EVRAZ

PUBLIC DOCUMENT:
Contains Business Confidential Information
for which Confidential information has been redacted
on Pages 2,3,4,5,7,8,10,13,14,15,16 and 17 (Identified by Brackets)

VIA: Public Version Email to Steel232@bis.doc.gov
Business Confidential Version Email to Steel232@bis.doc.gov

May 27, 2017

Mr. Brad Botwin
Director, Industrial Studies
Office of Technology Evaluation
Bureau of Industry and Security
U.S. Department of Commerce
1401 Constitution Avenue, NW, Room 1093
Washington, DC 20230

Department of Commerce – Bureau of Industry and Security, Office of Technology Evaluation

Re: *Section 232 National Security Investigation of Imports of Steel*
Comments of Evraz North America

I. Executive Summary

Evraz North America ("Evraz") welcomes the opportunity to comment on the above referenced manner. Headquartered in Chicago, Illinois, Evraz North America produces steel in both the United States and Canada, employing over 1,800 men and women in Canada, and 1,400 in the U.S. Evraz appreciates the impetus for the Section 232 investigation: projected increased in military spending by the United States. We believe the investigation should focus on steel-producing countries with chronic overcapacity issues, such as China, and those with continuous dumping and subsidizing that have caused injury to domestic producers and their ability to serve the U.S. National Security. The outcome of the investigation should be to increase global pressure on China and those countries following China's production model to change their policies and reduce global overcapacity in steel.

Our comments are summarized by the following:

- Evraz produces several products critical to U.S. National Security and critical infrastructure, such as Armored Plate for U.S. Military, Rail steel, Concrete Reinforcing Bar ("Rebar") for construction,

and Oil Country Tubular Goods ("OCTG") and line pipe for energy exploration and transmission. Maintaining the conditions of competition to provide the ability to invest and maintain productive capacity will ensure Evraz is able to continue serving these important sectors for U.S. National Security

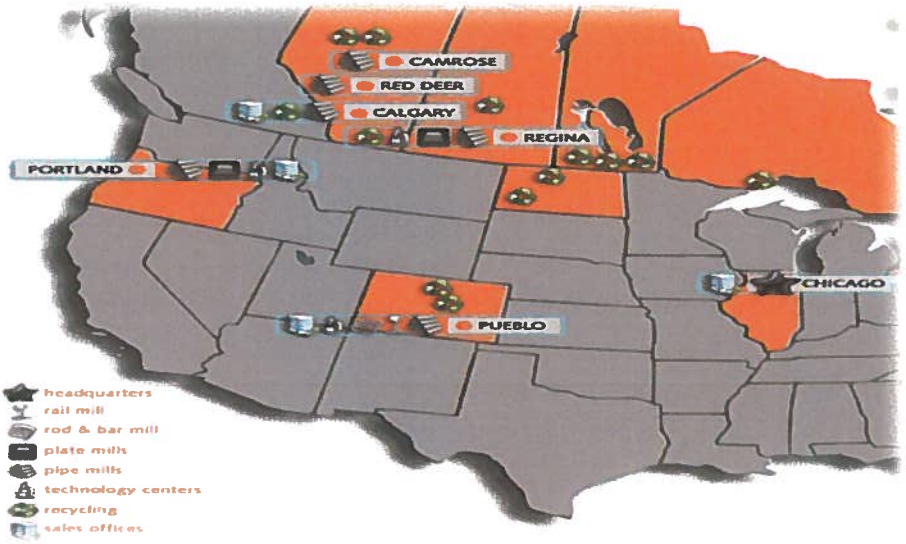
- Evraz has not been able to optimally invest in U.S. facilities, technology, and production capabilities due to increased import penetration, principally caused by Chinese overcapacity
- Evraz has a carefully coordinated supply chain, and customer base, in both the U.S. and Canada. Steel trade with Canada is fair, balanced, uniquely integrated and vital to U.S. National Security. Canada and the U.S. also holds many mutually beneficial National Security and Defense fora and organizations. Imports of Canadian steel should excluded from any recommendations by the Department of Commerce
- [redacted]
- To ensure continued product availability in the U.S., measures implemented should consider domestic production capacity and any specific sectors which may require some imports to augment full U.S. production

II. Introduction to Evraz

Evraz is the largest producer of premium rail steel in North America, operating the only rail mill in Western North America. Evraz rail provides critical infrastructure to the United States and Canada. Evraz also has the only Plate mill in the western United States, and produces Armored Plate products critical to Defense and National Security of the United States [redacted]. Evraz is the largest producer of Large Diameter (greater than 24" in outer diameter) line pipe in North America, serving the Canadian and U.S. pipe market for oil and gas transmission, vital to moving critical energy products from well sites to refineries for American energy security. Evraz also produces Oil Country Tubular Goods ("OCTG") in Colorado that have enabled America's "Energy Renaissance" in the Bakken and western Texas that have spurred American energy independence. Evraz produces additional steel products in the U.S. and Canada (as discussed below). We are a partner of the United Steelworkers, with over 2,000 union jobs.

EVRAZ

Operations are shown on the following map and are discussed below in detail.



U.S. facilities:

Pueblo, Colorado: Rocky Mountain Steel ("RMS") has produced 100percent U.S.-made steel—from melting scrap through final rolling—since 1872. RMS produces up to 1,000,000 tons per year of raw steel, for products finished on-site. RMS products include:

- **Premium and Industrial quality rail**, including head-hardened rail. Steel rail is critical infrastructure, facilitating the flow of commerce and materials across the country for U.S. National Security
- **Rebar** for nearly every infrastructure application, including roads, bridges, and power transmission
- **Wire Rod** for infrastructure and construction development
- **OCTG** for oil and gas exploration

Safe, efficient, and reliable rail transportation is critical to the United States and U.S. National Security. Rail lines move goods long distances across the U.S. West, and Evraz is well position to supply this market domestically from Colorado. There are only three major primary rail steel producers in the United States: RMS, ArcelorMittal Steelton, and Steel Dynamics Inc.

The RMS wire rod mill produces high-carbon wire rod for specialty applications, such as tire cord, tire bead, and wire rope. In rebuttal to claims at the May 24, 2017 public hearing by Ms. Tracey Norberg of the Rubber Manufacturers Association, RMS can and does produce tire cord-quality wire rod. RSM produces grade 1080 tire cord and grade 1080 tire bead rod from steel melted from its Electric Arc Furnace in Pueblo. RMS Wire Rod facilities can accommodate 450,000 tons of production annually. Over the last three years, RSM has averaged [redacted] tons of sales per year in the U.S. The decline in sales from

2015 to 2016 of over [redacted] tons was due to heavy price competition from foreign imports. A description of Evraz tire cord-quality wire rod is found in **Exhibit A.**

Portland, Oregon: Oregon Steel Mills ("OSM") can roll up to 800,000 tons of flat steel products. OSM products include:

- **Cut-to-Length plate and discrete plate**, including armor plate for military applications, security applications, and for machinery, railcars, shipbuilding, construction, and various industrial applications
- **Plate in Coil** for pipeline pipe and various industrial applications
- **Large Diameter line pipe** (currently idled) – 200,000 tons annual capacity. Line pipe is critical to energy independence, moving energy across North America. The facility is idled due to low-priced imports primarily from Turkey, Greece, and India

OSM comprises a Steckel rolling mill, a plate quench and tempering facility (making Hot Rolled coil and Cut-to-Length plate). OSM produces discrete steel plate in widths from 48" to 135" and in thicknesses from 3/16" to 8". [redacted].

The OSM rolling mill is the only plate mill on the West Coast (west of Texas), and is thus uniquely situated to rapidly provide steel products for industry in the U.S. west, such as shipbuilding, railcar manufacturing, and other industrial uses. Much of the OSM customer base benefits from the logistics price advantage compared to other domestic sources.

The impact of OSM steel to Oregon is not only through our own employment, but those of other businesses we supply in the Portland area that fabricate steel into finished industrial products. The local Portland Harbor manufacturing base, including railcar manufacturing and shipbuilding, will likely suffer job losses if Evraz steel, [redacted], is not available. Due to higher intra-country rail transportation costs than trans-ocean shipping costs, OSM steel used to make many of the downstream products in the West would likely not be replaced by steel from the Midwest and Eastern U.S., but with pre-fabricated products that are increasingly coming from China. Indeed, imports of pre-fabricated steel are increasing in presence in the United States. For example, an Oxford Economics study published May 15, 2017 stated that 65,000 American jobs in the railcar industry are under threat from Chinese imports of subsidized railcars. The absence of Evraz steel from OSM, [redacted], would drastically impact our customer cost structure and ability to compete with foreign imports.

EVRAZ

OSM heat-treating facilities and specialized equipment to produce Armored Plate for defense purposes, including for the U.S. Department of Defense. Armored Plate is used for heavy, medium, and light military vehicles (including tanks), add-on kits, personnel protection, VIP Armored cars, and security structures. OSM has a capacity to produce up to [redacted] tons of Armored Plate per month, which could be entirely earmarked to the United States military through rated contracts. According to data publicly available from the website *GovernmentContractswon.com,* OSM was awarded ten different Department of Defense Contracts in 2007, 2008, and 2012, totaling over $48 million. OSM worked closely with the Department of Defense on specifications and production for exacting tolerances for Mine-Resistant Ambushed Protected Vehicles (MRAPs) and Joint Light Tactical Vehicles (JLTVs).The details of the contracts are listed **in Exhibit B**. Data Sheets for OSM Armored Plate are listed in **Exhibit C.** Descriptions of all OSM plate products are listed in **Exhibit D**.

OSM has [redacted] Evraz is the only producer of the AR650 and AR600 grades of Armored Plate ("ARMALLOY 600UHH" and "AMRALLOY 650UHH") in the United States for Defense purposes. Evraz is also the only producer of Cadillac Grade ("CG") products, CG2001 and CG2002 used for vehicle defense. [redacted].

Additionally, OSM has [redacted].

Like other American steel companies that testified at the May 24, 2017 public hearing, steel for military applications represents a small percentage of Evraz overall revenues. However, without a viable commercial market for OSM products, production for National Security is put in jeopardy.

Minot, North Dakota; Colorado Springs and Denver, Colorado: Recycling facilities purchase scrap metal for use in Evraz's Electric Arc Furnaces.

Chicago, Illinois: Evraz North America headquarters. Functions include Executive Leadership, Human Resources, Information Technology, Legal, Sales, and Finance. The site employs approximately 100 people.

EVRAZ

Canadian Facilities

Regina, Saskatchewan: Evraz Regina include Steelmaking, Large and Small Diameter Line Pipe, Cut-to-Length Plate, Plate in Coil, OCTG. Importantly, Evraz Regina makes substrate (slabs) as part of the U.S. National Security supply chain, as input for Portland rolling and processing operations for Armored Plate products for Department of Defense procurement.

Evraz Regina is the largest steel making operation in Western Canada. The facility has been making line pipe since 1956 and is the longest-running Large Diameter pipe producer in North America. It produces line pipe steel from 100 percent recycled materials. The site comprises two Electric Arc Furnaces, a ladle furnace, a continuous variable width slab caster, and a Steckel mill that is capable of rolling coil and plate up to 72" wide. The tubular mills are important suppliers to the energy markets in both the United States and Canada.

Camrose, Alberta: Evraz Camrose operates two pipe mills, producing Large and Small Diameter Line Pipe. Camrose has an Electric Resistance Welding ("ERW") pipe mill and a Longitudinal Submerged Arc Welded ("LSAW") Large Diameter line pipe mill. The ERW mill converts coils into line pipe up to 16" in outside diameter, the LSAW mill converts plate into Large Diameter line pipe used for transmission of oil and gas.

Calgary, Alberta: Evraz Calgary produces OCTG Casing and OCTG Tubing. The site comprises an ERW pipe mill specializing in OCTG production, including heat-treated casing, and a tubing finishing facility with upsetting, testing, and threading operations.

Red Deer, Alberta: Evraz Red Deer products include Small Diameter Line Pipe and OCTG Casing. The site comprises an ERW pipe mill, producing OCTG and Small Diameter line pipe, and threading facilities for both API and Premium connections.

Alberta, Manitoba, Ontario, and Saskatchewan: Various recycling facilities that purchase scrap metal for use in Evraz Electric Arc Furnaces.

III. Evraz Faces Difficult Business Conditions Caused by Increased Imports and Global Overcapacity in the Markets it Operates Related to National Security

a. Import penetration growth is principally caused by Chinese steel overcapacity

Per the American Iron and Steel Institute ("AISI"), finished steel imports into the U.S. were a record 29 percent of the U.S. market in 2015, while domestic steel shipments declined by over 12 percent. A significant volume of trade cases brought by the domestic industry against dumped and subsidized imports caused a 15 percent decline in steel imports in 2016. However, imports in 2017 have increased – with total imports up 19 percent in the first quarter.

This import surge, fueled mainly by China, is the result of foreign government interventionist policies in the steel sector that have fueled massive, and growing, global overcapacity in steel, estimated by the OECD to be more than 700 million metric tons. We estimate that more than half of that overcapacity – 425 million metric tons – is located in China, where government market-distorting policies have produced a dramatic increase in the size of the Chinese steel industry: today it represents about half of all global steel production.

RMS and OSM have been battling both fair and unfair trade in imports for decades, and increasing import penetration into the U.S. from outside the NAFTA region have been an increasing problem in the last decade.

b. Import penetration has eroded Evraz's ability to maintain domestic productive capacity needed to effectively compete and provide for National Security needs

Evraz has been unable to optimally allocate capital to investment and development needed for growth. The most significant example of this is

[redacted]

[redacted]

[redacted]

EVRAZ

[redacted]

IV. Canadian Steel should not be subject to any findings or measures

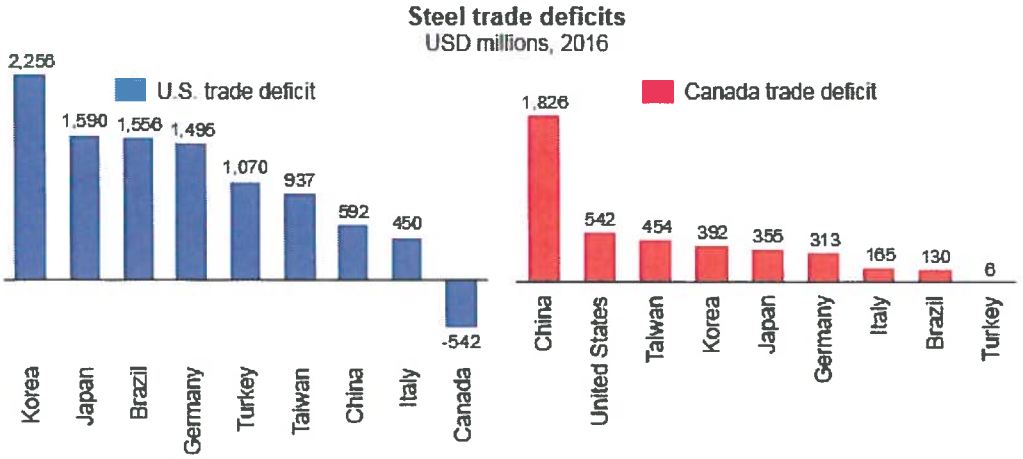
a. Steel trade between the U.S. and Canada is fair, balanced, and integrated

Steel trade between the United States and Canada is fair, balanced, and uniquely integrated. There are no antidumping or countervailing duty orders nor any ongoing trade disputes in steel between the countries. There have not been for over ten years.

The U.S. has a steel trade surplus with Canada: in 2016 of $542 million in steel products. More than 10 million tonnes of steel was traded between the two countries.

The United States benefits from a healthy Canadian steel sector that provides steel inputs for U.S. manufacturing sectors such as military / defense, critical infrastructure, automotive, construction, fabrication, and machinery and equipment. As an example, Evraz steel slabs are used for Department of Defense Armored Plate applications. Furthermore, customers in the U.S. and Canada depend on longstanding, unimpeded product flows across the border. Steel is a major export to Canada from Ohio, Pennsylvania, Indiana, Texas, Michigan, Kentucky and Alabama, supporting thousands of U.S. steel workers.

Increasing low-priced import penetration has been and remains a problem for the U.S. industry. Much progress has been made through trade petitions and strengthening of U.S. trade laws. However, the United States still faces major steel deficits with countries other than Canada.



Source: U.S. Department of Commerce, Enforcement & Compliance, Statistics Canada

In its consideration of imports under Section 232 in 2001 on Iron Ore and Semi-Finished Steel, the Bureau of Export Administration cited that production was from "safe foreign suppliers", including Canada. We believe this characterization of Canada remains the same today.

b. Evraz Canadian operations, including exports to the U.S., are critical to funding Evraz U.S. businesses

Evraz operates a carefully integrated North American steel supply chain that depends on the free flow of goods between the U.S. and Canada to serve customers in both markets and preserve the viability of well-paying middle-class jobs in both countries. Significantly, Evraz's Canadian-based pipeline operations provide crucial and irreplaceable support for Evraz's Pueblo, Colorado and Portland, Oregon operations. Furthermore, Evraz's North American operations and ability to commit the capital to maintain and invest in our operations are based in large part on the predictable legal and regulatory structure that has been in place for decades. Importantly, impairing Evraz's ability to earn adequate returns from Canadian production could put in jeopardy our ability to maintain U.S. productive capacity in Armored Plate and Rail steel, both critical and necessary for National Security.

c. Canadian steel support customers on both sides of the border

Evraz is a perfect example of the integrated U.S. - Canada steel supply chain. For example, jobs in Oregon depend on exporting plate to customers in Western Canada; jobs in Colorado depend on exporting rail to Canada; and jobs in Canada depend on serving line pipe customers in the U.S. Evraz has aver-

aged hundreds of millions of dollars per year over the last three years in cross border trade. Our approximately 350 direct jobs in Portland, Oregon; approximately 1,000 jobs in Pueblo, Colorado; and multiples of indirect jobs in both U.S. locales depend on continued unimpeded product flows across the border.

d. Canada and the U.S. participate in several joint defense programs critical to our shared National Security

Canada and Canadian steel is critical to the U.S. National Security. Canada and the U.S. are partners in defense in the bi-lateral North American Aerospace Defense Command (NORAD), since 1958. NORAD is charged with the missions of aerospace warning and aerospace control for North America, critical in jointly defending our two countries against foreign threats. From an industrial standpoint, the U.S. and Canadian militaries are partners in the North American Technology and Industrial Base Organization (NATIBO), founded in 1997, tasked to "promote a cost effective, healthy technology and industrial base that is responsive to the national and economical security needs of the United States and Canada." In addition to NORAD and NATIBO, bilateral defense arrangements between the U.S. and Canada include the Permanent Joint Board on Defense, established in 1940, Military Cooperation Committee established in 1946, the Combined Defense Plan, the Tri-lateral Command Framework established in 2009, the Canada-U.S. Civil Assistance Plan founded in 2008, and the North American Maritime Security Initiative (NAMSI). Clearly, National Security, and the industrial base for National Security, between the United States and Canada are inextricably linked, to each country's benefit[1].

e. Canadian steel is important in the U.S. national defense supply chain

Per U.S. Department of Defense regulations for certain specifications, Evraz utilizes Canadian steel substrate for some of its production of Armored Plate in Portland for which it is fully compliant. Slabs are rolled and processed in Portland, Oregon at OSM. Limiting Canadian exports of slabs used for further processing into Armored Plate significantly harms the Portland site and its ability to produce support defense procurement of Armored Plate. OSM also utilizes small quantities of U.S. slab sources for Armored Plate, from [redacted].

f. Possible detrimental impacts to U.S. operations of companies with significant Canadian operations

[1] More information on The Canada-U.S. Defense Relationship can be found at http://www.forces.gc.ca/en/news/article.page?doc=the-canada-u-s-defence-relationship/hob7hd8s

Just as important as Canadian steel is the impact Canadian operations of U.S. firms have on their ability to invest in the U.S. The financial health of steelmakers with operations on both sides of the border is dependent on market stability and access for all of their operations. Therefore, their ability to maintain production and employment in the United States and their ability to undertake new investments that are critical to the U.S. National Security is contingent on the viability of their Canadian operations, and vice versa. Any negative impact on the profitability of their Canadian steel operations could lead to an inability to make necessary investment in U.S. facilities.

For example, when Evraz makes pipe in Canada and sells it in the U.S. and Canada, the funds are used to invest in Colorado and Oregon operations, and plant and equipment. Limits on access of Canadian products into the U.S. for Evraz means less investment, jobs, and productive capacity in the United States, and can be detrimental to the U.S. National Security.

g. Similarity in Labor Markets – United Steelworkers in favor of a Canadian exemption

From a labor perspective and cost structure standpoint, Canadian steel producers share an employee pay and benefit profile very similar to their counterparts in the United States. As close allies and trading partners, millions of jobs are created on both sides of the border due to our close proximity and cross-border trade. Additionally, the balanced steel trade relationship, with the U.S. at a slight surplus with Canada, shows the importance of the Canadian market to U.S. steelmakers. To that end, Leo Gerard, International President of the United Steelworkers, said in a press release on April 27, 2017: "*China is the problem, not Canada or other countries which are following the rules. Our goal should be fair trade, not just walling off the U.S. market. That's what the Steelworkers have fought for, for years,*" Gerard said. He continued: *"Last week, the Trump administration initiated an investigation under the same section of U.S. trade law on steel. In steel, like aluminum, Canada is not the problem. In fact, in steel, the U.S. has a generally balanced trade relationship with Canada. Canada should be exempted from any potential action in that sector as well."*

h. Detrimental impact on providers of raw materials from the U.S.

Canada is an important market for raw materials from the U.S. According to the Government of Canada, Canadian companies purchase a total of $2.3 billion yearly in U.S. raw materials such as iron ore, metallurgical coal, flux, non-ferrous metals, and scrap steel. Approximately 85 percent of all inputs used by Canadian steelmakers in 2016 were purchased in the United States. This economic activity inherently supports employment and enterprises essential to the production of steel and by extension helps to ensure these raw material refinement, heavy transportation, and resource extraction activities remain economically viable and accessible for U.S.-based industrial activity. U.S. states' employment that would be

most affected by a drop in sales of raw materials to Canada include Michigan, Minnesota, Utah (the three leading iron ore suppliers), as well as Wyoming, West Virginia, Kentucky, Pennsylvania and Illinois (the leading U.S. coal suppliers).

i. Canada and the United States work together on mutual steel industry issues

NAFTA governments and the NAFTA steel industry have worked together through the North American Steel Trade Committee (NASTC) since 2003 to demonstrate our shared commitment to combatting market distortions in the steel sector, to further collaboration between our steel industries and to preserving our fair and balanced trading relationship. The governments and steel industries of North America continue to collaborate on wide-ranging work that seeks common policy approaches for enhancing the competitiveness of North American steel producers.

The governments of the United States, Canada, and Mexico have worked together within the NASTC to develop strong coordinated positions on issues in multilateral settings of importance to steel, including the OECD Steel Committee and WTO Rules Negotiations.

Canada and the United States share a track record of collaboration and coordination at the OECD Steel Committee. Through those dialogues, we have been encouraged by joint activities between Canadian and U.S. Governments in support of the G20/OECD Global Forum on Steel Excess Capacity.

j. Evraz is not subsidized by the Government of Canada

Evraz North America is a wholly-owned subsidiary of Evraz PLC, a publicly traded company on the London Stock Exchange. Evraz PLC is not a state-owned enterprise. Canadian steel is not subsidized, and Evraz operations is not and have not been subsidized by the Government of Canada or any Provincial Government. There are no systemic subsidy programs specific to the Canadian steel industry available for Evraz to use.

k. Canadian Line Pipe and integrated U.S. - Canada energy markets are critical for American energy security

From its Canadian operations, Evraz is an important supplier to the U.S. and Canadian integrated energy markets. Pipeline companies are tightly integrated on both sides of the border, moving energy products to and from refineries in both countries. Safe, high-quality pipelines are critical to maintaining a secure energy supply chain, and Canada and U.S. are closely integrated for mutual energy security. According to the Department of Natural Resources of the Government of Canada, there are 70 pipelines that cross the U.S. - Canada border: 23 pipelines export gas from Canada to the U.S., and eight export

gas from the U.S. to Canada. 39 oil pipelines cross the U.S.-Canada border. The U.S. imports more oil from Canada than any other country.

Inclusion of Canadian line pipe products in any findings by Commerce could result in higher pipeline costs, higher energy costs, and delays in energy projects, which could leave oil and gas exploration and pipeline construction jobs on the sidelines.

V. [redacted]

a. [redacted]

[redacted]

[Redacted Chart]

EVRAZ

b. [redacted]

[redacted]

c. [redacted]

[redacted]

[2] [redacted]

[Redacted Graph]

[Redacted Graph]

d. [Redacted]

e. [Redacted]

f. [Redacted]

EVRAZ

[redacted]

[Redacted Graph]

[redacted]

[Redacted Graph]

[redacted]

VI. Products With Limited Domestic Capacity, Where Markets Rely on Imports, Should be Carefully Considered

This issue was highlighted in the May 24, 2017 public hearing regarding Tin Plate. Evraz does not produce tin plate. But, for example, Evraz

[redacted]

VII. Potential Remedy Recommendations and Considerations

a. Evraz recommends a complete exclusion for Canadian steel products from any recommendations by the Department of Commerce. The importance of Canadian steel to the U.S. economy, its infrastructure, and its defense, combined with the mutual defense partnership and fair trade, warrants Canadian exclusion.

b. For products with limited domestic capacity, the Department of Commerce should carefully consider and seek out arguments from both steel producers and consumers to avoid unnecessary shortfalls or unintended employment effects for either side of the issue.

c. For [redacted].

d. For [redacted].]

e. Evraz recommends [redacted].

f. Possible trade retaliation by affected countries on steel or other products should be considered

Request for Confidential Treatment

Confidential treatment should be granted with respect to the business confidential information designated as such, pursuant to 5 U.S.C. § 552(b)(4). The information for which confidential treatment is requested is found on pages 2,3,4,5,7,8,10,13,14,15,16 and 17, and is: (a) commercial or financial information, (b) obtained from a person, and (c) confidential. This information is not publicly available. Public disclosure of this information would cause substantial competitive harm to Evraz. Moreover, such disclosure would have a negative impact on the ability of the Department to obtain similar information from Evraz or other sources, similarly situated, in the future.

The information for which Evraz is requesting confidential treatment has been deleted from the public version of this response. To the extent that the Department considers releasing any of the confidential information enclosed in brackets under FOIA, Evraz requests an opportunity to review a redacted version before it is released, and reserves the right to withdraw this response.

EVRAZ

Conclusion

Evraz appreciates the opportunity to comment on this initiative and trusts that the Department of Commerce will carefully consider the issues raised.

Respectfully submitted,

Brian Kristofic
Director – Trade and Government Affairs
EVRAZ North America

EVRAZ

EXHIBIT A – Evraz RSM Tire Cord Wire Rod Products

EVRAZ

EVRAZ Rocky Mountain Steel is vertically integrated, manufacturing virtually all of the billets for its Rod and Bar mill.

EXHIBIT A

WIRE ROD AND COILED

REINFORCING BAR

EVRAZ Rocky Mountain Steel is vertically integrated, manufacturing and providing virtually all of the billets for its Rod and Bar mill.

Our products exhibit excellent drawability, tensile uniformity, microstructure and chemical control. This provides our customers with superior, consistent performance and excellent value.

Wire Rod

- Low Carbon
- Medium Carbon (control-cooled)
- High Carbon (control-cooled)
- High Carbon Tensile Refined

Sizes

- 0.197 - 0.750 in (5.5 - 20 mm)

Grades

- 1003B to 1093
- High Carbon Tensile Refined Grades
- High Carbon Chemistry Grades

Coil Weights

- 4,600 and 5,800 lb

Wire Rope

Because wire rope is a premium quality product with demanding requirements, it is produced to rigorous internal standards which meet or exceed industry specifications.

Compositional aspects such as segregation control are achieved by controlled melting, casting and rod cooling practices. Surface decarburization is controlled by our walking beam reheat furnace practices, and our ultra heavy duty no-twist V-Block ensures exceptional dimensional control of the rod, which permits more accurate prediction of finished wire properties. Precise controlled cooling of the rod is possible via our modern Stelmor cooling conveyor. Our processes produce carbon steel grades of 1045 up to 1093 to meet the tensile refined grade requirements.

PC Strand

Due to the critical nature of this product, EVRAZ Rocky Mountain Steel employs selective scrap control along with electromagnet stirring both in the mold and below the mold to ensure our products meet the demanding requirements of this application. Tensile Refined grades are typically employed in these applications due to the requirement of precise final wire/strand tensile strength.

Tire Bead and Cord

The high strength, flexibility and adhesive qualities of steel bead and cord make it an ideal rubber reinforcing material. EVRAZ Rocky Mountain Steel produces 5.5 mm high-carbon rods to meet the high quality standards required by our customers. All heats are carefully analyzed for chemical components and the wire rod is critically inspected for surface and internal defects. Each heat of steel is processed as a single unit under controlled conditions.

Representative chemical specification

Carbon

- 0.67 - 0.80%

Copper

- Trace

Manganese

- 0.40 - 0.70%

Nickel

- Trace

EXHIBIT A

Silicon
- 0.15 - 0.30%

Chromium
- Trace

Phosphorus
- 0.020% max.

Nitrogen
- 60 ppm

Sulfur
- 0.020% max.

Coiled Reinforcing Bar

Big Bertha drilled the Seattle Tunnel; EVRAZ supplied the rebar for its reinforced concrete supporting arches.

Our coiled reinforcing bar represent some of the highest quality rebar products in the world. Our bar exhibits excellent tensile and yield strength, as well as deformation uniformity, microstructure and chemical control. And it provides our customers with superior, consistent performance and value.

The EVRAZ Rocky Mountain Steel facility produces deformed material to ASTM A615, ASTM A706, Dual Grade and CSA standards in the following size ranges:

Sizes available in 4,200 lb coils
- #3 (10 mm)
- #4 (13 mm)
- #5 (16 mm)
- #6 (19 mm)
- 10M Metric
- 15M Metric

Also available: ASTM A-36 and A-615 Grade 40 and 60 smooth bar in rod diameters between .197" to .8125" in coil weights ranging from 4,200 to 5,800 lbs.

Contact us for more information regarding wire rod and coiled reinforcing bar products.

EVRAZ

EXHIBIT B – Evraz OSM Government Contracts Awarded – from GovernmentContractswon.com

GovernmentContractsWon.com
(https://www.governmentcontractswon.com/)

EXHIBIT B

Enter the Name of a Defense Contractor GO | See Defense Contracts Won

Defense Contract Totals in 2015 Count: 579,458 Dollar Amount: $273,533,707,310

EVRAZ OREGON STEEL MILLS INCORPORATED
1000 SOUTHWEST BROADWAY, SUITE 2200
PORTLAND, OR 97205-3074

2008 Government Contracts

Awarded to this Contractor/Location

Defense Department

Government Contractor Information

Download Data

Download the entire list of Defense Contracts for this contractor from 2000 - 2015
To a Spreadsheet or Other File Type

Government Contractor/ Address	**EVRAZ OREGON STEEL MILLS INCORPORATED** 1000 SOUTHWEST BROADWAY, SUITE 2200 PORTLAND, OR 97205-3074
Dollar Amount of Defense Contracts Awarded to this Contractor from 2000 to 2015	$46,029,486
Number of Defense Contracts Awarded to this Contractor from 2000 to 2015	10
Industry Classification	Iron and Steel Mills
Type of Business Entity	--
Women-Owned Business	No
HUB Zone Representation	No
Ethnic Group	--
Veteran-Owned Small Business	--

Govt Contracts (Defense) - Count/$ Dollar Amount	
2015	0/$0
2014	0/$0
2013	0/$0
2012	1/$-879 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?yr=12)
2011	0/$0
2010	0/$0
2009	2/$0 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?yr=09)
2008	7/$46,030,365 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?yr=08)
2007	0/$0
2006	0/$0
2005	0/$0
2004	0/$0
2003	0/$0
2002	0/$0
2001	0/$0
2000	0/$0

Download Data

Download the entire list of Defense Contracts for this contractor from 2000 - 2015
To a Spreadsheet or Other File Type

Defense Contract List for the Year 2008 for this Contractor (*** Contract Dollar Amounts and Defense Dept Contract IDs are** available with data download)

EXHIBIT B

Contract Dollar Amount	*		
Defense Dept Contract IDs/Numbers	*		
Product/Service	Plate, Sheet, Strip, Foil, Iron and Steel (https://www.governmentcontractswon.com/department/defense/plate_sheet_strip_foil_iron_and_steel.asp?yr=08)		
Government Contracting Office	XR W0K8 USA ROCK ISL ARSENAL (https://www.governmentcontractswon.com/department/defense/xr-w0k8-usa-rock-isl-arsenal.asp?yr=08)	Principal Place of Performance	Portland, Oregon (Multnomah County) (https://www.governmentcontractswon.com/department/defense/portland-multnomah-oregon.asp?yr=08)
Claimant Program	COMBAT VEHICLES		
Weapon System	STRYKER (IAV) (https://www.governmentcontractswon.com/department/defense/stryker-iav.asp?yr=08)		
From Date	10/22/2007	To Date	11/15/2007

Contract Dollar Amount	*		
Defense Dept Contract IDs/Numbers	*		
Product/Service	Plate, Sheet, Strip, Foil, Iron and Steel (https://www.governmentcontractswon.com/department/defense/plate_sheet_strip_foil_iron_and_steel.asp?yr=08)		
Government Contracting Office	W4GG HQ US ARMY TACOM (https://www.governmentcontractswon.com/department/defense/tacom-warren.asp?yr=08)	Principal Place of Performance	Portland, Oregon (Multnomah County) (https://www.governmentcontractswon.com/department/defense/portland-multnomah-oregon.asp?yr=08)
Claimant Program	NON-COMBAT VEHICLES		
Weapon System	NOT DISCERNABLE		
From Date	10/25/2007	To Date	12/20/2007

Contract Dollar Amount	*		
Defense Dept Contract IDs/Numbers	*		
Product/Service	Plate, Sheet, Strip, Foil, Iron and Steel (https://www.governmentcontractswon.com/department/defense/plate_sheet_strip_foil_iron_and_steel.asp?yr=08)		
Government Contracting Office	W4GG HQ US ARMY TACOM (https://www.governmentcontractswon.com/department/defense/tacom-warren.asp?yr=08)	Principal Place of Performance	Portland, Oregon (Multnomah County) (https://www.governmentcontractswon.com/department/defense/portland-multnomah-oregon.asp?yr=08)
Claimant Program	COMBAT VEHICLES		
Weapon System	NOT DISCERNABLE		
From Date	5/16/2008	To Date	9/11/2008

(* **Contract Dollar Amounts and Defense Dept Contract IDs ar**
available with data download

Page: 1 2 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?spg=2&yr=08)

GovernmentContractsWon.com
(https://www.governmentcontractswon.com/)

EXHIBIT B

Enter the Name of a Defense Contractor GO See Defense Contracts Won

Defense Contract Totals in 2015 Count: 579,458 Dollar Amount: $273,533,707,310

EVRAZ OREGON STEEL MILLS INCORPORATED
1000 SOUTHWEST BROADWAY, SUITE 2200
PORTLAND, OR 97205-3074

2012 Government Contracts

Awarded to this Contractor/Location

Defense Department

Government Contractor Information

Download Data

Download the entire list of Defense Contracts for this contractor from 2000 - 2015
To a Spreadsheet or Other File Type

Government Contractor/ Address	**EVRAZ OREGON STEEL MILLS INCORPORATED** 1000 SOUTHWEST BROADWAY, SUITE 2200 PORTLAND, OR 97205-3074
Dollar Amount of Defense Contracts Awarded to this Contractor from 2000 to 2015	$46,029,486
Number of Defense Contracts Awarded to this Contractor from 2000 to 2015	10
Industry Classification	Iron and Steel Mills
Type of Business Entity	--
Women-Owned Business	No
HUB Zone Representation	No
Ethnic Group	--
Veteran-Owned Small Business	--
Govt Contracts (Defense) - Count/$ Dollar Amount	
2015	0/$0
2014	0/$0
2013	0/$0
2012	1/$-879 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?yr=12)
2011	0/$0
2010	0/$0
2009	2/$0 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?yr=09)
2008	7/$46,030,365 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?yr=08)
2007	0/$0
2006	0/$0
2005	0/$0
2004	0/$0
2003	0/$0
2002	0/$0
2001	0/$0
2000	0/$0

Download Data

Download the entire list of Defense Contracts for this contractor from 2000 - 2015
To a Spreadsheet or Other File Type

Defense Contract List for the Year 2012 for this Contractor (*** Contract Dollar Amounts and Defense Dept Contract IDs are** available with data download)

EXHIBIT B

Contract Dollar Amount	*		
Defense Dept Contract IDs/Numbers	*		
Product/Service	Plate, Sheet, Strip, Foil, Iron And Steel (https://www.governmentcontractswon.com/department/defense/plate_sheet_strip_foil_iron_and_steel.asp?yr=12)		
Government Contracting Office	W4GG HQ US ARMY TACOM (https://www.governmentcontractswon.com/department/defense/tacom-warren.asp?yr=12)	Principal Place of Performance	Portland, Oregon (Multnomah County) (https://www.governmentcontractswon.com/department/defense/portland-multnomah-oregon.asp?yr=12)
Claimant Program	NON-COMBAT VEHICLES		
Weapon System	NOT DISCERNABLE		
From Date	3/27/2012	To Date	3/27/2012

(* Contract Dollar Amounts and Defense Dept Contract IDs ar
available with data download

GovernmentContractsWon.com
(https://www.governmentcontractswon.com/)

EXHIBIT B

Enter the Name of a Defense Contractor GO | *See Defense Contracts Won*

Defense Contract Totals in 2015 Count: 579,458 Dollar Amount: $273,533,707,310

EVRAZ OREGON STEEL MILLS INCORPORATED
1000 SOUTHWEST BROADWAY, SUITE 2200
PORTLAND, OR 97205-3074

2008 Government Contracts

Awarded to this Contractor/Location

Defense Department

Government Contractor Information

Download Data

Download the entire list of Defense Contracts for this contractor from 2000 - 2015
To a Spreadsheet or Other File Type

Government Contractor/ Address	**EVRAZ OREGON STEEL MILLS INCORPORATED** 1000 SOUTHWEST BROADWAY, SUITE 2200 PORTLAND, OR 97205-3074
Dollar Amount of Defense Contracts Awarded to this Contractor from 2000 to 2015	$46,029,486
Number of Defense Contracts Awarded to this Contractor from 2000 to 2015	10
Industry Classification	Iron and Steel Mills
Type of Business Entity	--
Women-Owned Business	No
HUB Zone Representation	No
Ethnic Group	--
Veteran-Owned Small Business	--

Govt Contracts (Defense) - Count/$ Dollar Amount	
2015	0/$0
2014	0/$0
2013	0/$0
2012	1/$-879 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?yr=12)
2011	0/$0
2010	0/$0
2009	2/$0 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?yr=09)
2008	7/$46,030,365 (https://www.governmentcontractswon.com/department/defense/oregon-steel-mills-inc-009106055.asp?yr=08)
2007	0/$0
2006	0/$0
2005	0/$0
2004	0/$0
2003	0/$0
2002	0/$0
2001	0/$0
2000	0/$0

Download Data

Download the entire list of Defense Contracts for this contractor from 2000 - 2015
To a Spreadsheet or Other File Type

Defense Contract List for the Year 2008 for this Contractor (*** Contract Dollar Amounts and Defense Dept Contract IDs are** available with data download)

EXHIBIT B

Contract Dollar Amount	*		
Defense Dept Contract IDs/Numbers	*		
Product/Service	Plate, Sheet, Strip, Foil, Iron and Steel (https://www.governmentcontractswon.com/department/defense/plate_sheet_strip_foil_iron_and_steel.asp?yr=08)		
Government Contracting Office	W4GG TACOM ROCK ISLAND (https://www.governmentcontractswon.com/department/defense/tacom-rock-island.asp?yr=08)	Principal Place of Performance	Portland, Oregon (Multnomah County) (https://www.governmentcontractswon.com/department/defense/portland-multnomah-oregon.asp?yr=08)
Claimant Program	COMBAT VEHICLES		
Weapon System	NOT DISCERNABLE		
From Date	11/7/2007	To Date	8/11/2008

Contract Dollar Amount	*		
Defense Dept Contract IDs/Numbers	*		
Product/Service	Plate, Sheet, Strip, Foil, Iron and Steel (https://www.governmentcontractswon.com/department/defense/plate_sheet_strip_foil_iron_and_steel.asp?yr=08)		
Government Contracting Office	W4GG HQ US ARMY TACOM (https://www.governmentcontractswon.com/department/defense/tacom-warren.asp?yr=08)	Principal Place of Performance	Portland, Oregon (Multnomah County) (https://www.governmentcontractswon.com/department/defense/portland-multnomah-oregon.asp?yr=08)
Claimant Program	ALL OTHER SUPPLIES AND EQUIPMENT		
Weapon System	NOT DISCERNABLE		
From Date	2/15/2008	To Date	2/15/2008

(* Contract Dollar Amounts and Defense Dept Contract IDs ar
available with data download

EVRAZ

EXHIBIT C– Data Sheets for Evraz Armored Plate Produced in Portland, OR

EXHIBIT C

EVRAZ MIL-DTL 12560J Armor Plate

EVRAZ North America produces a wide range of steel armor plate specifications for the defense and security industries. End uses include heavy, medium, and light military vehicles, add-on armor kits, VIP armored cars, personnel protection, and security structures.

DIMENSIONS AND TOLERANCES

Class	Thickness (in.)	Width (in.)	Length (in.)	Thickness (mm)	Width (mm)	Length (m)
1	0.140 - 4.000	48 - 102	96 - 480	3.6 to 102	1220 to 2590	2.4 to 12.2
2	0.140 - 2.000	48 - 102	96 - 480	3.6 to 50.8	1220 to 2590	2.4 to 12.2
3	0.140 - 4.000	48 - 102	96 - 480	3.6 to 102	1220 to 2590	2.4 to 12.2
4A	0.140 - 2.000	48 - 102	96 - 480	3.6 to 50.8	1220 to 2590	2.4 to 12.2

1/2 ASTM A6/A6M thickness & flatness tolerances. All other tolerances per ASTM A6/A6M unless otherwise agreed.

CHEMICAL COMPOSITION (heat analysis - % maximum)

Thickness (in.)	Thickness (mm)	C	Mn	P	S	Si	Ni	Cr	Mo	B	CE*
0.140 - 1.125	3.6 - 28.5	0.28	1.45	0.02	0.005	0.40	0.50	0.30	0.45	0.003	0.62
1.126 - 2.500	28.6 - 63.5	0.28	0.65	0.02	0.005	0.40	1.55	1.60	0.35	0.003	0.75
2.501 - 4.000	63.6 - 102	0.30	0.50	0.02	0.005	0.40	2.50	1.40	0.37	0.003	0.80

*Carbon Equivalence (CE) = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15

Delivery condition: Water quenched and tempered

MECHANICAL PROPERTIES (typical values)

Class	Thickness (in.)	Thickness (mm)	Hardness (BHN)	Toughness (CVN) Transverse -40°	Toughness (CVN) Longitudinal -40°
2	0.140 - 2.000	3.6 to 50.8	262 - 302	35 - 55	inquire
1 & 3	0.140 - 0.624	3.6 to 15.9	363 - 400	16 - 17	
1 & 3	0.625 - 1.249	16 to 31.7	331 - 375	16 - 25	
1 & 3	1.250 - 2.000	31.8 to 50.8	302 - 341	22 - 35	
4A	0.140 - 2.000	3.6 to 50.8	420 - 460	16	

BALLISTIC PROPERTIES:	Complies with MIL-DTL-12560J
MATERIAL TEST REPORT:	Chemical composition, BHN hardness, Charpy impact testing per MIL-DTL-12560J
EDGE CONDITION:	Mill edge or cut edge as agreed
SURFACE CONDITION:	Per ASTM A6/A6M Shot-blast and primer coating available upon request
HEAT TREATMENT:	May not be heated above 400°F (225°C) during fabrication or the certified hardness cannot be maintained

FABRICATION

COLD-FORMING: Due to the high hardness, EVRAZ recommends cold blending to be limited to:

Class	Direction	Radius	Die Opening
1 & 3	Both Directions (Easy & Hard)	5 T	12 T
2	Both Directions (Easy & Hard)	3 T	10 T
4A	Transverse to Rolling (Easy)	4 T	12 T
4A	Longitudinal to Rolling (Hard)	5 T	12 T

Bend radius recommendation valid up to 0.5" inclusive. Please inquire about other sizes.

FLAME CUTTING: Standard thermal cutting (oxy-fuel, plasma, laser, water jet) can be used. Plasma cutting under water can be used to 1.00" (25.4mm thickness). Preheating is recommended – refer to welding section below. The HAZ hardness will be softened by elevated heat input. The HAZ softening can be eliminated by using abrasive water jet cutting.

WELDING: MIL-DTL 12560J is commonly welded using standard industry welding techniques. The potential for cracking increases with plate thickness, therefore it is recommended to preheat based on material thickness per the table below:

Recommended Preheat Temperatures						
Thickness	0.140" 3.6mm	0.50" 13mm	1.00" 25mm	1.50" 35mm	2.00" 50mm	2.50"+ 65mm+
	70°F/22°C		150°F/66°C	200°F/100°C	250°F/125°C	300°F/150°C

When ambient temperature is below 50°F (10°C), the recommended preheat should be increased by 70°F (22°C). Please contact our sales service department for additional information on welding.

EVRAZ Portland
14400 N. Rivergate Blvd
Portland, OR 97203
800-468-8913 (tel)
503-240-5240 (tel)
503-240-5291 (fax)
steelplate@evrazna.com

EXHIBIT C

EVRAZ

DEFENSE: Armor Plate

EVRAZ North America produces a wide range of steel armor plate specifications for the defense and security industries. End uses include heavy, medium, and light military vehicles, add-on armor kits, VIP armored cars, personnel protection, and security structures.

SPECIFICATIONS	Thickness (in.) min.	Thickness (in.) max.	Thickness (mm) min.	Thickness (mm) max.
MIL-DTL-12560J Class 1	0.140	4.000	3.6	102
MIL-DTL-12560J Class 2	0.140	2.000	3.6	50.8
MIL-DTL-12560J Class 3	0.140	4.000	3.6	102
MIL-DTL-12560J Class 4a	0.140	2.000	3.6	50.8
MIL-DTL-32332	0.1575	0.500	4.00	12.7
MIL-DTL-46100E	0.1575	2.000	4.00	50.8
ARMALLOY 440T	0.140	2.000	3.6	50.8
ARMALLOY 500HH	0.1575	2.000	4.00	50.8
ARMALLOY 550HH+	0.1575	0.500	4.00	12.7
ARMALLOY 650UHH	0.1575	0.500	4.00	12.7

DIMENSIONS	Width (in.) min.	Width (in.) max.	Length (in.) min.	Length (in.) max.	Width (mm) min.	Width (mm) max.	Length (m) min.	Length (m) max.
	48	102	96	480	1220	2590	2.4	12

BALLISTIC PROPERTIES ARMALLOY 500HH

Specifications	Ammunition	Velocity (ft/s)	Velocity (m/s)	Min Thick (in.)	Min Thick (mm)
NIJ					
3	7.62 x 51 M80	2750 +/- 49	838 +/- 15	0.250	6.35
4	30.06 M2, AP	2850 +/- 49	869 +/- 15	0.500	12.7
STANAG					
	5.56 x 45 M193	3073 +/- 66	937 +/- 20		
1	7.62 M80	2733 +/- 66	833 +/- 20	0.357	9.00
	5.56 x 45 SS109/M855	2953 +/- 66	900 +/- 20		
2	7.62 x 39 API BZ	2280 +/- 66	695 +/- 20	0.472	12.0
EN					
FB4	7.62 x 39 M43	2362 +/- 32	720 +/- 10	0.157	4.00
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.236	6.00
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.250	6.35
FB6	7.62 M80	2722 +/- 32	830 +/- 10	0.250	6.35
FB7	7.62 x 51 P80 AP	2690 +/- 32	820 +/- 10	0.551	14.0

BALLISTIC PROPERTIES ARMALLOY 650UHH

Specifications	Ammunition	Velocity (ft/s)	Velocity (m/s)	Min Thick (in.)	Min Thick (mm)
NIJ					
3	7.62 x 51 M80	2750 +/- 49	838 +/- 15	0.250	6.35
4		2850 +/- 49	869 +/- 15		
STANAG					
	5.56 x 45 M193	3073 +/- 66	937 +/- 20		
1	7.62 M80	2733 +/- 66	833 +/- 20	0.250	6.35
	5.56 x 45 SS109/M855	2953 +/- 66	900 +/- 20		
2	7.62 x 39 API BZ	2280 +/- 66	695 +/- 20	0.250	6.35
EN					
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.187	4.75
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.236	6.00
FB6	7.62 M80	2722 +/- 32	830 +/- 10	0.236	6.00
FB7	7.62 x 51 P80 AP	2690 +/- 32	820 +/- 10	0.315	8.00

*Additional ballistic properties not listed above are available upon request

Please refer to EVRAZ Armalloy Data Sheets for instructions on welding and fabrication.

EVRAZ Portland
14400 N. Rivergate Blvd
Portland, OR 97203
800-468-8913 (tel)
503-240-5240 (tel)
503-240-5291 (fax)
steelplate@evrazna.com

www.evrazna.com

EXHIBIT C

EVRAZ ARMALLOY 550HH+ Armor Plate

EVRAZ North America produces a wide range of steel armor plate specifications for the defense and security industries. End uses include heavy, medium, and light military vehicles, add-on armor kits, VIP armored cars, personnel protection, and security structures.

SPECIFICATION

Armalloy 550HH+ complies with a variety of military and commercial specifications.

DIMENSIONS AND TOLERANCES (other dimensions available upon request)

T	0.1575" to 0.500"	4.0mm to 12.7mm
W	48" to 102"	1220mm to 2590mm
L	96" to 480"	2.4m to 12m

1/2 ASTM A6/A6M thickness & flatness tolerances. All other tolerances per ASTM A6/A6M unless otherwise agreed.

CHEMICAL COMPOSITION (heat analysis - % maximum)

C	Mn	P	S	Si	Ni	Cr	Mo	Al	B	CE*
0.46	1.00	0.02	0.005	1.0	2.00	1.0	0.5	0.06	0.003	0.86

*Carbon Equivalence (CE) = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15

Delivery condition: Water quenched and tempered

BALLISTIC PROPERTIES

Please inquire about current ballistic capabilities

MECHANICAL PROPERTIES (typical values)

Hardness	Yield	Tensile	Elongation	Toughness (CVN) Transverse -40°	Toughness (CVN) Longitudinal -40°
530 to 570 BHN	220 Ksi 1,517 MPa	300 Ksi 2,068 MPa	8% min. in 2" (50mm)	inquire	inquire

BALLISTIC TESTING:	As agreed per customer order
MATERIAL TEST REPORT:	Chemical composition, BHN hardness, toughness (CVN) testing per heat lot
EDGE CONDITION:	Mill edge or cut edge as agreed
SURFACE CONDITION:	Per ASTM A6/A6M Shot-blast and primer coating available upon request
HEAT TREATMENT:	May not be heated above 400°F (225°C) during fabrication or the certified hardness cannot be maintained

FABRICATION

COLD-FORMING: Due to the enhanced high hardness, extreme care must be taken during cold bending. Please contact our sales service department for more information before attempting to cold bend.

FLAME CUTTING: Standard thermal cutting (oxy-fuel, plasma, laser, water jet) can be used. Plasma cutting under water can be used to 0.5" (12.7mm thickness). Preheating is recommended – refer to welding section below. The HAZ hardness will be softened by elevated heat input. The HAZ softening can be eliminated by using abrasive water jet cutting.

WELDING: Armalloy 550HH+ has been successfully welded using standard industry welding techniques. When welding, use austenitic (stainless) weld wire.

The potential for cracking increases with plate thickness; therefore it is recommended to preheat based on material thickness per the table below:

Recommended Preheat Temperatures			
Thickness	0.1575" 4mm	0.25" 6.35mm	0.5" 12.7mm
	70°F/22°C		200°F/100°C

When ambient temperature is below 50°F (10°C), the recommended preheat should be increased by 70°F (22°C). Please contact our sales service department for additional information on welding.

EVRAZ Portland
14400 N. Rivergate Blvd
Portland, OR 97203
800-468-8913 (tel)
503-240-5240 (tel)
503-240-5291 (fax)
steelplate@evrazna.com

EXHIBIT C

EVRAZ ARMALLOY 650UHH Armor Plate

MIL-DTL-32332

EVRAZ North America produces a wide range of steel armor plate specifications for the defense and security industries. End uses include heavy, medium, and light military vehicles, add-on armor kits, VIP armored cars, personnel protection, and security structures.

SPECIFICATION

Armalloy 650UHH complies with MIL-DTL-32332 and a variety of other military and commercial applications.

DIMENSIONS AND TOLERANCES (other dimensions available upon request)

T	0.1575" to 0.500"	4.0mm to 12.7mm
W	48" to 102"	1220mm to 2590mm
L	96" to 480"	2.4m to 12m

1/2 ASTM A6/A6M thickness & flatness tolerances. All other tolerances per ASTM A6/A6M unless otherwise agreed.

CHEMICAL COMPOSITION (heat analysis - % maximum)

C	Mn	P	S	Si	Ni	Cr	Mo	Al	B	CE*
0.46	1.00	0.02	0.005	1.0	2.00	1.0	0.5	0.06	0.003	0.86

*Carbon Equivalence (CE) = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15

Delivery condition: Water quenched and tempered

MECHANICAL PROPERTIES (typical values)

Hardness	Yield	Tensile	Elongation	Toughness (CVN) Transverse -40°	Toughness (CVN) Longitudinal -40°
590 to 670 BHN	230 Ksi 1,585 MPa	325 Ksi 2,240 MPa	8% min. in 2" (50mm)	inquire	inquire

BALLISTIC TESTING:	As agreed per customer order
MATERIAL TEST REPORT:	Chemical composition, BHN hardness, toughness (CVN) testing per heat lot
EDGE CONDITION:	Mill edge or cut edge as agreed
SURFACE CONDITION:	Per ASTM A6/A6M Shot-blast and primer coating available upon request
HEAT TREATMENT:	May not be heated above 400°F (225°C) during fabrication or the certified hardness cannot be maintained

FABRICATION

COLD-FORMING: Due to the ultra high hardness, extreme care must be taken during cold bending. Please contact our sales service department for more information before attempting to cold bend.

FLAME CUTTING: Standard thermal cutting (oxy-fuel, plasma, laser, water jet) can be used. Plasma cutting under water can be used to 0.5" (12.7mm thickness). Preheating is recommended – refer to welding section below. The HAZ hardness will be softened by elevated heat input. The HAZ softening can be eliminated by using abrasive water jet cutting.

WELDING: Armalloy 650UHH has been successfully welded using standard industry welding techniques. When welding, use austenitic (stainless) weld wire.

The potential for cracking increases with plate thickness; therefore it is recommended to preheat based on material thickness per the table below:

Recommended Preheat Temperatures			
Thickness	0.1575" 4mm	0.25" 6.35mm	0.50" 13mm
	70°F/22°C		200°F/100°C

When ambient temperature is below 50°F (10°C), the recommended preheat should be increased by 70°F (22°C). Please contact our sales service department for additional information on welding.

continued on back

EXHIBIT C

EVRAZ

ARMALLOY 650UHH Armor Plate

MIL-DTL-32332

BALLISTIC PROPERTIES ARMALLOY 650UHH					
Specifications	Ammunition	Velocity (ft/s)	Velocity (m/s)	Min Thick (in.)	Min Thick (mm)
NIJ					
3	7.62 x 51 M80	2750 +/- 49	838 +/- 15	0.250	6.35
4	30.06 M2, AP	2850 +/- 49	869 +/- 15	0.375	9.50
STANAG					
	5.56 x 45 M193	3073 +/- 66	937 +/- 20		
1	7.62 M80	2733 +/- 66	833 +/- 20	0.250	6.35
	5.56 x 45 SS109/M855	2953 +/- 66	900 +/- 20		
2	7.62 x 39 API BZ	2280 +/- 66	695 +/- 20	0.250	6.35
EN					
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.187	4.75
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.236	6.00
FB6	7.62 M80	2722 +/- 32	830 +/- 10	0.236	6.00
FB7	7.62 x 51 P80 AP	2690 +/- 32	820 +/- 10	0.315	8.00

*Additional ballistic properties not listed above are available upon request

EVRAZ Portland
14400 N. Rivergate Blvd
Portland, OR 97203
800-468-8913 (tel)
503-240-5240 (tel)
503-240-5291 (fax)
steelplate@evrazna.com

EXHIBIT C

EVRAZ

ARMALLOY 500HH Armor Plate

MIL-DTL-46100E

EVRAZ North America produces a wide range of steel armor plate specifications for the defense and security industries. End uses include heavy, medium, and light military vehicles, add-on armor kits, VIP armored cars, personnel protection, and security structures.

SPECIFICATION

Armalloy 500HH complies with MIL-DTL-46100E and a variety of other military and commercial specifications.

DIMENSIONS AND TOLERANCES (other dimensions available upon request)

T	0.1575" to 2.000"	4.0mm to 50.8mm
W	48" to 102"	1220mm to 2590mm
L	96" to 480"	2.4m to 12m

1/2 ASTM A6/A6M thickness & flatness tolerances. All other tolerances per ASTM A6/A6M unless otherwise agreed.

CHEMICAL COMPOSITION (heat analysis - % maximum)

Thickness (in.)	Thickness (mm)	C	Mn	P	S	Si	Ni	Cr	Mo	B	CE*
0.1575 - 1.350	4.0 - 34.3	0.32	1.00	0.02	0.005	1.0	1.5	1.5	0.50	0.003	0.68
1.351 - 2.000	34.3 - 50.8	0.32	1.00	0.02	0.005	1.0	2.0	1.6	0.50	0.003	0.80

*Carbon Equivalence (CE) = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15

Delivery condition: Water quenched and tempered

MECHANICAL PROPERTIES (typical values)

Hardness	Yield	Tensile	Elongation	Toughness (CVN) Transverse -40°	Toughness (CVN) Longitudinal -40°
477 to 534 BHN	190 Ksi 1,310 MPa	240 Ksi 1,655 MPa	10% min. in 2" (50mm)	20 ft-lbs 27 Joules	24 ft-lbs 33 Joules

BALLISTIC TESTING:	As agreed per customer order
MATERIAL TEST REPORT:	Chemical composition, BHN hardness, toughness (CVN) testing per heat lot
EDGE CONDITION:	Mill edge or cut edge as agreed
SURFACE CONDITION:	Per ASTM A6/A6M Shot-blast and primer coating available upon request
HEAT TREATMENT:	May not be heated above 400°F (225°C) during fabrication or the certified hardness cannot be maintained

FABRICATION

COLD-FORMING: Due to the high hardness, EVRAZ recommends cold bending to be limited to:

Direction	Radius	Die Opening
Transverse to Rolling (Easy)	6 T	12 T
Longitudinal to Rolling (Hard)	8 T	16 T

FLAME CUTTING: Standard thermal cutting (oxy-fuel, plasma, laser, water jet) can be used. Plasma cutting under water can be used to 1.00" (25.4mm thickness). Preheating is recommended – refer to welding section below. The HAZ hardness will be softened by elevated heat input. The HAZ softening can be eliminated by using abrasive water jet cutting.

WELDING: Armalloy 500HH is commonly welded using standard industry welding techniques. The potential for cracking increases with plate thickness; therefore it is recommended to preheat based on material thickness per the table below:

Recommended Preheat Temperatures					
Thickness	0.1575" 4mm	0.50" 13mm	1.00" 25mm	1.50" 35mm	2.00" 50mm
	70°F/22°C		200°F/100°C	250°F/125°C	300°F/150°C

When ambient temperature is below 50°F (10°C), the recommended preheat should be increased by 70°F (22°C). Please contact our sales service department for additional information on welding.

continued on back

EXHIBIT C

EVRAZ

ARMALLOY 500HH Armor Plate

MIL-DTL-46100E

BALLISTIC PROPERTIES ARMALLOY 500HH

Specifications	Ammunition	Velocity (ft/s)	Velocity (m/s)	Min Thick (in.)	Min Thick (mm)
NIJ					
3	7.62 x 51 M80	2750 +/- 49	838 +/- 15	0.250	6.35
4	30.06 M2, AP	2850 +/- 49	869 +/- 15	0.500	12.7
STANAG					
	5.56 x 45 M193	3073 +/- 66	937 +/- 20		
1	7.62 M80	2733 +/- 66	833 +/- 20	0.357	9.00
	5.56 x 45 SS109/M855	2953 +/- 66	900 +/- 20		
2	7.62 x 39 API BZ	2280 +/- 66	695 +/- 20	0.472	12.0
EN					
FB4	7.62 x 39 M43	2362 +/- 32	720 +/- 10	0.157	4.00
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.236	6.00
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.250	6.35
FB6	7.62 M80	2722 +/- 32	830 +/- 10	0.250	6.35
FB7	7.62 x 51 P80 AP	2690 +/- 32	820 +/- 10	0.551	14.0

*Additional ballistic properties not listed above are available upon request

EVRAZ Portland
14400 N. Rivergate Blvd
Portland, OR 97203

800-468-8913 (tel)
503-240-5240 (tel)
503-240-5291 (fax)

steelplate@evrazna.com

EXHIBIT C

EVRAZ

ARMALLOY 440T Armor Plate

MIL-DTL-12560J Class 4a

EVRAZ North America produces a wide range of steel armor plate specifications for the defense and security industries. End uses include heavy, medium, and light military vehicles, add-on armor kits, VIP armored cars, personnel protection, and security structures.

SPECIFICATION

Armalloy 440T complies with MIL-DTL-12560J Class 4a and a variety of other military and commercial specifications.

DIMENSIONS AND TOLERANCES (other dimensions available upon request)

T	0.140" to 2.000"	3.6mm to 50.8mm
W	48" to 102"	1220mm to 2590mm
L	96" to 480"	2.4m to 12m

1/2 ASTM A6/A6M thickness & flatness tolerances. All other tolerances per ASTM A6/A6M unless otherwise agreed.

CHEMICAL COMPOSITION (heat analysis - % maximum)

C	Mn	P	S	Si	Ni	Cr	Mo	Al	B	CE*
0.26	1.50	0.02	0.005	0.5	1.0	1.0	0.5	0.05	0.003	~0.61

*Carbon Equivalence (CE) = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15

Delivery condition: Water quenched and tempered

MECHANICAL PROPERTIES (typical values)

Hardness	Yield	Tensile	Elongation	Toughness (CVN) Transverse -40°	Toughness (CVN) Longitudinal -40°
420 to 480 BHN	170 Ksi 1,175 MPa	200 Ksi 1,380 MPa	13% min. in 2" (50mm)	16 ft-lbs 22 Joules	inquire

BALLISTIC TESTING:	As agreed per customer order
MATERIAL TEST REPORT:	Chemical composition, BHN hardness, toughness (CVN) testing per heat lot
EDGE CONDITION:	Mill edge or cut-edge as agreed
SURFACE CONDITION:	Per ASTM A6/A6M Shot-blast and primer coating available upon request
HEAT TREATMENT:	May not be heated above 400°F (225°C) during fabrication or the certified hardness cannot be maintained.

FABRICATION

COLD-FORMING: Due to the high hardness, EVRAZ recommends cold blending to be limited to:

Direction	Radius	Die Opening
Transverse to Rolling (Easy)	4 T	12 T
Longitudinal to Rolling (Hard)	5 T	12 T

FLAME CUTTING: Standard thermal cutting (oxy-fuel, plasma, laser, water jet) can be used. Plasma cutting under water can be used to 1.00" (25.4mm thickness). Preheating is recommended – refer to welding section below. The HAZ hardness will be softened by elevated heat input. The HAZ softening can be eliminated by using abrasive water jet cutting.

WELDING: Armalloy 440T is commonly welded using standard industry welding techniques. The potential for cracking increases with plate thickness; therefore it is recommended to preheat based on material thickness per the table below:

Recommended Preheat Temperatures					
Thickness	0.140" 3.66mm	0.50" 13mm	1.00" 25mm	1.50" 35mm	2.00" 50mm
	70°F/22°C		150°F/66°C	200°F/100°C	250°F/125°C

When ambient temperature is below 50°F (10°C), the recommended preheat should be increased by 70°F (22°C). Please contact our sales service department for additional information on welding.

EVRAZ Portland
14400 N. Rivergate Blvd
Portland, OR 97203
800-468-8913 (tel)
503-240-5240 (tel)
503-240-5291 (fax)
steelplate@evrazna.com

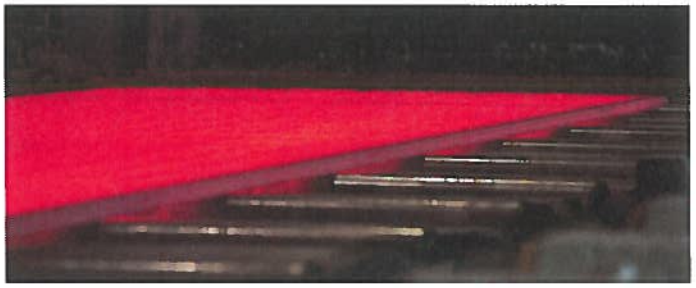
EVRAZ

EXHIBIT D – All Evraz steel plate products

EXHIBIT D

EVRAZ

About EVRAZ | Products | Locations | Careers



EVRAZ has the flexibility to meet our customers' dimension specifications.

STEEL PLATE

EVRAZ Regina and Portland collectively produce over 500 grades and specifications of steel plate. We are known for the ability to provide products and services that consistently satisfy our customers' expectations.

Our hot-rolled plate, strip mill plate and heat-treated plate spans a wide variety of grades and sizes. We produce as-rolled carbon, high-strength-low-alloy and alloy grades, plus heat-treated carbon and alloy grades. Our ability to turn and roll product to width before we finish the length allows us great flexibility in producing our customers' specific dimensions.

Steel plate is in railcars, barges, ocean-going vessels, industrial equipment, tanks and pressure vessels, large diameter pipe for oil and natural gas transmission, wind towers, bridges, armored vehicles and many other applications.

Dimensions

Thickness

- .1875" to 8" (4.76mm to 203mm)

Width

- 48" to 135" (1.2m to 3.43 m)

Length

- 96" to 1120" (2.4m to 35.5m)

Data Sheets

- Armalloy 440T Data Sheet
- Armalloy 500HH Data Sheet
- Armalloy 550HH+ Data Sheet
- Armalloy 650UHH Data Sheet
- Defense Armor Plate Data Sheet
- MIL-DTL Data Sheet

Steel Plate Product Groups

- As-rolled Discrete Plate
- Temper-passed cut-to-length plate
- Quenched and tempered plate
- Normalized plate

Steel Plate Grades

- Structural
- Pressure Vessel
- Shipbuilding
- Abrasion Resisting
- Boron
- Armor

Additional Processing

- Shot-blasting
- Prime coating
- Restricted tolerances
- Edge trimming

Steel Plate Specifications

As-rolled Plate Grades	Heat Treated Grades	Military Armor Grades
ASTM A36	ASTM A514	MIL-A-12560
ASTM A285	ASTM A516	MIL-A-46177
ASTM A455	ASTM A517	MIL-A-46100
ASTM A514 ASTM A516	ASTM A633	Armalloy
ASTM A572	ASTM A710	CG2001
ASTM A573	Oregon AR 350	CG2002
ASTM A588	Oregon AR 400	S-05-603

 EXHIBIT D

ASTM A656	Oregon AR425	S-05-605
ASTM A709	Oregon AR 450	
ASTM A871	Oregon AR 500	
ABS	Formalloy 400	
CSA CSA G40.21 44W CSA G40.21 50W CSA G40.21 50WT CSA G40.21 50A CSA G40.21 50AT	Formalloy 500	
Lloyds	Formalloy 525	
AR 200 AR 235	Weldalloy 80	
1008 to 1045	Weldalloy 100	
HR 100	Weldalloy 130	
API 5L to X80	Weldalloy 140	
AASHTO 15B30	HPS 70	

Contact us for more information regarding plate products.