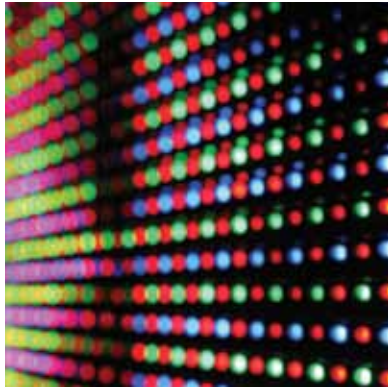


# LEADING THE WORLD IN MOLY





Climax Mine, Colorado

# INTRODUCTION

There is a growing global demand for molybdenum, a versatile element with diverse applications in the chemical, engineering and petroleum industries. Molybdenum and its alloys are key components in chemical and metallurgical applications.

Climax Molybdenum Company, a subsidiary of Freeport-McMoRan, is one of the world's leading molybdenum producers. From our early beginnings in Colorado, Climax Molybdenum has grown into a global, diversified company with downstream operations and a proven commercial presence worldwide.



Molybdenum first discovered on Bartlett Mountain.



First stakes claimed mine.



## 1918

**CLIMAX MINE BEGINS PRODUCTION**  
On April 2, 1918, Climax ships its first concentrate totaling 21,000 pounds with a market value of \$100,000. Climax is a major contributor to the allied war effort during World War I.

1879

1890

1918

# GLOBAL OPERATIONS

Our operations in North America and South America include both primary and by-product molybdenum mines.

We are also one of the leading global producers of molybdenum with chemical and metallurgical products manufactured at our production facilities in the United States and Europe. Our Fort Madison's conversion capabilities provide Climax Molybdenum with a premier source for

upgraded molybdenum chemical products. The Climax Stowmarket plant in the United Kingdom provides ferromolybdenum and Climax Molybdenum B.V. in the Netherlands produces technical molybdc oxide, ammonium dimolybdate and pure molybdc oxide.

Serving customers worldwide, Climax Molybdenum's resources are well positioned to maintain molybdenum production rates for decades to come.

## HENDERSON, COLORADO

Primary Mine

## CLIMAX, COLORADO

Primary Mine

## PHOENIX, ARIZONA

Global Headquarters, Sales Office

## SIERRITA, ARIZONA

By-product Mine  
Roasting

## BAGDAD, ARIZONA

By-product Mine  
Pressure Leach

## FORT MADISON, IOWA

Roasting, Chemicals

## CERRO VERDE, PERU

By-product Mine

## ROTTERDAM, NETHERLANDS

Roasting, Chemicals

## TOKYO, JAPAN

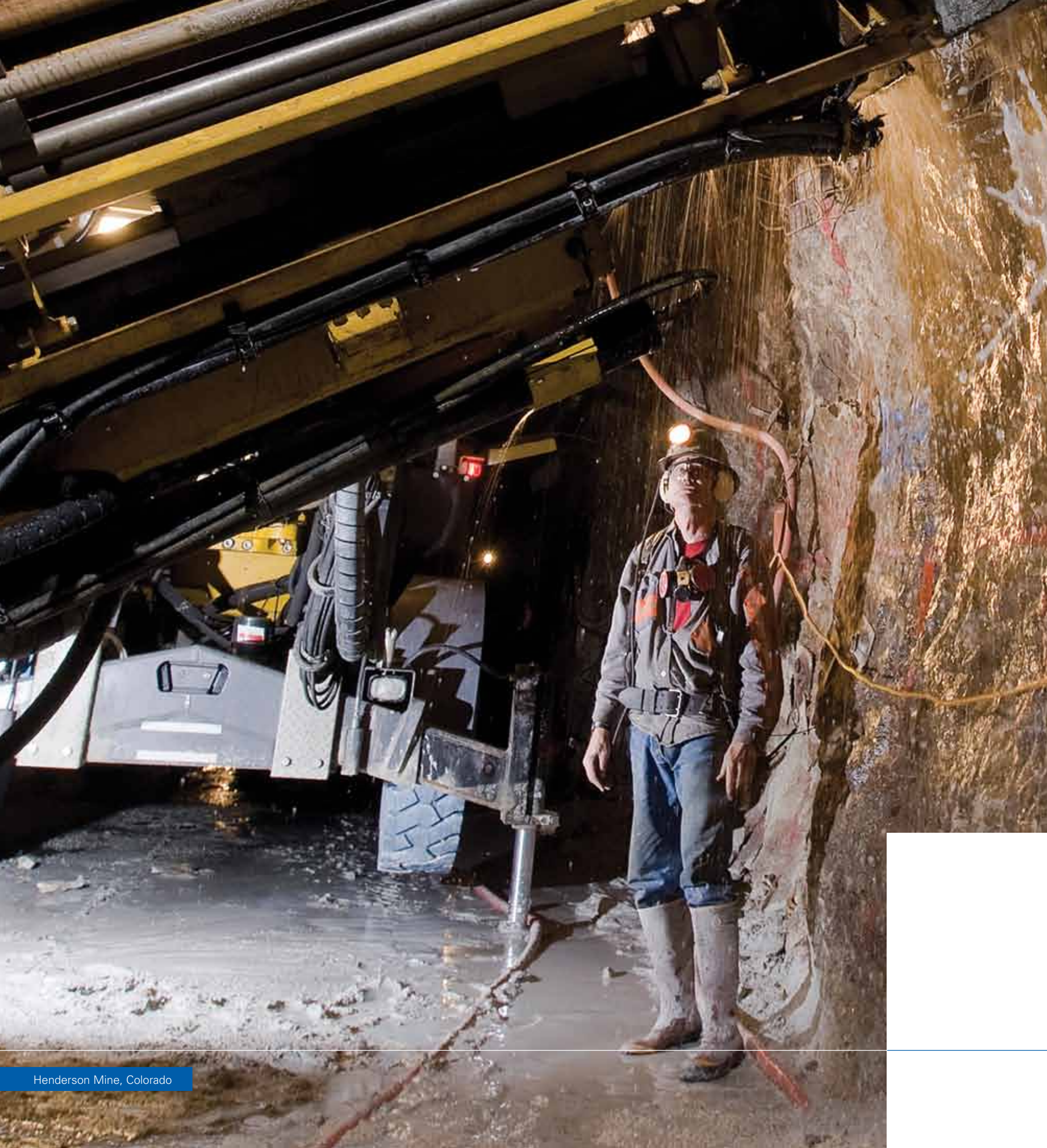
Representative Office

## STOWMARKET, UNITED KINGDOM

Ferromolybdenum  
Sales Office

## SHANGHAI, CHINA

Representative Office



Henderson Mine, Colorado

## MINING AND DOWN STREAM PRODUCTION

Climax Molybdenum operates the Henderson Mine and Mill in the Rocky Mountains, west of Denver. It is the world's largest primary producer of molybdenum and has been in operation since 1976. Henderson has the capability to produce between 30 and 40 million pounds of molybdenum per year.

Separated by the Continental Divide, the Henderson Mine and Mill are connected by one of the world's longest conveyor systems, a 10 mile elevated belt that runs underneath the Continental Divide and emerges above ground for the final five miles.

Our Climax mine near Leadville, Colorado, restarted in 2012 and has a potential production capacity of 30 million pounds per year.

### 1945

**WORLD'S LARGEST MINE**  
Climax becomes the world's largest underground mine.



1945

## CHEMICAL APPLICATIONS OF MOLYBDENUM



CATALYSTS

Molybdenum chemicals are used in the production of catalysts for a variety of reactions, notably hydrotreating and selective oxidation. The increasingly stringent requirements for low sulfur fuel oils, gasoline and diesel fuel make this application a particularly important use for molybdenum.



METAL PRODUCTS

Molybdenum metal and alloys are used in a number of important end products including lamp applications, glass melting electrodes and electronic devices. The characteristics of molybdenum metal powders are determined not only by the process conditions during reduction, but also by the physical and chemical properties of the starting materials.



LUBRICANTS

The naturally occurring form of molybdenum ( $\text{MoS}_2$ ) is an important solid lubricant used primarily for reduction of wear and friction, and maintains good lubricating performance in tough conditions. Molybdenum complexes, soluble in petroleum oils and other organic solvents, are finding increased use as antiwear and extreme pressure additives as well as friction modifiers in lubricating oils, greases and coatings.

## CHEMICAL APPLICATIONS OF MOLYBDENUM



CORROSION INHIBITION

Molybdate, usually in the form of Sodium Molybdate, is used as an anodic corrosion inhibitor in aqueous systems, such as cooling water treatments and automobile anti-freeze/coolant products. It is effective in inhibiting corrosion of steel, cast iron, aluminum, copper, brass, cadmium and solder, and is typically used with other corrosion inhibitors.



SMOKE SUPPRESSANTS

Molybdenum in the form of Ammonium Octomolybdate (AOM) or Molybdic Oxide is used as a smoke suppressant in plastics, especially polyvinyl chloride (PVC). Common applications include wire and cable for use in plenum spaces, interiors of mass transit vehicles, carpet backing for commercial grades of vinyl backed carpet, and building materials for interior use in public buildings.



PIGMENTS

Historically Molybdenum compounds have been used in pigments generally called Molybdenum Orange, for use in paints, plastics and inks providing a reddish hue, cleanliness and striking colors. White corrosion inhibiting pigments are used as paint primers and other Molybdenum compounds are important components in organic toners. More recent uses include incorporation into Bismuth Vanadate Yellow and the emerging classes of Rare Earth Molybdenum high-performance pigments.

### 1957

**CLIMAX MERGES**  
Climax and American Metal Trading Company merge to become AMAX.



1957

1976

### 1976

**HENDERSON MINE PRODUCES**  
Henderson begins production at the rate of 10,000 tons per day via panel caving from the 8,100 foot level.

## METALLURGICAL APPLICATIONS OF MOLYBDENUM



STAINLESS STEEL

Molybdenum is primarily used to improve the corrosion resistance of stainless steel in more demanding applications, such as chemical processing plants or in marine applications. The addition of molybdenum increases the pitting and crevice corrosion resistance of stainless steels in chloride containing solutions.



ALLOY STEEL & IRON

To increase hardness and wear resistance over a broad temperature, molybdenum is added to tool- and high-speed steel. It increases the strength and hardness of cast iron, as well as increases elevated temperature strength and creep resistance. In high-strength, low-alloy steels (HSLA) molybdenum improves strength and weldability.



NICKEL BASE ALLOYS

Molybdenum is an important alloying element in high-performance nickel base alloys. The corrosion-resistant nickel base alloys find extensive use in the chemical processing, pharmaceutical, oil and gas, petrochemical, and pollution-control industries.



Climax Mine, Colorado

### 1980

#### BREAKING RECORDS

Climax and Henderson mines produce a record 100 million pounds of molybdenum; employment peaks at 3,000 at Climax and at 2,000 at Henderson.



1980



Stowmarket, United Kingdom

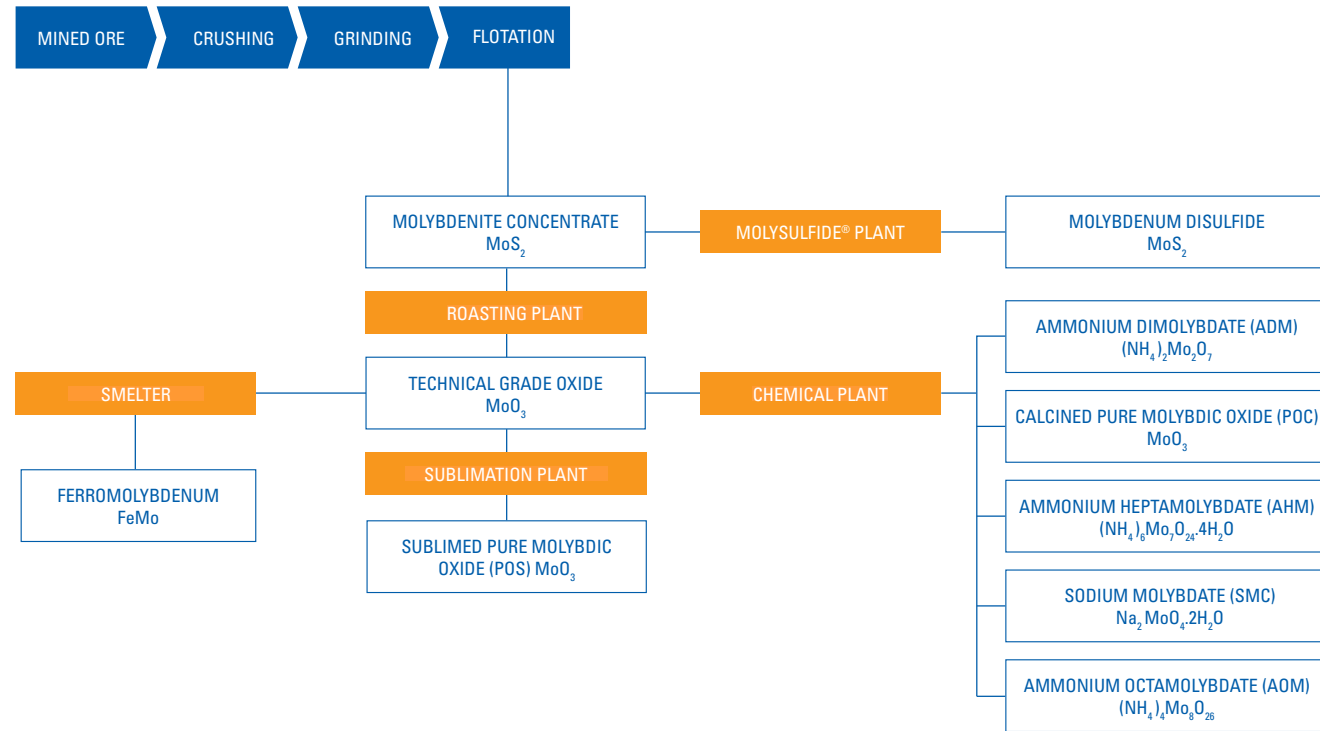
1993

### 1993

#### AMAX MERGER

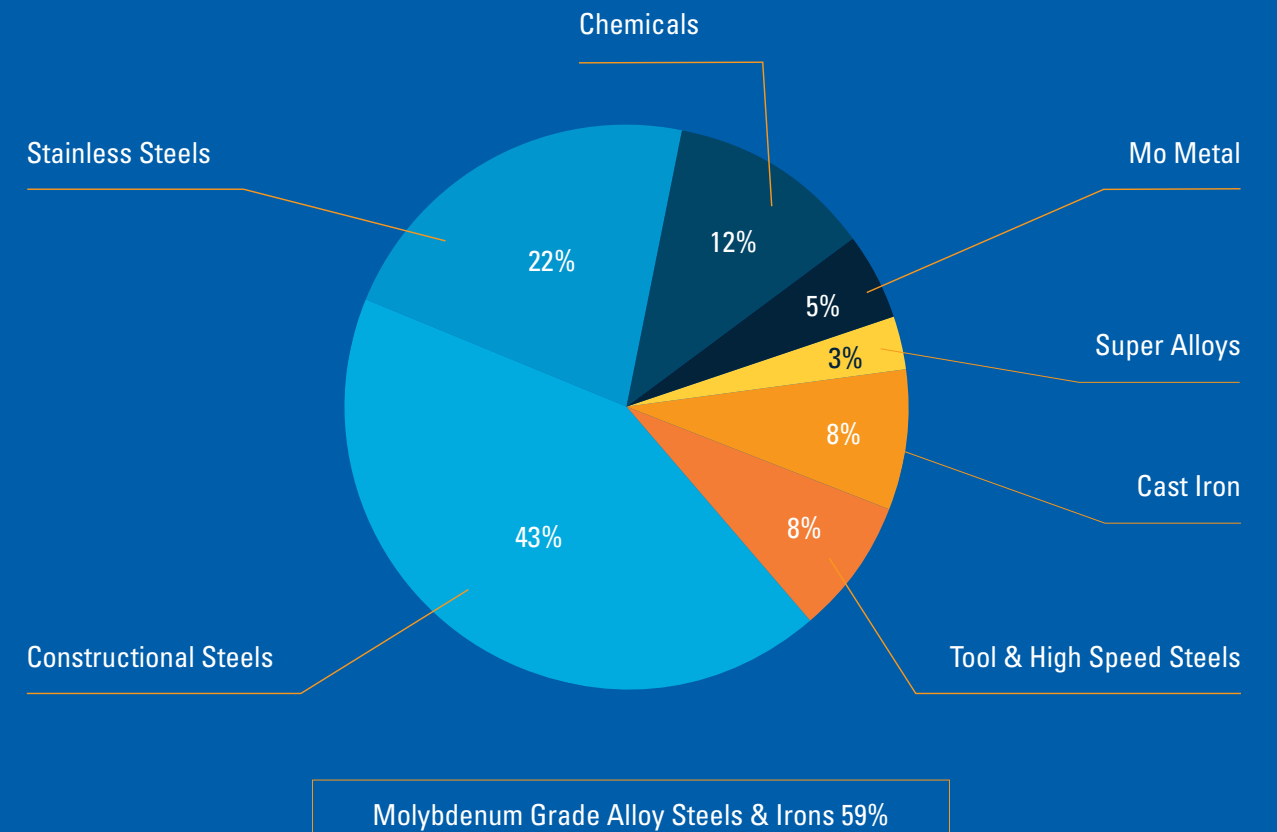
Cyprus Minerals and AMAX merge becoming Cyprus AMAX.

## PRODUCTION OF MOLYBDENUM PRODUCTS



## MARKETS

The markets for molybdenum products are diverse, and we serve both the chemical and metallurgical market segments on a global basis.



SOURCE: INTERNATIONAL MOLYBDENUM ASSOCIATION'S SMR END USE 2012 EXECUTIVE SUMMARY

### 1996

#### HENDERSON REPLACES TRAIN

Project at Henderson commences to replace train with an underground crusher and 15 mile long conveyor system.



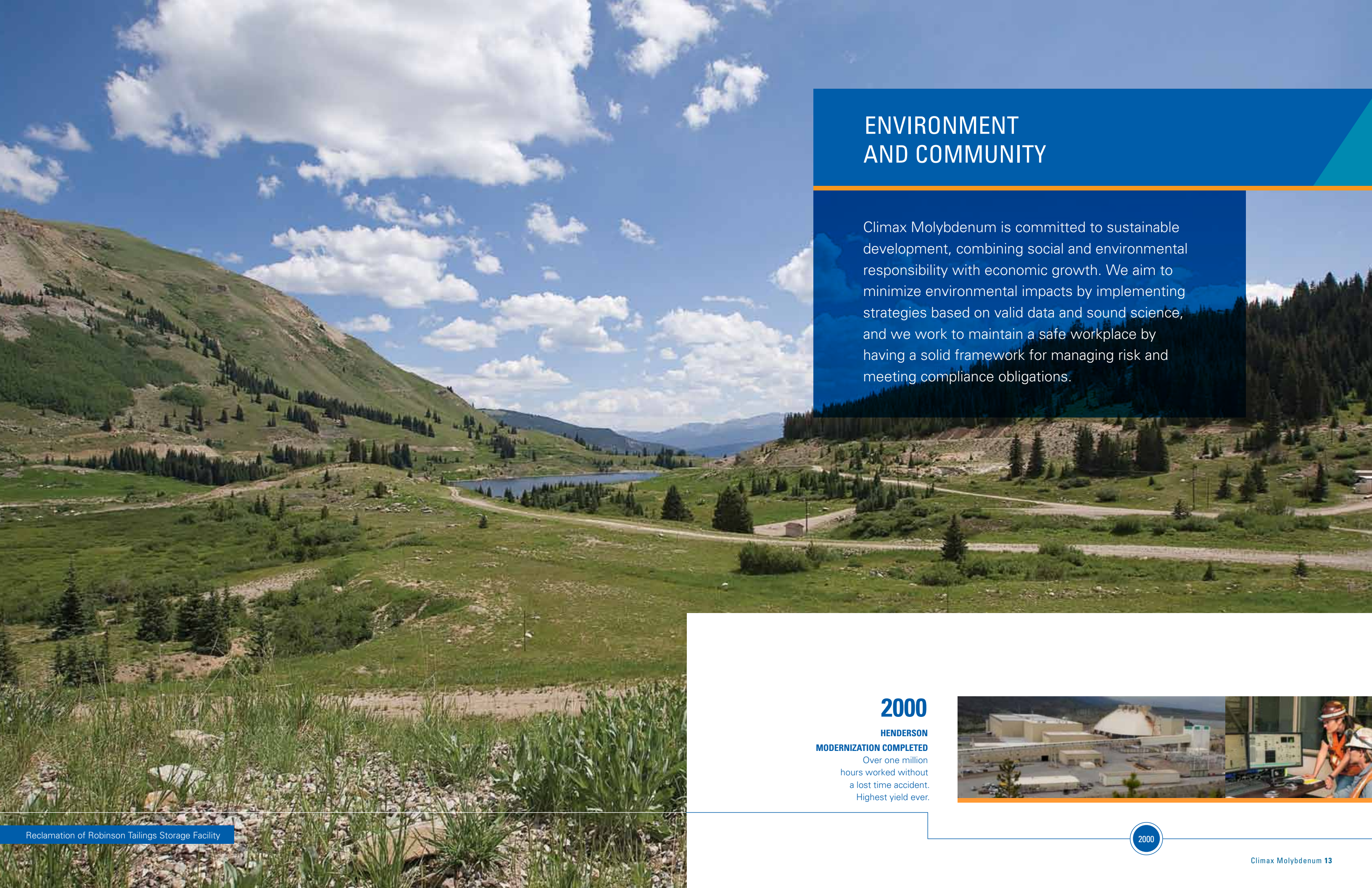
1996

### 1999

#### CONVEYOR SYSTEM COMPLETE

Phelps Dodge purchases Cyprus AMAX; conversion from train haulage to conveyor system is completed.

1999



## ENVIRONMENT AND COMMUNITY

Climax Molybdenum is committed to sustainable development, combining social and environmental responsibility with economic growth. We aim to minimize environmental impacts by implementing strategies based on valid data and sound science, and we work to maintain a safe workplace by having a solid framework for managing risk and meeting compliance obligations.

### 2000

**HENDERSON  
MODERNIZATION COMPLETED**

Over one million hours worked without a lost time accident. Highest yield ever.



2000





Sierrita Mine, Arizona

# LEADING THE WORLD OF MOLY INTO THE FUTURE

At Climax Molybdenum, we mine metals and produce products for the future. With growth in demand for our products, we continue to explore opportunities to provide more molybdenum to the world while respecting our sustainable priorities and maintaining safe operations.

## 2007

**PHELPS DODGE ACQUISITION**  
FCX acquires Phelps Dodge and announces restart of Climax.



## 2012

**CLIMAX OPERATIONS START**  
Commercial operation starts at Climax with first shipment of molybdenum in May.

2007

2012



## INFORMATION AND CUSTOMER SERVICE

**AMERICAS**  
1.800.255.7684

**EMAIL**  
Climax@FMI.com

**EUROPE**  
+44.1449.674.431

**WEBSITE**  
www.climaxmolybdenum.com

**ASIA**  
+81.3.6213.0670

## PRODUCTS

### CHEMICAL PRODUCTS

Ammonium Octamolybdate  
Ammonium Dimolybdate  
Ammonium Heptamolybdate  
Calcined Pure Molybdic Oxide  
Sublimed Pure Molybdic Oxide  
Sodium Molybdate  
Molybdenum Disulfide

### METALLURGICAL PRODUCTS

Ferromolybdenum  
Technical Molybdenum Oxide  
Powder  
Carbon Free Briquettes

### OTHER

Ammonium Perrhenate  
Rhenium Pellets

## LOCATIONS AND CONTACTS

### GLOBAL HEADQUARTERS

Climax Molybdenum Company  
333 North Central Avenue  
Phoenix, AZ 85004-4415 USA  
Phone: +1.800.255.7684  
or +1.602.366.7932

### HENDERSON, COLORADO

Climax Molybdenum Company  
P.O. Box 68  
Henderson Mine  
Empire, CO 80438 USA

### CLIMAX, COLORADO

Climax Mine  
11236 Hwy 91 – Fremont Pass  
Climax, CO 80429 USA

### FORT MADISON, IOWA

Climax Molybdenum Company  
P.O. Box 220  
2598 Highway 61 South  
Fort Madison, IA 52627 USA  
Phone: +1.319.463.7151

### ROTTERDAM, NETHERLANDS

Climax Molybdenum B.V.  
P.O. Box 1130  
3180 AC Rozenburg  
Theemsweg 20  
3197 KM Botlek  
Rotterdam, The Netherlands  
Phone: +31.0181.243737

### STOWMARKET, UNITED KINGDOM

Climax Molybdenum U.K. Limited  
Needham Road  
Stowmarket  
Suffolk IP142AE  
United Kingdom  
Phone: +44.1449.674.431

### CLIMAX MOLYBDENUM ASIA Marunouchi

Trust Tower North, 17th Floor 1-8-1  
Marunouchi  
Chiyodo-ku, Toyko  
Japan 100-0005  
Phone: +81.3.6213.0670

### CLIMAX MOLYBDENUM CHINA Shanghai

Representative Office Suite 3521-3524,  
35th Floor, Central Plaza 381 Huaihai Rd  
(M), Shanghai 200020 China  
Phone: +86.21.6136.3188

