

Mining & Mineral Processing Oil Sands Steel Aluminum Cement Rail Oil & Gas Power Ground Engaging & Heavy Equipment Crushing Smelters

# High Pressure Grinding Rolls

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Mining & Mineral Processing Oil Sands Steel Aluminum Cement Rail Oil & Gas Power

# CSP11/S008

## Areas of

### Interest

- About Us
- Design, Engineering & Testing
- General Terms & Conditions of Sale
- Contact Us

# View our extensive product information.

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We provide worldwide innovative engineering, custom solutions and superior service and support.

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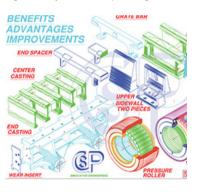
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# About Us

Cast Steel Products LP (CSP) is a leading worldwide supplier to OEM and aftermarket of state of the art and innovatively engineered **cast**, **forged** and fabricated wear, abrasion and heat resistant products. We have a successful track record of supplying global **mining and mineral processing**, **oil sands**, **oil & gas**, **steel**, **aluminum**, **cement**, **power** and **railway** industries, **ground engaging & heavy equipment**, **smelting** and **crushing** application sectors. CSP has sales, engineering and fabrication facilities in Edmonton and Montreal, Canada, St. Petersburg, United States, Beijing, China and Brazil and South Africa. Our head office is in Edmonton.



For over 25 years our worldwide customers: designers, engineers, project managers, purchasing, production and maintenance departments and contractors have relied on CSP to deliver innovative engineered, market leading, quality cast, forged and fabricated wear, abrasion and heat resistant products with best in class performance and proven industry leading high wear, extended service life, ease of maintenance and significantly reduced operating and maintenance costs.





Our experienced sales and engineering departments work closely with the end user to determine exactly what is required in order to supply an innovative engineered custom solution manufactured to the highest industry standards including ISO 9000, ASTM, AISI, DIN, JIS, SAE or proprietary standards. In addition CSP cast, forged and fabricated products are designed to provide customers with fast lead times, high levels of safety, reliability, maintainability and to minimize downtime and withstand the harshest wear environments.

CSP is committed to meeting and exceeding our customer's expectations with excellence in supplying proven reliable quality custom cast, forged and fabricated wear, abrasion and heat resistant products and value pleasing service. We continually invest in research and development to take full advantage of industry advancements in order to supply market leading and innovative new products. In doing so; we shall adhere to the highest standards of integrity and commitment to our customers, employees and communities.

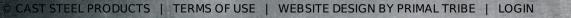
Cast Steel Products LP is committed to supplying innovatively engineered and market leading cast, forged and fabricated wear, abrasion and heat resistant products and services which will enhance the value of your project!



Please explore our web site to review our extensive product information and product and project photos and **contact us** via phone or email to discuss your custom requirements and to obtain pricing and delivery information for our extensive CSP product range.



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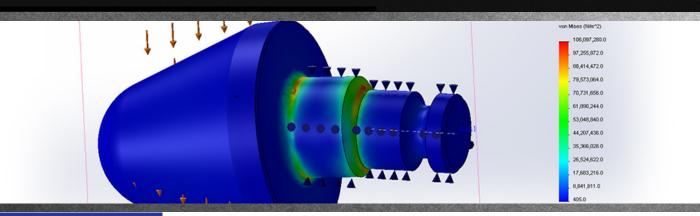






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# Design, Engineering & Mesting



# **Proven Reliability**

For over 25 years our worldwide customers: engineers, project managers, production and maintenance departments and contractors have relied on CSP to deliver proven quality cast, forged and fabricated metal products with innovative engineering custom solutions for wear, replacement and abrasion and heat resistant requirements.

# Innovative Customized Engineering

Our experienced sales and engineering departments utilizing

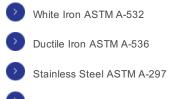
state of the art computer technology in design and drafting and engineering programs (such as AutoCAD / Solid Works, FEA, Solid Modeling, Rapid Prototyping and Solidification analysis) work closely with the end user to determine exactly what is required in order to supply an innovative engineered custom solution. CSP uses SolidWorks 3D modeling software to design and simulate all of our products. This software allows us to visualize our products before they are built, target any potential problems, and relay accurate information to our foundries and machine shops.

# Quality

CSP supplied products provide our customers with high levels of safety, reliability, maintainability and to minimize downtime and withstand the harshest wear environments. Our products meet or exceed the highest industry standards including ISO 9000, ASTM, AISI, DIN, JIS, SAE or proprietary standards, and are subject to stringent Quality Assurance programs to ensure consistent quality.

CSP products meet or exceed:

- Carbon Steel ASTM A-27
- Mild Steel ASTM A-36
- Low Alloy Steel ASTM A-148
- Gray Iron ASTM A-319



Manganese Steel ASTM A-128

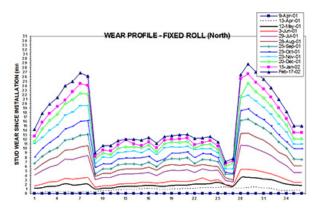
# Inspection and Testing to Provide Reliable and Predictable Performance

14.0 12.0 • 372 10.0 384 Wear (mm) 8.0 364 6.0 360 × 376 4.0 • 369 2.0 0.0 200,000 400,000 600,000 800,000 1,000,000 1,200,000 0 Tonnes Processed (dry metric)

Effect of Stud Type on Wear Rate

Our commitment to meeting and exceeding our customer's expectations with excellence in supplying reliable quality custom cast, forged and fabricated metal products includes conducting full scale industrial testing of our designs and systems. Our engineering department uses SolidWorks Simulation (Finite Element Analysis) software to analyze how our products will react in real-world

situations. Using these results, we can optimize our designs to reduce cost and improve performance, while ensuring they will not fail under the conditions specified. We also undertake the following tests: Liquid Penetrant, Magnetic Particle (wet and dry), Ultrasonic, Radiographic, Mechanical Properties and Chemical Analysis. Our program for testing is supported by research and laboratory facilities around the world. This testing provides a wealth of operating data to ensure reliable and predictable industry leading performance. CSP also issues comprehensive engineering standards for all critical components and assembly including thorough review of all dimensional and tolerance requirements.



# Optimization

CSP specializes in optimizing current designs to better meet the needs of our customers. We are able to extend the lifetime of our products, reduce cost, and provide better performance while requiring less maintenance and down time. Some of the ways we achieve these goals are by reducing weight, choosing better-suited materials, optimizing designs, and using our knowledge of in-field usage to find better ways of doing things.

"There's a way to do it better - find it." - Thomas Edison

# Product Development

CSP is committed to meeting and exceeding our customer's expectations with excellence in supplying reliable quality custom cast, forged and fabricated metal wear, replacement and abrasion and heat resistant products and value pleasing service. We continually invest in research and development to take full advantage of industry advancements in order to supply market leading and innovative new products.



# Forging Capabilities & Machine Shops

CSP utilizes an extensive network of forging and machine shop facilities to provide the following capabilities and performance:

#### SIZE

0.025 kilograms to 120,000 kilograms (120 MT)

### LOT SIZE

Can range from one each, to several thousand. Open and closed die forging.

#### MOLDING

Shell, Pit-Molding (for large castings), Auto Molding, Investment Casting, Green Sand, No Bake

#### ALLOYS

Our castings using Electric Arc or Induction Furnace sand Vacuum Degassing (if required) are manufactured to ASTM, AISI, DIN, JIS, SAE or proprietary standards:

### CSP FERROUS ALLOYS

expand 🖂

### CSP NON FERROUS ALLOYS



Cast Steel Products LP is committed to supplying innovative engineered cast, forged and fabricated metal wear, replacement and abrasion and heat resistant products and services which will enhance the value of your project!

Please explore our web site to review our extensive product information and product and project photos and **contact us** via phone or email to discuss your custom requirements and to obtain pricing and delivery information for our extensive CSP product range.





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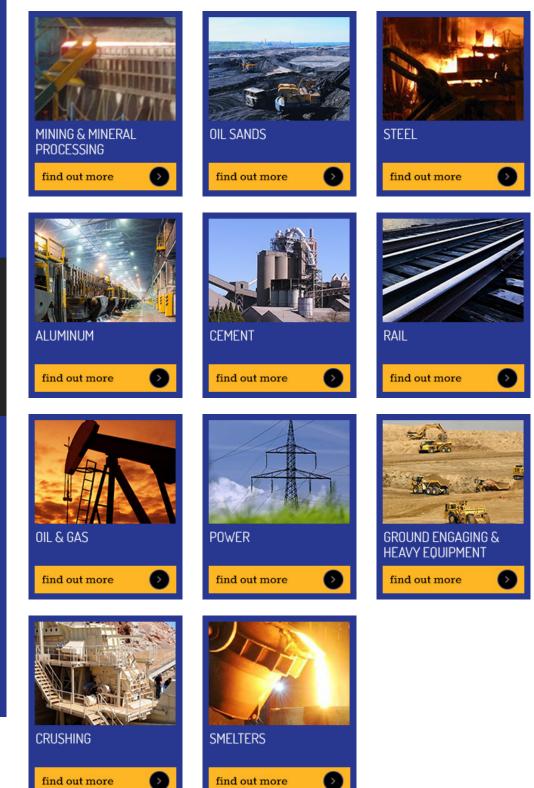
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# Products



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# CSP High Pressure Grinding Rolls (HPGR)

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CSP is a leading worldwide supplier of HPGR Rolls to OEM and aftermarket. We have many successful working applications having supplied hundreds of sets of HPGR Rolls to a variety of worldwide mining and mineral processing operations including Iron Ore, Diamond, Molybdenum, Gold and Copper. With our innovatively engineered and proprietary edge, stud and roll design and unique and proprietary state of-the-art wear technology, CSP HPGR Rolls deliver best in class performance and proven industry leading high wear, extended service life, ease of maintenance and

#### significantly reduced maintenance costs.

Our experienced sales and engineering departments work closely with the end user to determine exactly what is required in order to supply an innovative engineered custom solution manufactured to ISO 9000 or proprietary standards and designed to deliver to our customers proven industry leading reduced operating costs, reduced maintenance costs, and increased production yield. In addition CSP HPGR Rolls are custom designed to provide customers with fast lead times and high levels of safety, reliability and maintainability.

CSP has many successful global working applications of our industry leading HPGR Rolls including the following countries and mining and mineral processing operations:

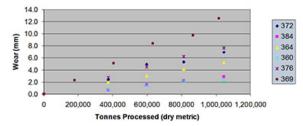


# Benefits to our customers of CSP's **HPGR Rolls**

PROVEN MARKET

Effect of Stud Type on Wear Rate

LEADING REDUCED PLANT OPERATING COSTS, LONGER SERVICE LIFE AND REDUCED



### MAINTENANCE COSTS

CSP's proprietary carbide edge design, studs and roll surface system has delivered proven industry leading longer service cycles and lower maintenance requirements. CSP's HPGR Rolls are uniquely designed and built for maximum performance and durability. They reduce plant operating cost per ton and cost per hour. Longer service cycles leads to significantly reduced maintenance costs and our unique HPGR Rolls design enables them to be withdrawn efficiently and replaced when wore down. Wom down carbide edges can be replaced in five minutes!!

# LONGER WEAR SURFACE LIFE AND ABILITY TO PROCESS DIFFICULT MATERIAL

Recognizing that the cost of wear is a major economic cost in the mining and minerals processing industry, CSP has undertaken full scale industrial testing of studs to line the surface of the HPGR Rolls and has developed a proprietary highly wear resistant carbide stud-lining of the rolls. As these carbide studs are in direct contact with the material to be pressed under varying pressures, they offer the best wear protection. We have supplied working HPGR Rolls around the world with high wear surface life of 36,000 hrs. In addition our proprietary studs and design have proven to economically process difficult material such as moist pellet feed up to 6%.

## ENERGY EFFICIENT

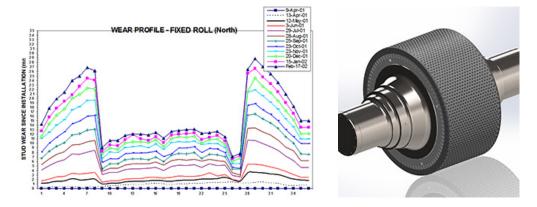
Our HPGR Rolls utilizes the principle of high pressure inter particle comminution to grind various types of ore, industrial minerals, or clinker for cement production. Using our proprietary edge, stud and roll design and unique state of-the-art wear technology, a CSP HPGR Roll consumes less energy resulting in reduced operational costs and exceptional long term reliability.

### CUSTOM DESIGN AND PRODUCTION CAPABILITIES

Our experienced sales and engineering departments work closely with the end user to determine exactly what is required in order to supply an innovative engineered custom HPGR Roll solution manufactured to ISO 9000 or proprietary standards. CSP can supply HPGR Rolls from a lab size of 300mm x 75mm to the largest in operation today 2400mm x 1700mm.

## RELIABLE AND PREDICTABLE PERFORMANCE

Our commitment to meeting and exceeding our customer's expectations with excellence in supplying reliable quality custom HPGR Rolls includes conducting full scale industrial testing of our edge, studs and roll surface designs and system. Our program for testing is supported by research and laboratory facilities around the world. This testing provides a wealth of operating data to ensure reliable and predictable industry leading HPGR Roll performance.



Contact us via phone or email to discuss your custom requirements and to obtain pricing and delivery information for our extensive CSP HPGR Roll product range.

To enable us to better respond to your needs please complete the attached HPGR Roll questionnaire.

Click on the link above and save the questionnaire to your desktop by clicking File > Save As



Fill out the fields on the form and save your document

Please email the completed form to us at info@cspinnovative.com



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