirotech® horizontal split case pump
3. Floway® vertical turbine pumps
4. Geho® PD slurry pump
5. Multiflo® self-priming diesel driven pump sets



At the heart of every process the grinding circuit represents the most abrasive applications that process equipment ever encounters. Weir Minerals' abrasion and corrosion-resistant materials technology leads the world.

The wear resistant properties of Weir Minerals' products are ideally suited for the highly abrasive nature of the ore in the early stages of the extraction process.

The full range of Weir Minerals' products available for the critical milling process includes Vulco® mill liners and wear resistant linings, Warman® severe duty mill circuit pumps, Isogate® slurry valves, Linatex® screens and Cavex® hydrocyclones.

## Mill circuit

When the ore arrives for processing at the concentration plant, it is often crushed and then passed through to the milling and classification process to reduce it to the fine particle size needed to allow the desired mineral to be extracted.

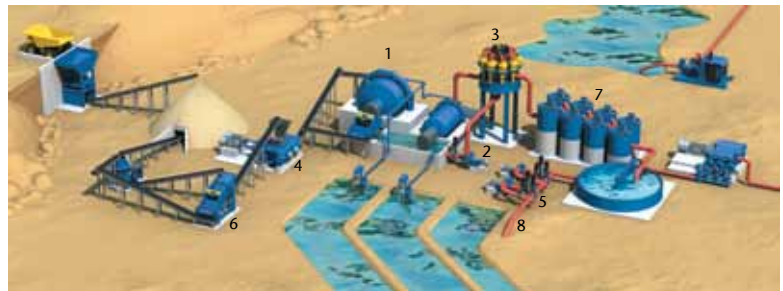
Within the mill itself, Weir Minerals offers a range of mill lining systems for a number of different types of mills, including semi-autogenous mills which use a grinding medium such as steel rods or balls, through to autogenous mills, which use the ore's own force as it falls against itself to break it down into a smaller size.

The mill circuit must also contain a means of classification, the most common being a hydrocyclone. As well as supplying the heavy duty pumps and valves to handle the transfer of the slurry between milling and classification, Weir Minerals offers a range of high performance Cavex® hydrocyclones.

The use of centrifugal force to separate coarse solids makes classification by hydrocyclones an ideal application for Weir Minerals' innovations in materials and hydraulic technology.

Effectively a simple conically shaped vessel with a tangential inlet and two outlets at either end of its

The mill circuit



KEY:

- |                                    |                             |
|------------------------------------|-----------------------------|
| 1 Vulco® mill liners               | 5 Isogate® slurry valve     |
| 2 Warman® mill circuit pump        | 6 Linatex® vibrating screen |
| 3 Cavex® hydrocyclones             | 7 Linatex® rubber lining    |
| 4 KHD high pressure grinding rolls | 8 Linatex® slurry hose      |

axis, hydrocyclones use centrifugal force to accelerate the settling rate. Coarser solids report to the underflow and are returned to the mill, whilst finer solids report to the overflow and on through the process.

To complement the wear solution in the mill, Weir Minerals offers an extensive wear erosion solution in the mill circuit, including Linatex® flexible distance pieces, rubber lining distribution boxes, cyclone feed hoses, lining of cyclones and pipes vessels and launders.

## Slurry solutions for your process critical applications



1



2

1. A Warman® mill circuit pump during installation in South America
2. A Warman® 450MCR™ in a copper-gold installation in Argentina
3. Routine inspection of Vulco® mill liners



3

Whilst the milling process is common for most ore processing, the method of concentrating the minerals varies widely.

Weir Minerals offers a range of products to help address applications across them all.

# Ore processing

Slurry solutions for your process critical applications



## Froth flotation

Froth flotation involves mixing, frothing and collecting reagents with the ore slurry and then passing air through the slurry. The mineral particles cling to the bubbles which rise to the surface as a froth, making pumping difficult for all but the very best of pumps. Weir Minerals offers a range of Warman® pumps to cope with the arduous nature of froth pumping.

## Solvent extraction

Solvent extraction is the process of dissolving the desired mineral in a suitable solvent. This can be a highly corrosive application making it well suited to Weir Minerals' developments in corrosion-resistant materials.

Extraction is often achieved by pumping an organic solvent with water into a mixer and then allowing the mineral-rich organic solvent to separate from the water, similar to the way oil and water separate after mixing them. This process is commonly used to process copper and uranium, and has recently been adapted for zinc.

## Gravity concentration

Gravity concentration, as the name implies, uses gravity as the main force of concentration. Other additives are also applied to make the separation faster and more efficient.

Clarification is such a gravity method of separating fluid from solid particles. It is often used in conjunction with flocculent to make the particles sink to the bottom of the clarification pool faster, while solids-free fluid is collected at the surface.

Thickening is a similar process. Solids that sink to the bottom are obtained and clear fluid is rejected from the surface.

Clusters of hydrocyclones can also be used to perform gravity concentration.

A combination of these processes is utilised in most mineral processing. The most desirable aspect of this method is its cost effectiveness.

## Electrostatic separation

Electrostatic separation is achieved by utilising forces acting on particles of ore in an electric field and is often used to concentrate silver, copper and zinc-iron.

## Magnetic separation

Magnetic separation is used to recover ferromagnetic materials, particularly iron ore, from slurries. It is also used for the recovery of dense media such as magnetite and ferrosilicon in flotation processes. Weir Minerals is well placed to address this application, often characterised by a high concentration of abrasive and corrosive slurries which have to be pumped, processed and controlled.

1. Geho® PD pumps at a nickel plant in Australia

2. An Isogate® slurry valve

3. Cavex® hydrocyclones arranged in clusters

4. Bauxite digester feed at a Chinese alumina plant with Geho® PD slurry pumps



Underground and opencast ore mining are the most recognised types of mining, but inland and offshore dredging, china clay quarries and sand and gravel pits encounter the same critical process equipment needs.

**Minerals extraction**

Mining ore can be from underground, opencast mines, quarries or from underwater. Although such mining is generally a mechanical operation, in some cases water is utilised in the front line mining process.

**Hydraulic mining**

Water monitors or jets have long been used to remove or loosen soft aggregates, often using surface and recirculated water. Weir Minerals' centrifugal pumps offer the ideal solution to this often extremely hard wearing application, both feeding the monitors and moving the ore slurry to the process plant. Warman® Type G gravel pumps are ideally suited to these extremely abrasive slurries.

**Dredging and barge loading**

Weir Minerals has a range of centrifugal pumps specifically designed for dredging anything from fine sand to coarse aggregates. The range of pumps for these generally low head high flow applications can be used either inland or offshore.



# Hydraulic mining and dredging

Slurry solutions for your process critical applications

**Sand & gravel plants**

Linatex® anti-abrasion rubber lining products and Linatex® hoses are known for being cost effective solutions in sand and gravel operations.

To complete the Weir Minerals range of products that enables full optimisation of the process, there are Warman® vertical and submersible slurry pumps, Cavex® hydrocyclones, Isogate® slurry valves, and Vulco® wear resistant mill linings.

- 1, 2, 3. Suction dredger "Rotterdam 56" and the deck-mounted Warman® 18" gravel pump and twin Warman® 200mm PC feed pumps
- 4. A Warman® heavy-duty dredge pump installed on a sea-going dredger
- 5. A Warman® gravel pump handling china clay slurry



Conventional mining requires all mined material to be hauled or lifted to the surface for further treatment in the process plant and then transported by road or rail. Waste tailings are often transported as diluted slurries which often require large settling ponds and return water systems.

Weir Minerals has played an active role in the development and realisation of higher concentration ore lifting, ore transportation and tailings disposal systems with both Warman® centrifugal slurry pumps and Geho® piston diaphragm slurry pumps.

# Hydraulic ore lifting, transportation

Best value solutions for replacing road and rail infrastructure

## Hydraulic ore lifting

Classic mining requires all mined material to be hauled or lifted to the surface for further treatment in the process plant.

The Geho® piston diaphragm pumps offer a cost-effective alternative which enables underground mined ore to be hydraulically pumped to the surface processing plant as a highly concentrated slurry after it has been crushed, ground and mixed with mine water in situ underground.

The ore slurry can either be pumped into temporary storage, or directly fed into the processing circuit.

## Transportation

Ore slurry pipelines are an efficient way of transporting solids safely, silently and reliably to the process plant. This proven technology is environmentally safe and provides a cost-effective alternative to the more traditional means of truck hauling or rail.

The most efficient way of pumping highly concentrated slurry through pipelines is the utilisation of either centrifugal slurry pumps or piston diaphragm pumps. Due to their low wear and substantially low operating costs, both pumps have proved to be the favoured pump types rather than plunger or piston pumps. Many companies have looked at both capital costs and operating costs and chosen the latter through the utilisation of either Warman® centrifugal slurry pumps or Geho® piston diaphragm pumps. The efficiency and reliability of both pump types removes the requirement of a stand-by pump thus reducing capital costs. The high availability and cost-effectiveness of the pumps is unmatched as demonstrated by the handling of a diverse range of slurries, such as copper, nickel, bauxite, iron and phosphate concentrates.

1. Slurry pipeline transportation of copper concentrate with a lift of approx. 800m using a Geho® PD slurry pump
2. High pressure Warman® 12/10 AHPP slurry pumps in a platinum tailings application





# and waste management

## Waste management

From a disposal viewpoint, it is no longer environmentally and economically acceptable to transport waste materials at low concentration to large disposal areas.

Thickened tailings disposal systems and stope filling procedures are now actively sought and require much higher concentrations to be transported than can be delivered by conventional pipelines.

Weir Minerals has played an active role in the development and realisation of high concentration tailings disposal systems with Warman® centrifugal slurry pumps and Geho® piston diaphragm slurry pumps, as well as the Isogate® JCO high pressure valves.

## Advantages of higher concentration slurry disposal:

Less water required than diluted slurries

A stable deposit is created

The need for a dam water reclamation system with return water lines is often eliminated.

If used as mine backfill, the system does not add water to the mine dewatering capacity and solids addition to the mine water.

Shallow cone at the point of discharge reduces erosion of the disposal by run-off rainwater.

1. Isogate® JCO pinch valves in a tailings application in Chile
2. Warman® 14/12FF AHP heavy duty slurry pumps used in series pumping for tailings disposal (diamond).
3. Warman® 20/18 AHPP high pressure pumps in a copper tailings application in Chile.
4. Mine tailings disposal with Geho® PD slurry pumps
5. 250 km bauxite slurry pipeline in Brazil





**WARMAN®**

Centrifugal Slurry Pumps

**ENVIROTECH®**

Centrifugal Slurry Pumps

**GEHO®**

PD Slurry Pumps

**FLOWAY® PUMPS**

Vertical Turbine Pumps

**MULTIFLO®**

Mine Dewatering Solutions

# Slurry, dewatering and process water pumps

Elastomer-lined, metal-lined and metal-cased centrifugal and PD slurry pumps for severe applications.

World class speciality pump ranges designed to meet the specific needs of end users in process water and mine dewatering applications.



## Warman® & Envirotech® centrifugal slurry pumps

The Warman® range includes horizontal, vertical and electro-submersible centrifugal slurry pumps, abrasion and corrosion-resistant, elastomer-lined, metal-lined and metal-cased slurry pumps for handling fine abrasive and corrosive slurries, slurries with very large particles, frothy slurries, pulps and process liquids. The Warman® efficiency base (E-Base) is engineered to reduce operating costs and ensure performance improvements in pump installations.

## Geho® PD slurry pumps

The Geho range of PD slurry pumps includes crankshaft and hydraulic driven piston diaphragm pumps for a wide range of high head slurry applications.

## Floway® vertical turbine pumps

Vertically suspended close coupled single or multistage turbine pumps available in wet pit, can and thrust pot configurations.

## Envirotech® dewatering dumps and Multiflo® process & dewatering pumps

The Envirotech® range of mine dewatering centrifugal pumps and pump sets includes end-suction, single stage split case, two stage split case and multistage ring sections. The submersible range is designed for exceptional wear life and ease of operation, suitable for dirty water and sludge mixed with solids. The Multiflo® range includes self-priming diesel-driven, skid, trailer and pontoon-mounted pumps.

# Slurry valves

Cost-effective knife gate, ball and pinch valves designed for today's slurry applications.

## Isogate® slurry knife-gate valves

A cost effective valve designed for today's slurry applications.

Conventional slurry valves have been applied in abrasive and corrosive slurries and not always with satisfactory results. Typical problems include rapid wear of valve liners, sticking and leakage to the atmosphere during operation.

Isogate® slurry valves are designed to eliminate these problems because of the two-piece rubber sleeve system that allows the valve to cycle in heavy slurries without sticking, full port design that reduces pressure drop and turbulence (thus minimising liner wear) and protective bellows to prevent external contamination. This design minimises downtime and reduces risk of disruption during operation.

Using materials proven by experience in abrasion and corrosion resistance, the Isogate® heavy-duty slurry valve combines a low maintenance design with a wide range of available materials, making the Isogate® heavy-duty slurry valve suitable for a wide range of applications.

## Isogate® pinch valves

A full range of mechanical and pneumatic pinch valve products are available with premium natural and synthetic elastomer lined pinch sleeves and robust cast iron, aluminium and steel alloy operating mechanisms and bodies. The pinch valve products are available with hand wheels and bevel gears for manual operation and pneumatic, hydraulic or electric actuators for automated operation. Isogate® pinch valves are ideal for both on-off and modulating control of corrosive and abrasive liquids and slurries.

### Isogate® pinch valve sleeves

Isogate® pinch valve sleeves are available for all brands, sizes and styles of pinch valves. They are manufactured with a wide variety of natural and synthetic inner liner materials and feature genuine Linatex®, Linard® and Linagard™ rubber linings for maximum corrosion protection and outstanding wear life.

## Isogate® check valves

Isogate® check valves are full bore swing check valves available in both single non-return and double non-return configurations. These valves are fully lined with premium quality natural and synthetic elastomers and are available with cast iron, cast aluminium or fabricated steel bodies. Isogate® check valves are designed to prevent reverse flow of corrosive and abrasive liquids and slurries in process piping systems.



# Hydrocyclones

Laminar spiral hydrocyclones for extended wear life and maximum process efficiency.

## Cavex® hydrocyclones

Cavex® hydrocyclones feature a unique laminar spiral inlet geometry designed to deliver maximum efficiency, maximum capacity and longer wear life than conventional involute or tangential feed hydrocyclone designs.

Not just a cone modification, the Cavex® hydrocyclone has an entirely new feed geometry that substantially increases hydraulic capacity while minimising localised wear on the feed chamber and vortex finder. These design improvements result in lower operating costs and fewer hydrocyclones required for a given duty.

For grinding circuit applications, Cavex® hydrocyclones increase circuit capacity by minimising the quantity of fines by-passing to the underflow stream. Cavex® hydrocyclones achieve these results by maximising the air core diameter created within the rotating mass of fluid in the hydrocyclone. These effects are proven in both laboratory testing and full scale plant operation.

## Cavex® DE double efficiency hydrocyclones

Weir Minerals has re-engineered the two-stage cyclone design and made significant improvements resulting in a solution with a well proven track record.

Substantial improvements have been made to the Cavex® DE hydrocyclone, offering an innovative adjustable cone design which not only effectively controls the flow split to the secondary cyclone, but also solves the wear problems in the transition zone, associated with earlier designs.

## Cavex® G3 dewatering cyclone

Weir Minerals uses the latest developments in computer generated cyclone modelling, based on actual performance from the many Cavex® cyclone installations world wide to select the appropriate cyclone or cluster to optimise the performance of new or established process plants in sand washing, coal preparation and mineral processing. Dewatering/stacker options are also available in Cavex® cyclone technology as an alternative.

## Dense media separation

Cast from hard-wearing 27 percent chromium iron or high alumina, ceramic lined Cavex® dense medium separation hydrocyclones provide high abrasion resistance and cost effectiveness, particularly in the treatment of abrasive minerals. Typical applications are coal, iron ore and diamonds where classification is required to separate particles with differing specific gravities.

## Cavex® dewatering canister

Capacity concerns of the small cyclones have been overcome by the development of Cavex® dewatering canisters which combine numerous small cyclones in one assembly. These dewatering canisters were developed to dewater large volumes effectively, with each canister consisting of either 16 x 40CVX™ cyclones or 8 x 100CVX™ cyclones. Each canister can act as an individual cyclone, or a cluster of canisters can be fabricated.





## Screens

With improved efficiencies and increased capabilities, all of our screen products showcase a combination of innovative and proven screen technology.

Our range of linear motion vibrating screens offer extremely robust design and construction.

With the benefits of high screening efficiency and capacity, low headroom and reduced operating and maintenance costs, these screens are ideally suited for light to heavy duty applications in the minerals processing, coal and aggregate industries.

### Classification screens

Weir Minerals offers a number of vibrating screens that include single and double deck and multislope designs. These screens meet the needs of modern high capacity production plants in terms of maximum equipment availability. Focus is placed on minimising power consumption, especially important in today's mining environment.

### Dewatering screens

These screens incorporate a sloping back deck section, fitted with slotted apertures on the screen media. Slurry is fed uniformly along the top of this back section, which acts as a vibrating drainage panel. The main deck slopes upward at 3° - 5° and is fitted with smaller slotted apertures. The Linatex® dewatering screen is ideally suited to produce a conveyable, drip free product with high solids recovery.

### Single and double deck multislope screens

The development of the multislope screen concept is a recent innovation in screening technology, essentially because of its higher throughput per unit screening area. Multislope screens provide a high capacity, high velocity machine with thin material depth leading to greater efficiencies and throughput performance, which is due to its superior ability to stratify a bed.

### Single and double deck horizontal screens

Ranging from 0.3 m to over 4 m wide, and up to 10 m in length, these single or double deck screens are popular in a variety of applications, including coal sizing and DMS drain and rinse applications. Excitation is via twin out-of-balance motors or geared oil bath lubricated exciter. Common screen media include modular rubber/polyurethane or woven/wedge wire media.



# Rubber sheeting

Versatile and flexible sheeting suitable for lining surfaces to minimise wear and corrosion.

Weir Minerals is a manufacturer and global supplier of high quality rubber products which are specifically designed for abrasion and corrosion protection of equipment across a variety of industries. Our commitment to our customers is simple. Selecting the correct rubber from the Linatex® range will provide the end user with the 'best in field' performance and low cost of ownership.

## Sheet rubber

Our global presence combined with our vast experience across a variety of industries allows us to confidently provide a 'complete solution' to your needs.

## The Linatex® range

Linatex® rubber is a 95% premium natural rubber that exhibits outstanding resilience, strength, resistance to cutting, tearing and abrasion and is used in applications where the equipment is subjected to high wear in the presence of fine slurries.

Linatex® VS rubber is a newly developed premium uncured natural rubber with proven differentiated wear performance when compared to other uncured natural rubber products. Specifically designed for slurry applications where hot bonding is preferred.

## The Linard® range

The Linard® range has been developed for applications where heavy duty impact and wear resistance are required.

Linard® 60 rubber is a uniquely designed silica reinforced natural rubber with high resilience, resistance to deformation and wear. Suitable in applications where coarse, sharp material is present, skirting rubber and any applications where sticking is an issue.

The Linard® HD and HDS rubber ranges are natural/synthetic rubber blends specifically designed to exhibit exceptional toughness without compromising natural elasticity. The range comprises:

- Linard® HD60
- Linard® HD70
- Linard® HDS

Formulated to withstand severe abrasion in heavy duty applications. Suitable for primary screen decks and underpans, heavy duty transfer chutes lining and heavy duty impact applications.

## The Linagard™ range

The Linagard™ range of rubber products has been developed for applications where more than just wear resistance is required.

Linagard™ NBR rubber is a nitrile based rubber reinforced with silica fillers specifically formulated to give unmatched wear performance. Ideally suited for applications where oil and/or chemicals are present, and/or in high temperatures.

Linagard™ BB (Bromo Butyl) rubber has been formulated to provide excellent protection where resistance to acids, alkalis and corrosion is required to prolong service life. Suitable for rubber lining of acid tanks that experience high temperatures, or where UV and ozone protection is required.

Linagard™ FG rubber is natural rubber compound that offers outstanding wear resistance. Manufactured from FDA approved ingredients, it is recommended for a wide range of applications including general linings in areas of food processing, pharmaceutical and cosmetic manufacturing.

Linagard™ OSR rubber is a high quality rubber compound designed to provide resistance to oils, wet abrasion and elevated temperatures. The combination of wear and oil resistance is unmatched in the industry. Initially designed to meet the rigorous demands of the oil sands industry, the unique properties of Linagard™ OSR rubber make it adaptable for many other applications.

## Lining and fabricated products

The Linatex® rubber range is extremely versatile and suitable as protective lining for a variety of surfaces to minimise wear and corrosion of equipment. Typical lining applications include:

- Chute lining
- Pipe lining
- Vessel lining

Linatex® rubbers are lighter and more flexible than wear liner materials such as steel and ceramics. This aids installation, which can be completed at one of our many service centres or on site. Linatex® rubber can be bonded quickly and permanently using our proprietary range of adhesives. Both cured and uncured rubber products are manufactured in sheet form of varying thicknesses, allowing it to be cut or configured into any shape the application may require.



# Hoses

Standard or custom design, we provide the best hose solution for your site.

## **Linatex® speciality hose**

Linatex® speciality rubber hose is designed for maximum wear life to minimise down time. Available in bore sizes from 50 mm to 900 mm (2 in to 36 in), lengths up to 10 metres, many end type configurations, pressures and liner compounds, Linatex® speciality rubber hose has proven to be the superior hose product for all applications.

Weir Minerals also offers additional services including technical and design advice, hose audits, testing and certification.

## **Linatex® materials handling hose**

Designed and manufactured for optimum wear characteristics in processing or dredging applications, our range of materials handling hose sets the standard for quality and performance.

Available in both suction or discharge constructions, Linatex® hoses are specifically designed to meet your requirements for maximum abrasion resistance.

## **Linatex® cut-end hose and couplings**

Available in either aluminium or cast iron, the Linatex® cut-end coupling (muff-coupling) system allows quick and simple on-site assembly thus minimising down time and maintenance costs. It is available in 10 metre lengths.

## **Linatex® preformed rubber bends**

Similar in construction to Linatex® materials handling hose, Linatex® preformed hose bends are intended for use where space limitations demand a much sharper bend than can be achieved using a length of Linatex® materials handling hose, or to replace existing steel bends for enhanced wear protection.





# Mill liners

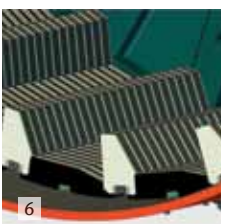
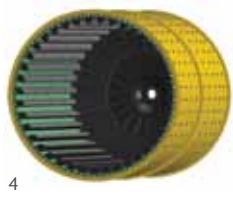
Custom designed to optimise grinding mill performance and maximise productivity.



1. Typical grate discharge assembly  
2. New composite SFL plates for SAG mill application



3. Patented Vulco® heavy-duty metal cap shell plate for extended service life in large diameter AG, SAG and ball mills



4. Shell lining with radial head liner design  
5. Head lining with a curved design  
6. Typical moulded SFL lining section  
7. Composite metal cap SFL shell lining



## Vulco® elastomer wear linings

Weir Minerals' years of elastomer technological developments have led to a wide array of products for abrasive and corrosive applications.

### Mill lining systems

- head plates
- shell plates
- metal cap lifter bars
- grate plates
- pulp dischargers
- trunnion liners
- centre cones

Vulco® mill lining systems offer extended wear life in mills with large diameters, large nominal feed particle size, large grinding media diameter, and/or where ore fractures into highly angular particles.

### Ceramic wear pads

Vulco® ceramic wear pads combine the resilience of high quality rubber with the toughness and abrasion-resistance of embedded ceramic cylinders to provide a unique solution to wear problems in typical applications such as:

- launders
- chute linings
- clarifier blades
- sluice gate doors
- vibrating feed systems

### Impact bars

Vulco® impact bar assemblies provide highly efficient maintenance-free loading point stations in conveyor belt systems.

These durable impact bars offer years of trouble-free service and require no routine maintenance.

Unlike conventional impact idlers, they have no moving parts, no bearings to grease and no idler shafts to bend.

# Service & support

With the right service programme you can achieve optimum performance and reduce ownership costs.

## Service & support

Our services range from on-request service through to our service agreements. Our on-request services include commissioning, pump rebuilds and emergency repairs. Weir Minerals' service offers an innovative approach to equipment servicing which ensures that your plant achieves optimal health and marks a step-change from costly reactive maintenance to preventative plant maintenance.

## Health check

We diagnose the condition of your plant much in the same way your general practitioner would diagnose your health - from temperature checks through to basic maintenance.

## Fitness programme

This includes a bearing tolerance check, strip and rebuild, and part condition report. This first stage also includes the necessary safety assessments to ensure that we comply with all the required health & safety regulations.

## Peak performance

This involves a visit by our expert engineers to survey your plant design and provide a written report with recommendations. This value added service ensures that you know exactly how to arrange your system to achieve optimal operating performance from your installed pumps, hydrocyclones, valves and mill lining systems. Additionally, we will provide training so that you understand exactly how our products work, and ensure maximum return on investment.





**WARMAN®**  
Centrifugal Slurry Pumps

**ENVIROTECH®**  
Centrifugal Slurry Pumps

**GEHO®**  
PD Slurry Pumps

**LINATEX®**  
Rubber Products

**VULCO®**  
Wear Resistant Linings

**CAVEX®**  
Hydrocyclones

**FLOWAY® PUMPS**  
Vertical Turbine Pumps

**ISOGATE®**  
Slurry Valves

**MULTIFLO®**  
Mine Dewatering Solutions

**LEWIS® PUMPS**  
Vertical Chemical Pumps

**WEIR MINERALS  
RENTALS™**

For further information on any of these products or product support services, contact your nearest sales office or visit:

[www.weirminerals.com](http://www.weirminerals.com)

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