



ESCO Wear Management

Mining, Construction, Aggregate & Industrial Applications



ESCO Corporation

With a history of proprietary products and a reputation for engineering and metallurgical expertise, ESCO is a leading manufacturer of technically-rich ground engaging tools and durable wear parts for mining, construction, dredging and other industrial applications. ESCO also produces a wide array of critical components for the aerospace and power-generation markets.



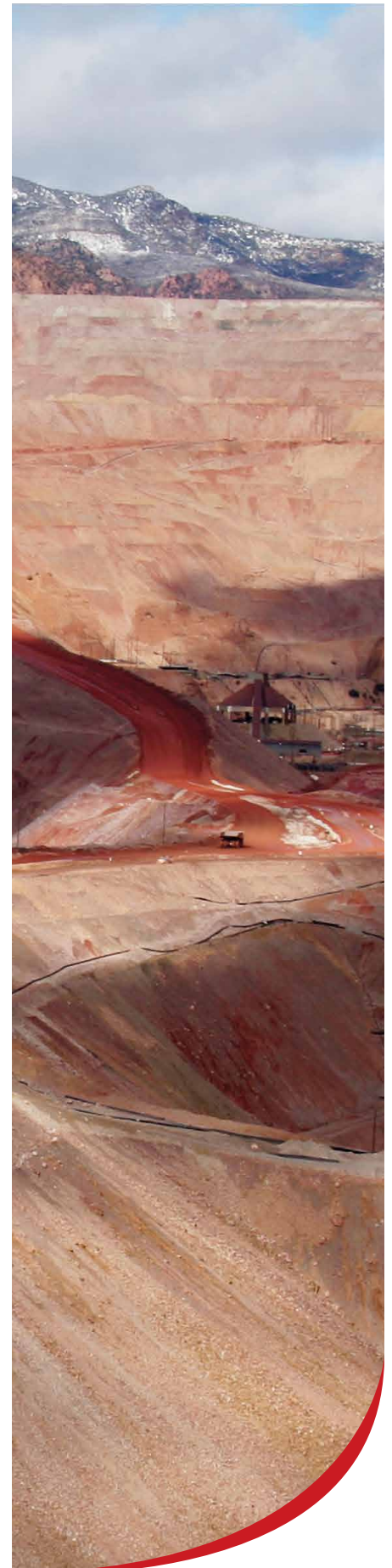
ESCO Engineered Products

With manufacturing facilities throughout North and South America, Europe and Asia — and licensees in key markets around the world — ESCO Engineered Products is the customer's choice for premier, field-tested wear solutions and ground engaging tools for the toughest, most challenging applications.



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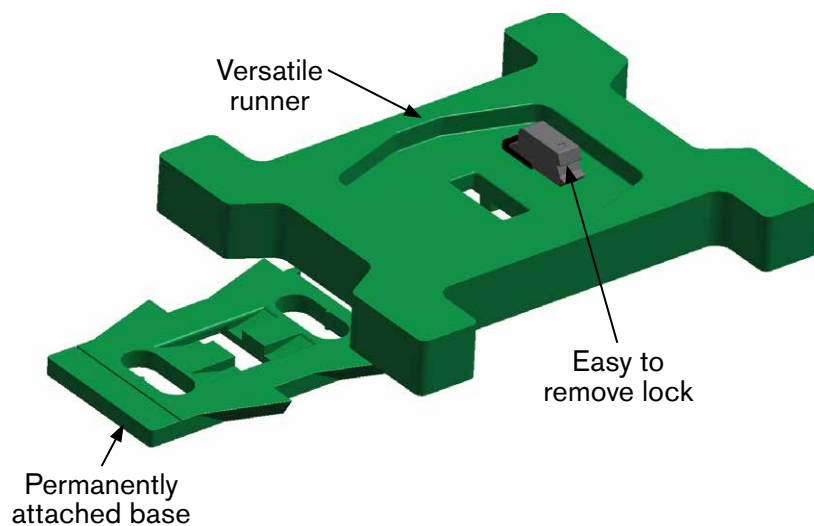
Kwik-Lok® II System



Kwik-Lok II Wear Protection

The Kwik-Lok II wear protection system provides reliable protection and convenient replacement in the field. Kwik-Lok II runners are safer and easier to change than conventional wear protection. Depending on the demands of the application, multiple wear runners may be used to protect large surfaces or a single runner can be installed to protect an area of high wear. Kwik-Lok II wear protection improves safety, lowers costs and reduces maintenance.

ESCO also offers the semi-mechanically attached Kwik-Lok system for special applications where a rubber lock is the best option.



Features and Benefits

Improved Safety

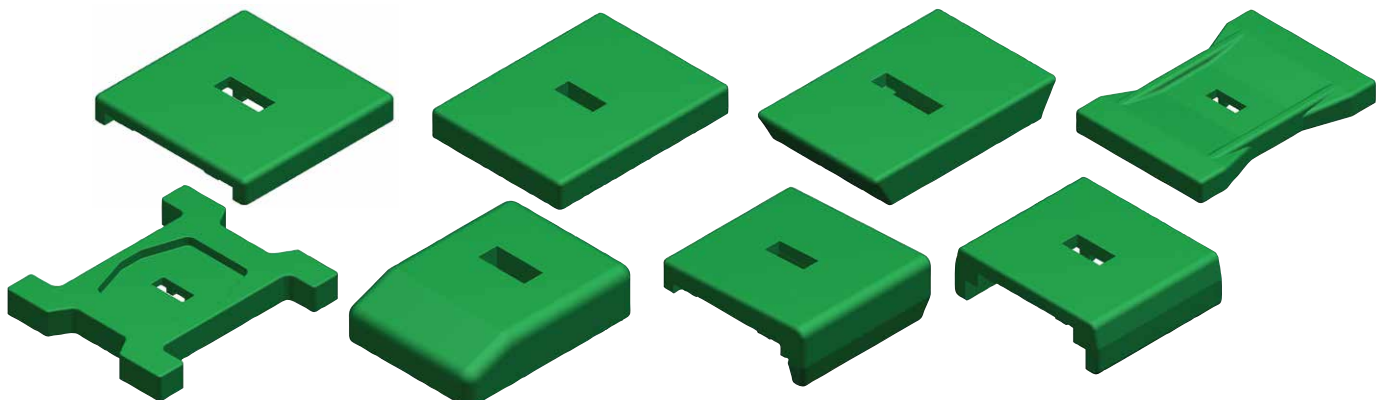
- Lightweight wear runners are safer and easier to handle
- One-piece lock is fast and simple to install and remove
- No large wear plates to handle or welding required for replacement

Reduced Operating Cost

- Universal design is adaptable to curved and flat surfaces to provide maximum protection
- Easy-to-change system reduces maintenance time to minutes rather than hours
- Wide variety of wear runners are available to protect valuable equipment in any application
- Runners are reversible for maximum wear life

Increased Production

- Reduced maintenance ensures maximum machine availability
- Quick-change feature allows replacement during other scheduled maintenance
- Superior ESCO alloys last longer for more time between replacement



Kwik-Lok® II System

Mobile Equipment

Kwik-Lok II runners provide an effective wear solution on mobile equipment to protect high wear areas on draglines, shovel dippers, face shovels, excavators and loader buckets. They are also an excellent choice for haul truck beds. Other applications include dozer arms, scraper bowls and under log loading forks.

Stationary Equipment

Wear runners are particularly effective in crushing and processing plants where limited access, confined space and lack of crane service make lightweight runners a safer, more cost-effective solution. Runners have been successfully used to protect high wear areas under crushers, in chutes, feeders, scalping decks, grizzlies, transfer points and strike plates.

System is Easy to Select and Install

First select the size of base to match the application and surface contour. Then select the matching wear runner and lock. Once the base is welded in place, the wear runner is slipped on the base and the lock installed. The equipment is now ready to operate. When replacement is needed, the lock removes easily with a simple pry tool and a new runner is installed.

Kwik-Lok Wear Protection

The original Kwik-Lok wear protection is a semi-mechanical system that utilizes a weld-on stop block to hold the runner in place. The standard Kwik-Lok system is an ideal option for special applications.

Hot Slag

Semi-mechanical Kwik-Lok runners are ideally suited for fighting abrasion in hot slag. The weld-on stop block eliminates the use of rubber that may be damaged in the heat, while offering the benefits of ESCO alloy wear and impact resistance.

Underwater Dredge

The reliability of Kwik-Lok system is an excellent match for underwater applications. The positive retention with the weld-on stop block is ideal where components are not always visible to the machine operator.

Processing Plants

Kwik-Lok wear protection is ideally suited for applications where gravity can be used to hold the runner on the base. Since there is no reverse load trying to push the runner off the base, the system may be operated without the stop block installed, saving time and expense when replacement is needed.



Infinity® Bimetallic Wear Products

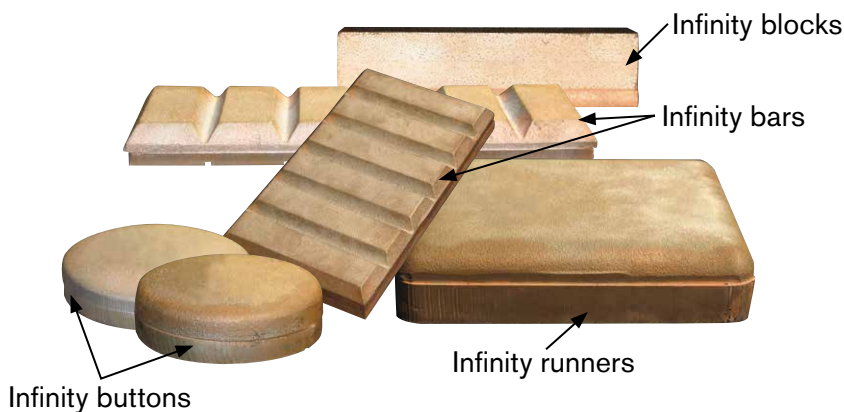


ESCO Wear Management is more than just a product. It is a combination of products, services and metallurgical expertise to provide superior wear protection for mining equipment and other industrial applications. A key part of this package is the Infinity Bimetallic Wear Products, a comprehensive offering of buttons, blocks, bars, runners, tiles and overlay plate to match any application.

Infinity Buttons, Blocks, Bars and Runners

ESCO Infinity wear buttons, blocks, bars and runners are a chrome white iron (CWI) casting on a mild steel backing plate. The CWI has a minimum hardness of 700 Brinell, and the mild steel backing allows easy attachments with minimal welding. There are a variety of shapes and sizes to protect any high wear area on mobile or stationary machinery.

Some of the many applications are buckets for shovels, draglines, loaders and excavators, and conveyor chutes liners, grizzly screens, crusher liners or any other equipment exposed to abrasive wear.



Features and Benefits

Reduced Maintenance

- Protects any high wear area, eliminating the need for frequent rebuild or replacing wear plate
- Lasts longer than other wear protection
- Excellent alternative to hard facing which can lead to cracking of major structural components

Increased Production

- Reduced maintenance ensures maximum machine availability
- Wide variety of shapes and sizes allows small areas to be protected, minimizing the affect on penetration and material flow

Lower Operating Cost

- Can be fit to flat or curved surfaces, eliminating the need to have wear plate formed to fit
- Bucket life is significantly increased, minimizing repair and new bucket orders



Infinity® Wear Tiles

In addition to buttons, blocks, bars and runners, ESCO also offers Infinity wear tiles. These tiles have the same advantages of 700 Brinell chrome white iron (CWI) with mild steel backing, and may be ordered in custom sizes. Wear tiles may also be ordered in a jacketed version, where the mild steel backing comes up around the sides.

Standard Wear Tiles

Infinity wear tiles may be custom ordered to a size that matches a specific application and are designed for high abrasion with low impact. Standard sizes range from 203mm/8.00in. to 610mm/24.00in. long by 152mm/6.00in. to 203mm/8.00in. wide. Other sizes may be available on request. ESCO wear tiles are more economical when covering larger surfaces on conveyors, bins, feeders, hoppers and material chutes.

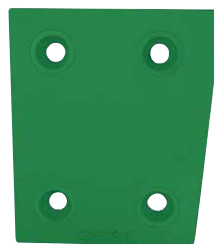


Jacketed Wear Tiles

Infinity jacketed wear tiles are available in various custom sizes. Excellent for high abrasion protection, the jacket design allows the product to be used in moderate impact applications with high abrasion on conveyors, bins, feeders, hoppers and material chutes.

CWI Bolt-on Cast Wear Blocks

ESCO bolt-on cast wear blocks are an option for protection in severe wear areas in hoppers and conveyor chutes. Cast in solid 700 Brinell chrome white iron, the bolt-on design eliminates welding and makes replacement quick and easy.



Abrasion Resistant Plate



Wear is one of the biggest challenges facing mining operations today. The application at each operation is unique so ESCO offers a variety of options to protect valuable equipment. Abrasion resistant plate is available with several options: premium ESCO AR plate in 400 or 500 grades, and Infinity® plate, a specialized chromium carbide overlay plate for extreme abrasion applications.

ESCO offers ESCO AR 400 and 500 quenched and tempered alloy plates to handle extreme wear, with optimum resistance to gouging abrasion under severe impact. ESCO AR plate has exceptional toughness, ductility, formability and hardness over T1 type abrasion grades. ESCO AR plate can be sheared, plasma cut and welded using conventional methods, and is a great choice for bucket, dozer blade, crusher, chute, and haul truck bed liners, and can also be used for fabricated ripper shanks, heel bands and mold boards.

ESCO's Infinity Chromium Carbide Overlay Plate is an excellent choice for severe wear protection as liners for machine buckets, dozer blades, chutes, conveyors, cement plants and coal preparation equipment.



Features and Benefits

Reduced Maintenance

- Protects entire surfaces, eliminating the need for frequent rebuild or replacing structural components
- Formable to contoured surfaces and easy to weld

Increased production

- Custom formed kits minimize affect on penetration and material flow
- Reduced maintenance ensures maximum machine availability

Lower Operating Costs

- Equipment life is significantly increased, minimizing repair and new replacement orders
- A variety of material options allows the best choice for abrasion and impact resistance to ensure maximum uptime



Abrasion Resistant Plate



ESCO AR 400

ESCO AR 400 through-hardened plate is available in 3/16" through 4" thickness. Typical hardness is 360-444 BHN, and the typical toughness is 20 ft.-lbs. in transverse direction. ESCO AR 400 is very formable and has high wear resistance, excellent toughness and weldability.



ESCO AR 500

ESCO AR 500 through-hardened plate is available in 1/8" through 4" thickness. Typical hardness is 477-555 BHN, and the typical toughness is 18 ft.-lbs. in transverse direction. ESCO AR 500 is formable in cold conditions and has superior wear resistance for extreme abrasion, very good toughness and weldability.

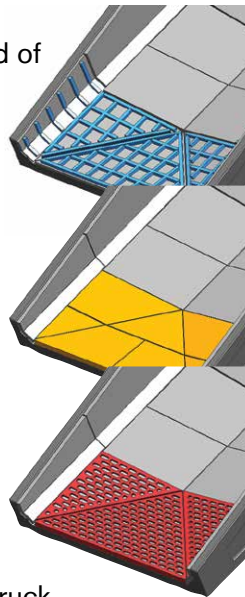
ESCO AR Wear Tiles

Tumble Bar Liners cause material to tumble instead of slide, which reduces wear during material discharge. Tumble bars are made from ESCO AR premium wear plate in thicknesses of 1/2" to 1-1/4", depending upon application.

Flat or Formed Liners made of premium grade ESCO AR wear plate. This design is ideal for extreme abrasion and high impact applications.

Waffle Style Liners are typically 40% lighter than solid plate liners with minimal change in wear life. Liners are usually 1/2" to 1-1/4" thick ESCO AR plate and are designed for lighter weight in high abrasion impact applications, but are not recommended for sticky materials which may substantially increase carry back.

These liner styles are available for dragline buckets, truck boxes, dozers, front end loaders, excavators, and face shovels.



Infinity® Chromium Carbide Overlay Plate

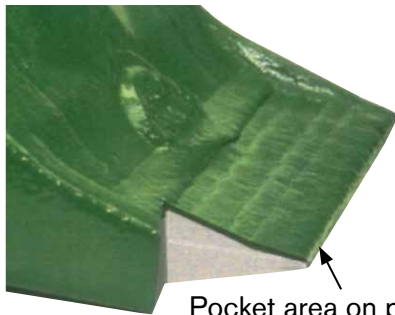
ESCO's Infinity Chromium Carbide Overlay wear protection is ideal in extreme abrasion and medium impact applications. ESCO overlay plate offers a minimum of 573 Brinell hardness. Infinity overlay plate is formable and can be ordered in custom designed kits to fit a wide variety of surface configurations.

E3® Overlay Technology



ESCO offers a wide variety of E3 Overlay Product for application to metal components to increase wear life and improve productivity. To maximize performance, the overlay material is applied based on the specific field application.

Overlay material can be simply applied to component surfaces for protection from abrasive wear, or applied in a specific pattern that not only increases wear life, but also improves the performance of the product as it wears. For example, overlay material applied to mining bucket teeth in a certain way dictates a wear pattern that improves penetration and loading, and thereby increases productivity for reduced operation costs. In addition, for certain applications, ESCO designs components specifically for best use of E3 overlay material.



Pocket area on point designed to optimize E3 and E3X manufacturing process.



Posilok® point with E3 wear material

Posilok point with partial wear

Sharp profile even when worn out

Features and Benefits

Improved Production

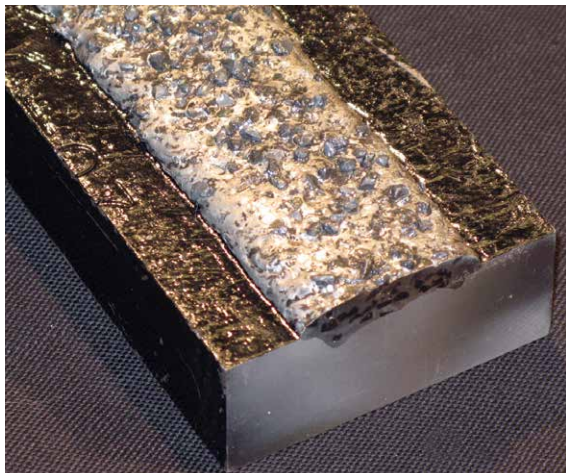
- Better penetration and loading
- Improved wear pattern and better performance

Lower Operating Costs

- Increased penetration reduces fuel consumption and wear to machine drive train
- Longer wear life with minimal downtime

Reduced Maintenance

- Protection can be modified to maximize service life
- Overlay added to wear parts at the factory require no additional work over standard replacement activity
- Minimize the need to replace parts



E3® Overlay Technology

E3 Chrome White Iron Overlay

ESCO Chrome White Iron Overlay material consists of microscopic chromium rich carbides embedded in an iron-base matrix. Overlay of this type is used to significantly increase abrasion resistance in low impact applications. Low impact applications are typically those involving digging in dirt, sand or well-shot rock up to 2" in diameter with minimal history of product breakage.

E3X Embedded Tungsten Carbide Overlay

ESCO Embedded Tungsten Carbide consists of macroscopic pieces of tungsten carbide material dispersed in a tough steel matrix. This type is for medium to heavy impact applications. Medium to heavy impact applications typically involve digging in shot rock over 2" in diameter, with some history of product breakage.

E3CX Embedded Tungsten Carbide Overlay

ESCO Embedded Tungsten Carbide consists of macroscopic pieces of tungsten carbide material dispersed in a chrome white iron matrix. Low impact applications are typically those involving digging in dirt, sand or well-shot rock up to 2" in diameter with minimal history of product breakage.

E3XP Tungsten Carbide/Nickel PTA Overlay

ESCO Tungsten Carbide/Nickel overlay consist of fine tungsten carbide particles dispersed in a nickel alloy matrix. This is applied using state-of-the-art Plasma Transfer Arc (PTA) welding equipment. In many applications, this type of overlay provides abrasion resistance unobtainable with any other type of overlay. The hardness of the tungsten carbide particles combined with their tight spacing result in an overlay that is ideal for low impact applications with extreme fine particle abrasion. Low impact applications are typically those involving digging in dirt, sand or well-shot rock up to 2" in diameter with minimal history of product breakage.

ESCO Overlay Benefits

- Increased wear life for minimal downtime
- Minimize the need for part replacement for lower maintenance costs
- Improved machine performance for increased productivity
- Increases the overall operating life of major equipment investments





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