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OMB Control Number: 0694-0120

Expiration Date: December, 31 2020

# Section 232 Investigation into Imports of Vanadium



### **SCOPE OF ASSESSMENT**

The U.S. Department of Commerce, Bureau of Industry and Security (BIS), Office of Technology Evaluation (OTE), is conducting a survey of the U.S. vanadium industry. The survey results will be used to support an ongoing investigation on the effect of imports of vanadium products on the U.S. national security initiated under Section 232 of the Trade Expansion Act of 1962, as amended.

The principal goal of this survey is to assist the U.S. Department of Commerce in determining whether vanadium imports are being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security. Information collected will include facilities and production data, capacity utilization, customers, sales and demand data, employment information, conditions of domestic and global competition, research and development, and other factors. The resulting data will provide the U.S. Department of Commerce detailed vanadium industry information that is otherwise not publicly available and needed to effectively conduct this Section 232 investigation.

## **RESPONSE TO THIS SURVEY IS REQUIRED BY LAW**

A response to this survey is required by law (50 U.S.C. Sec. 4555). Failure to respond can result in a maximum fine of \$10,000, imprisonment of up to one year, or both. Information furnished herewith is deemed confidential and will not be published or disclosed except in accordance with Section 705 of the Defense Production Act of 1950, as amended (50 U.S.C. Sec. 4555). Section 705 prohibits the publication or disclosure of this information unless the President determines that its withholding is contrary to the national defense. Information will not be shared with any non-government entity, other than in aggregate form. The information will be protected pursuant to the appropriate exemptions from disclosure under the Freedom of Information Act (FOIA), should it be the subject of a FOIA request.

Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number.

## **BURDEN ESTIMATE AND REQUEST FOR COMMENT**

Public reporting burden for this collection of information is estimated to average 10 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information to BIS Information Collection Officer, Room 6883, Bureau of Industry and Security, U.S. Department of Commerce, Washington, D.C. 20230, and to the Office of Management and Budget, Paperwork Reduction Project (OMB Control No. 0694-0120), Washington, D.C. 20503.

#### BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

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	General Instructions
	Your organization is required to complete this survey of the U.S. vanadium industry, which can be downloaded from the BIS website: <a href="http://www.bis.doc.gov/XXX">http://www.bis.doc.gov/XXX</a> If you are unable to download the survey document, at your request, BIS survey support staff will e-mail the Excel survey template directly to you.  For your convenience, a PDF version of the survey and required drop-down content is available on the BIS website to aid internal data collection. <b>DO NOT SUBMIT</b> the PDF version of the survey as your response to BIS. Should this occur, your organization will be required to resubmit the survey in the requested Excel format.
В.	Respond to every question. Surveys that are not fully completed will be returned for completion. Use the comment boxes to provide any information to supplement responses provided in the survey form. Make sure to record a complete answer in the space provided, even if the space does not appear to expand to fit all of the information.  DO NOT CUT AND PASTE RESPONSES WITHIN THIS SURVEY OR PASTE IN RESPONSES FROM OUTSIDE THE SURVEY. Survey inputs should be completed by typing in responses or by using a drop-down menu. The use of cut and paste can corrupt the survey template. If your survey response is corrupted as a result of cut and paste response, your survey will be rejected and your organization must immediately resubmit the survey.
C.	Do not disclose any USG classified information in this survey form.
D.	Upon completion of the survey, final review, and certification, transmit the survey document via e-mail to: Vanadium232@bis.doc.gov
E.	Questions related to the survey should be directed to BIS survey support staff at <a href="mailto:Vanadium232@bis.doc.gov">Vanadium232@bis.doc.gov</a> E-mail is the preferred method of contact.  You may speak with a member of the BIS survey support staff by calling (202) 482-5481.
F.	For questions related to the overall scope of this Section 232 Investigation, contact <a href="Vanadium232@bis.doc.gov">Vanadium232@bis.doc.gov</a> or:  Jason D. Bolton Program Manager, Industrial Studies BIS/Export Administration/Office of Technology Evaluation 1401 Constitution Avenue, NW, Room 1093 Washington, DC 20230  DO NOT submit completed surveys to Mr. Bolton's postal or personal e-mail address. All surveys must be submitted electronically to: <a href="Vanadium232@bis.doc.gov">Vanadium232@bis.doc.gov</a> PLISINESS CONFIDENTIAL Pay Section 705/d) of the Defence Production Act
	BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

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Term	Definitions  Definition
Authorizing Official	An executive officer of the organization or business unit or another individual who has the authority to execute this survey on behalf of the organization.
Capital Expenditures	Investments made by an organization in buildings, equipment, property, and systems where the expense is depreciated. This does not include expenditures for consumable materials, other operating expenses, and salaries associated with normal business operations.
Tipping/Recycling Fees	Fees collected for the recycling of waste products.
Conversion	The process of converting one form of vanadium, typically vanadium pentoxide, into another form of vanadium, typically ferrovanadium.
Vanadium Master Alloys	Master alloys produced from high purity vanadium pentoxide, including Aluminum-Vanadium master alloys (containing 35% aluminum and 64.5% vanadium).
High Purity Vanadium Pentoxide	Vanadium Pentoxide with vanadium content of 99% percent or more vanadium content.
Primary/By-Product Production	The process of producing vanadium products from mining operations or in conjunction with mining operations for other minerals.
Secondary Production	The process of transforming waste materials (spent catalyst, slag, ash, residues, etc.) into vanadium products, including vanadium pentoxide, ferrovanadium, vanadium metals, and metal alloys that contain vanadium.
Co-Production	The process of extracting vanadium from titaniferous magnetite ores during steel production.
Distributor	An independent selling agent who has a contract to sell the products of a manufacturer.
Customer	Any organization (external or internal entity) for which your organization manufactures/processes any product comprised of, or containing, steel in any form.
Customer	Any organization (external or internal entity) for which your organization manufactures/processes any product comprised of, or containing, steel in any form.
Defense-related Activities	Any product or service that your organization produces that is ultimately used by the U.S. Government for defense purposes, whether by the armed services, the Department of Defense, or any other U.S. Government entity.
Development	The design, simulation, and testing of a prototype, including experimental software or hardware systems, to validate technological feasibility or concept of operation in order to reduce technological risk, or provide test systems prior to production approval.
Exports	Shipments to destinations outside the United States.

	Definitions
Term	Definition
Facility	A building or the minimum complex of buildings or parts of buildings that conduct steel production, in which an organization operates to serve a particular function, producing revenue, and incurring costs for the company. A facility may produce an item of tangible or intangible property or may perform a service. It may encompass a floor or group of floors within a building, a single building, or a group of buildings or structures. Often, a facility is a group of related locations at which organization employees work, together constituting a profit-and-loss center for the company, and it may be identified by a unique DUNS number.
Full Time Equivalent (FTE) Employees	Employees who work for 40 hours in a normal work week. Convert part-time employees into "full time equivalents" by taking their work hours as a fraction of 40 hours.
Global Headquarters	A location that serves as the organization's hub of worldwide operations with all global branches or divisions reporting to it.
	A 10-digit numbering system that classifies a good based on its name, use, and/or the material used in its construction. The number provides Customs and Border Protection (CBP) with a standardized method of tracking all merchandise imported into the United States and sets out the tariff rates and statistical categories.
Import Value	Values reported should be landed, duty-paid values at the U.S. port of entry, including ocean freight and insurance costs, brokerage charges, and import duties (i.e., all charges except inland freight in the United States).
Inventory	The goods or materials an organization holds for its own use or for the ultimate goal of sale.
Non-U.S. Facility	A facility that is physically located outside of the United States.
Organization	A company, firm, laboratory, or other entity that owns or controls one or more U.S. establishment or facility capable of designing and/or manufacturing steel products.
Product/Process Development	Conceptualization and development of steel product or steel production techniques prior to the production of the product for customers (i.e., utilities, governmental agencies etc.).
Production	The process of transforming inputs (raw materials, semi-finished goods, subassemblies, ideas, information, knowledge) into goods or services.
Research & Development	Basic and applied research in the engineering sciences, as well as design and development of prototype products and processes. Efforts that an organization conducts towards innovating, introducing and/or improving products and processes.
Sales	All reported and unreported sales of steel, including sales to end-users, producers, financial entities, intermediaries, traders, distributors, et al.
Supplier	An entity from which your organization obtains inputs, which may be goods or services. A supplier may be another organization with which you have a contractual relationship, or it may be another facility owned by the same parent organization.
United States	The "United States" or "U.S." includes the 50 states, Puerto Rico, the District of Columbia, Guam, the Trust Territories, and the U.S. Virgin Islands.
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				1. Organiz	ation Inform	ation					
	Provide the following information for your	organization		·							
		OI BUILIZULIOII									
	Organization Name										
	Street Address										
	City										
١.	State										
A.	ZIP Code										
	Country of Global Headquarters										
	-										
	U.S. Point of Contact Name										
	U.S. Point of Contact Email										
	U.S. Point of Contact Phone										
	Is this organization owned, in whole or in pownership.	art, by any priv	te or government entity? Indicate Yes/No, then identify the entities below, if applicable. List entities with at least 5%								
	Entity Name	Global Hea	dquarters Street Address	Global Headq	uarters City	Global Headquarters State/Province		Global Headquarters Country		Ownership %	
В.											
٦.											
	Identify the subject products that your org	anization curre	ntly uses/sources and sells/i	orovides							
	, , , , ,		,,,								
		Subject Product	e			Hees/So	urces	Sells/Provides H		TSUS Code Used for	
	Subject Floducts				Uses/Sources			Selis/110Vides		Import/Export	
	Vanadium Ores and Concentrates					Import	Only	Export Only			
	Vanadates				So	urce Domes		Sell Domestically Only			
	Vanadium Carbides						e Domestically	Export and Sell Domestically			
					Шрог						
	Vanadium Sulfates					Not Appl	icable	Not Applicable			
_	Vanadium Hydrides, Nitrides, Azides, Silicid		S								
C.	Vanadium Pentoxide - Up to 99% Vanadius	m									
	High Purity Vanadium Pentoxide - 99%+ Vanadium										
	Other Vanadium Oxides and Hydroxides (Excluding Pentoxide)										
	Vanadium-Bearing Feedstocks (Ash, Residues, Spent Catalysts, Vanadium Slag, Etc.) Ferrovanadium - 40-60% Vanadium										
	Ferrovanadium - 80%+ Vanadium										
	Vanadium Master Alloys										
	Vanadium, Wrought and Unwrought (Exclu	ıding Master Al	loys)								
	Other	(spe	cify)								
	At the global headquarters level, identify the of the subject products listed below.	ne total numbe	r of facilities that your organ	nization current	ly operates, i	including sta	andby/idle facilities, i	nside and outside the U.S., that man	ufactur	e and/or distribute any	
	S	ubject Product	S		Nı	umber of U.	S. Facilities	Number of Non-	J.S. Fac	cilities	
	Vanadium Ores and Concentrates				Manuf		Distribute Only	Manufacture		Distribute Only	
	Vanadates										
	Vanadium Carbides						<del>                                     </del>				
	Vanadium Sulfates										
_	Vanadium Hydrides, Nitrides, Azides, Silicid		S								
D.	Vanadium Pentoxide - Up to 99% Vanadiu	m									
	High Purity Vanadium Pentoxide - 99%+ Va	nadium									
	Other Vanadium Oxides and Hydroxides (E	xcluding Pento	xide)								
	Vanadium-Bearing Feedstocks (Ash, Residu										
	Ferrovanadium - 40-60% Vanadium	,	, , , , , , , , , , , , , , , , , , , ,				<del>                                     </del>				
	Ferrovanadium - 80%+ Vanadium										
	Vanadium Master Alloys										
	Vanadium, Wrought and Unwrought (Exclu	iding Master Al	loys)								
	Other	(Spe	cify)								
							-				
	Comments:										
L			BUSINESS CONFIDE	NTIAL - Per Sec	tion 705(d)	of the Defe	nse Production Act				

ous Page					2. Facility Infor	mation					<u>Next</u>
					<u> </u>						
indicate in the box to the ries supporting multiple pr	right how many of your oduct categories should	organization's U.S. ba	ased facilities [including idle or or e for the total number but duplic	n standby and facilities under construction ated for each product category supported	are involved in the importati in the facility description	on, distribution, produc	tion, or exploration of vanadiu	ım products.			
en, in accordance with the	e header, describe each	u.S facility [including	idle or on standbyl involved in	the importation, distribution or production	of vanadium products.						
member to duplicate the	facility in a dedicated r	ow for each product of	ategory supported. In addition t	standby or idle facilities, include any facil	lities shut down since 2015 an	d facilities under consti	uction.				
								Danamat	*****************		
Current Operating Status Reconstitution from Status Standby/dile/Shutdown Future Operating Status											
Facility Name	City	State	Type of Facility	Product Category Supported	Current Operating Status	Start Date of Standby/Idle or Shutdown (MM/DD/YYYY)	Primary Reason for Satndby/Idle or Shutdown	Months to Reconstitute	Estimated Cost to Reconstitute (Thousands USD)	Primary Change in 2020- 2023	Comments
			Primary/By-Product Production	Vanadium Ores and Concentrates	Operating		Vanadium Price			Expansion	
			Secondary Production	Vanadates	Idle/Standby		oss of Market Share to Import	s		Upgrade	
			Co-Production	Vanadium Carbides	Under Construction	Loss of	Market Share to Domestic Com	petition		Starting Operations	
			Conversion Services	Vanadium Sulfates	Shutdown		Declining Demand			Restarting Operations	
			Master Alloy Production	Vanadium Hydrides, Sulfides, Nitrides, Vanadilirides täxtu Borides o 99%			Low Profitability			Standby/Idle	
			Distribution Only	High Purity Van Van Ada High Purity Van			Firm Restructuring			Significant Modernization	
			Other	Other Vanadium Baddes and Hydroxides			COVID-19/Pandemic			Closure	
				Vanadidry-beding Petersideks (Ash,			Other			None	
				Residues, Spent Catalysts, Slag, Etc.							
				Ferrovanádium - 40-60% Vanádium							
				Ferrovanadium - 80%+ Vanadium							
				Vanadium Master Alloys Vanadium, Wrought and Unwrought							
				(Excluding Master Alloys) Other Vanadium-Related							
				Other Variacidin-Related							
,											
Briefly explain the scop	e of your organization's	s vanadium-related a	tivities								
Brieffy explain the scop	e or your organization.	y variation i related to									
For each identified facil	lity scheduled to incur	a change in operating	status in 2020-2023, describe th	e circumstances behind your decision.							
For each identified idle,	standby facility schedu	uled [or considering to	o schedule] for restart in 2020-2	023, describe the circumstances behind yo	our decision.						
Comments:											
				DI ICINITCO CO	NFIDENTIAL - Per Section 705	(d) -(d) - D-( D	dustion Ast				

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				3a. U.S. Production							
Record the total annual quantity of each subject product your organization pro- measurement. If your organization toll produces any material, include the type	duced from 2015-20 and quantity produc	20 (YTD July). Then, do ced here. If your organ	ocument the current a lization is a tollee (i.e. p	nnual capacity, utiliza provides material to a	tion rate, average ma toller for conversion)	rginal cost per kilogra , do not record this p	m/unit, and price V2O5 rec roduction below.	uired to continue opera	tions. Remember to cor	firm the units of	
If you only distribute and do not manufacture any of the subject vanadium products, indicate so here and move to the next section.				Do not include data on subject products that your organization only distributes.							
Record data in Kg contained vanadium. If unable to record data in Kg contained vanadium, indicate unit used here											
			U.S. Pro	duction							
	2015	2016	2017	2018	2019	2020 (YTD July)	Current Annual Capacity	Capacity Utilization Rate Required to Remain Profitable	Average Cost to Produce Per Kg	Price V2O5 required to continue operations	
Vanadium Ores and Concentrates											
Vanadates											
Vanadium Carbides											
A. Vanadium Sulfates											
Vanadium Hydrides, Nitrides, Azides, Silicides, and Borides											
Vanadium Pentoxide - Up to 99% Vanadium											
High Purity Vanadium Pentoxide - 99%+ Vanadium											
Other Vanadium Oxides and Hydroxides (Excluding Pentoxide)											
Vanadium-Bearing Feedstocks (Ash, Residues, Spent Catalysts, Slag, Etc.)											
Ferrovanadium - 40-60% Vanadium											
Ferrovanadium - 80%+ Vanadium											
Vanadium Master Alloys											
Vanadium, Wrought and Unwrought (Excluding Master Alloys)											
Comments:											
		BUSIN	NESS CONFIDENTIAL - I	Per Section 705(d) of	the Defense Producti	on Act					

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		3b.	U.S. Sales and Exports				
Fo sh	r your organization's U.S. operations, answer the followingn questions abou ould not be in thousands USD. If your organization is a toll producer, do not	t revenues, sales, and include sales of vana	l exports. Record Sales: dium materials below: if	\$ in Thousands USD, e.g vour organization is a to	;. \$12,000.00 = survey ii ollee. record anv vanadi	nput of \$12. Average sal um sales below.	es price per unit
	,,,,,,,			,	,		
	For your organization's U.S. operations, by subject product category, recor	d both your U.S. sale	s and exports (shipments	from the U.S. to destin	ations outside the U.S.)	from 2015-2020 (YTD J	uly). Distributors must
	complete this section.						
		Vana	dium Ores and Concentr	ates			
	Select 'Not Applicable' if category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg						
	contained vanadium, indicate unit used here						
١,	U.S. and Export Sales U.S. Sales (Kg)	2015	2016	2017	2018	2019	2020 (YTD July)
A	U.S. Sales (Rg) U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Kg (\$)						
	Export Sales (Kg)						
	Export Sales (Thousands USD)						
	Average Export Sales Price per Kg (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
H	, and the second		Vanadates				
			Vallauates				
	Select 'Not Applicable' if category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg						
	contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
В	U.S. Sales (Kg)						
	U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Kg (\$)						
	Export Sales (Kg)						
	Export Sales (Thousands USD)						
	Average Export Sales Price per Kg (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
H			Vanadium Carbides				
	Select 'Not Applicable' if category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg						
	contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
C.	U.S. Sales (Kg)						
	U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg)						
	Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
H			Vanadium Sulfates				
			valiaululii Suliates				
	Select 'Not Applicable' if category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg						
	contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
D	0.5. sales (kg)						
	U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Unit (\$)						

Export Sales (Kg)

Export Sales (Thousands USD)
Average Export Sales Price per Unit (\$)

Percentage of Total 2019 Sales Attributable to Product

		Vanadium Hudvida	. Nibuidaa Asidaa Ciliai	dae and Davidee			
	Select 'Not Applicable' if category is not relevant to your operations	vanadium Hydrides	s, Nitrides, Azides, Silicio	des, and Borides			
	Record data in Kg contained vanadium. If unable to record data in Kg contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
E.	U.S. Sales (Kg) U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg)						
	Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
		Vanadium P	entoxide - Up to 99% V	anadium			
	Select 'Not Applicable' if category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg contained vanadium, indicate unit used here						
_	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
۲.	U.S. Sales (Kg) U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg)						
	Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
		High Purity Van	nadium Pentoxide - 99%	+ Vanadium			
	Select 'Not Applicable' if category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
G.	U.S. Sales (Kg)						
	U.S. Sales (Thousands USD) Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg)						
	Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
		Other Vanadium Ouis	daa amd I bydysyidaa /Fyy	alvedina Dantavida)			
		Other vanadium Oxid	des and Hydroxides (Exc	ciuding Pentoxide)			
	Select 'Not Applicable' if category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
Н.							
	U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg) Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
H	Va	 Inadium Bearing Feedst	ocks (Ash. Residue, Spe	ent Catalysts, Slag, Etc.)			
	Select 'Not Applicable' if category is not relevant to your operations			, , 0,,			
	solder Notrippinable in category is not rolevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
I.	U.S. Sales (Kg)						
	U.S. Sales (Thousands USD) Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg)						
	Export Sales (Rg)  Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
						I	

		F	di 40 (00/ )/	Jt			
	Select 'Not Applicable' if category is not relevant to your operations	Ferrova	nadium - 40-60% Vana	uiuiII			
	Record data in Kg contained vanadium. If unable to record data in Kg contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
١.	U.S. Sales (Kg)	2010	2010	2017	2010	2017	2020 (112 341)
٦.	U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg)						
	Export Sales (Rg)  Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
		Ferrov	anadium - 80%+ Vanad	lium			
	Colorbiblish Aprilliand of the color of the						
	Select 'Not Applicable' if category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg						
	contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
Н.	U.S. Sales (Kg)						
	U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg)						
	Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Developtions of Total 2010 Calca Attributable to Draduct						
	Percentage of Total 2019 Sales Attributable to Product						
		Va	nadium Master Alloys				
	Select 'Not Applicable' if category is not relevant to your operations						
	Select Not Applicable il Category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg						
	contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
١.	U.S. Sales (Kg)	2010	2020	2017	2010	2017	2020 (112 341)
1.	U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg)						
	Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Percentage of Total 2019 Sales Attributable to Product						
		Vanadium, Wrought	and Unwrought (Exclud	ling Master Alloys)			
	Select 'Not Applicable' if category is not relevant to your operations						
	Record data in Kg contained vanadium. If unable to record data in Kg						
	contained vanadium, indicate unit used here						
	U.S. and Export Sales	2015	2016	2017	2018	2019	2020 (YTD July)
J.	U.S. Sales (Kg)						
	U.S. Sales (Thousands USD)						
	Average U.S. Sales Price per Unit (\$)						
	Export Sales (Kg)						
	Export Sales (Thousands USD)						
	Average Export Sales Price per Unit (\$)						
	Developed of Tetal 2010 Color Attribut 11 1 2 1 1						
	Percentage of Total 2019 Sales Attributable to Product						
	Comments:						
Г	BUSINE	SS CONFIDENTIAL - Pe	r Section 705(d) of the	Defense Production Ac	t		

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Prev	ious Page		3c Product	ion Feedstock, End Uses, Substitutes, an	nd Supply Disruptions			Next Page		
				ion recustock, End Oses, Substitutes, an	и зарргу Бізгарсіонз					
٩ns١	wer the following questions related to your organ	nization's manufacturing inputs and	I market end uses.							
	Answer the following questions regarding your o	organization's vanadium production	n end uses and potential substitutes for vana	adium end uses.						
	Vanadium End Use	Percent of 2019 Production Attributable to End Use	Average Percent Cost of Vanadium Attributable to End Product Total Cost	Average Percent Vanadium Content Attributable to End Product	Primary Vanadium Product/Grade Needed for End Use	Substitutes Available for Vanadium Usage?	Indicate Primary Substitute, if relevant	Comments		
	1 Steel - High Strength Low Alloy									
	2 Steel - Full Alloy									
Α.	3 Steel - Carbon									
	4 Steel - Other									
	5 Vanadium-Redox Flow Battery									
	6 Aerospace (Master Alloys)									
	7 Chemical									
	8 Other - Specify									
ndio /ana	cate the subject vanadium products and specific adium products and only distributes them, and p	grades for which your organization roceed to Section 4.	has capabilites. Select "Distribute Only" if y	our organization does not produce						
Subject Product Capability Current Capability			Indicate any other products your organi capital investment and/o	zation could produce with little to no r changes in processes			Explain			
	1	Yes								
	2	No								
	3	Idle Capability								
B.	5									
	6									
	7									
	8									
oroc	ate whether your organization uses vanadium o luce and/or sell other vanadium products. (inclu cling).	or vanadium-bearing feedstock to ding Toll production and		If you indicated Yes, answer the following questions:						
	Subject Product	Primary Feedstock Used to Produce Subject Product	Primary Original Country Source of Feedstock	Primary Reason for Sourcing	Impact on Operations if Unable to Import Feedstock	Domestic Feedstock Sources Available?	Supply Disruption or Shortage Experienced?	Explain		
	1 Vanadates	Vanadium Ore and Concentrate		Financial Consideration	Positive	Significant Domestic Sources	Ongoing			
	2 Vanadium Carbides	Vanadium Slag		Technical Specification	Negative	Limited Domestic Sources	Past			
	3 Vanadium Sulfates	Ash		Relationship	Neutral	No Domestic Sources	Future Expected			
	4 Vanadium Hydrides, Sulfides, Nitrides, Silicides, and Borides	Residues		Delivery			None			
	5 Vanadium Pentoxide - Up to 99% Vanadium	Spent Catalysts		Other						
c.	6 High Purity Vanadium Pentoxide - 99%+ Vanadium	Vanadium Pentoxide - Up to 99% Vanadium								
	7 Other Vanadium Oxides and Hydroxides (Excluding Pentoxide)	High Purity Vanadium Pentoxide - 99%+ Vanadium								
	8 Ferrovanadium - 40-60% Vanadium 9 Ferrovanadium - 80%+ Vanadium	Vanadates Vanadium Carbides								
	10 Vanadium Master Alloys	Vanadium Carbides  Vanadium Sulfates								
	Vanadium, Wrought and Unwrought (Excluding Master Alloys)	Vanadium Hydrides, Nitrides, Silicides, and Borides								
	Have feedstock sourcing issues impacted your organization's ability to fulfill contracts for vanadium products?		Explain:							
	Comments:									
		1	BUSINESS COI	NFIDENTIAL - Per Section 705(d) of the D	Pefense Production Act					

Pre	evious Page		Od Cassadam, and Tall	Duadustian				Next Page
An	swer the following questions regarding your organ	nization's rsecondary production/recycling or toll produ	3d. Secondary and Toll	Production				
L			Fees and Other Process	sing/Recycling Fees				
T	If your organization accrues tipping fees due to re	ecycling or processing any vanadium-bearing materials			20 (YTD July).			
	Select 'Not Applicable' if your organization does continue to question 2.	not recycle/process vanadium-bearing materials, and						
			2015	2016	2017	2018	2019	2020 (YTD July)
	Average Tipping/Recycling Fee Charged per Cust Total Tipping/Recycling Fees Accrued	tomer						
	Net Tipping/Recycling Fees Accrued (Less Metals	Credits)						
	Total Facility Operating Costs  Percent of Total Revenues Attributable to Tipping	~						
1	Percent of Total Revenues Attributable to Vanadi Average Vanadium Price Needed for Metals	ium Product Sales (specify vanadium type)						
	Credit to go to Refinery  Average Percent of Sales Price Lost to Metals	(specify variation type)						
	Credit/Refinery							
	Do vanadium prices impact your organization's de	lecision to perform recycling/processing operations?		Explain:				
	Does your organization's profitability depend on		Explain:					
	Cor	mments:	7.1101	T II				
H		organization's toll production operations. Then, list you	Toll Production - ur top ten customers (in		olume) for 2019, the ave	rage percent revenue a	attributable to each, the	quantity produced for
	each, and the primary country of feedstock origin Select 'Not Applicable' if your organization does							
	question 3.							
	Record data in Kg contained vanadium. If unable unit used here							
	Total Tolling Fees Accrued		2015	2016	2017	2018	2019	2020 (YTD July)
	Total Raw Material Supplied Total Raw Material Supplied	(Specify Type) (Specify Type)						
	Total Quantity Produced	(Specify Type)						
	Total Quantity Produced	(Specify Type)						
2	Customer Name	Percent Revenue Attributable to Customer	Total Quantity	Produced - 2019	Primary Country o	f Feedstock Origin	Comi	ments
	Co-							
	Col	mments:						
			Toll Production -	Tollee				
	Answer the following questions related to your o	organization's U.S. tollee operations. Then, list the top t	hree toll organization's	used to convert materia	al in 2019, and the total	percent quantity attrib	utable to each organiza	tion.
	Select 'Not Applicable' if your organization does section.	not operate as a tollee firm, and continue to the next						
	Record data in Kg contained vanadium. If unable unit used here	e to record data in Kg contained vanadium, indicate						
	Total Conversion/Tolling Fees Paid		2015	2016	2017	2018	2019	2020 (YTD July)
	Total Raw Material Supplied to Toller (Kg)	(Specify Type)						
3	Total Raw Material Supplied to Toller (Kg)	(Specify Type)						
	Total Material Available for Sale (Returned by Toller)	(Specify Type)						
	Total Material Available for Sale (Returned by Toller)	(Specify Type)						
	Toller Name	Percent Tolled Attributable to Toller			•		•	
	Con	mments:						
	Comi	ments:						
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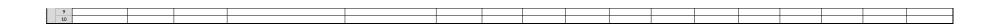
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redier Name (in			Common Danumbin	Drimary Spanne of			f Purchases that are Imported	2	015	2	016		1017	2	018	2	019	2020	(YTD July)
escending order by period volume)	Country of Fabrication	Country of Feedstock Origin	Common Ownership With Your Organization?	Primary Source of Disruption Experienced, If Applicable	Single/Sole Source?	Primary End-Use	Top Factor Influencing Purchase from Supplier	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (S
			Ves No.	Customs/Port Issue	Single Source	Steel - High Strength Low Alloy Steel - Full Alloy	Financial Consideration Technical Convitination												=
				Labor Disruption Natural Disaster	Nolther	Steel - Carbon Steel - Other	Relationship												$\vdash$
				Supplier Ended Production Supplier Production Delays		Variatium-Redox Flow Eathery Aerospace (Master Alloys)	Other												=
				Supplier Went Out of Business Trade Dispute/Tariffs		Chemical Other													
				Transportation Issue Other															
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ntify your total number of su	ppliers for this produ	ct category. If none, in	sut 0.																
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applier Name (in descending order by period	Country of Fabrication	Country of Feedstock Origin	Common Ownership With Your Organization?	Primary Source of Disruption Experienced, If Applicable	Single/Sole Source?	Primary End-Use	Top Factor Influencing Purchase from Supplier	Volume	Value (\$000)		Value (\$000)		Value (\$000)		Value (\$000)	Volume	Value (\$000)	Volume	Value (S
vceurrie)			Organization?	Applicable					(8000)		(8000)		(#000)		(8000)		(pad)		
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						Percentage o	f Purchases that are imported												
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						Fem	ovanadkum - 40-60% Vanadi	am											
Identify your total number of su	ppliers for this produ	ct category. If none, ing	put 0.																
Record data in Kg contained van	adium. If unable to p	rovide in Kg contained	vanadium, indicate unit	used here:															
								2	015	2	016	2	017	2	018	20	19	2020 (	YTD July)
Record your total purchases for	this product category	by volume and value f	for each applicable year					Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
						Percentage of	Purchases that are Imported										_		
Supplier Name (in	Country of	Countries of	Common Ownership	Primary Source of			Top Factor Influencing	2	015	2	016	2	017	2	018	20	19	2020 (	YTD July)
<ol> <li>descending order by period volume)</li> </ol>	Country of Fabrication	Country of Feedstock Origin	With Your Organization?	Disruption Experienced, If Applicable	Single/Sole Source?	Primary End-Use	Purchase from Supplier	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
1																			
3																			
5																			
6 7																			
8																			
90							rovanadium - 80%+ Vanadiu												
Identify your total number of su	ppliers for this produ	ct category. If none, ing	put 0.				OVALIDADIII - COM- VALIDADI												
Record data in Kg contained van	adum. Ir unable to p	rounce in Alg contained	vanadum, indicate uni	used here:					015		016		017		018		19	2020 (	YTD July)
Record your total purchases for	this product category	by volume and value f	for each applicable year					Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)		Value (\$000)		Value (\$000)	Volume	Value (\$000)
						Percentage of	Purchases that are imported												
Supplier Name (in descending order by period	Country of Fabrication	Country of Feedstock Origin	Common Ownership With Your	Primary Source of Disruption Experienced, If	Single/Sole Source?	Primary End-Use	Top Factor Influencing Purchase from Supplier	_	015		016		017		018	20			YTD July)
K. volume)	Fabrication	Feedstock Origin	Organization?	Applicable		- Fillay III Out	Purchase from Supplier	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
1 2																			
3 4																			
5 6																			
7																			
8 9																			
90							Vanadium Master Alloys												
Identify your total number of su	poliers for this grodu	ct category. If none, inc	put 0.																
Record data in Kg contained van	adum. Ir unable to p	rounce in Alg contained	vanadum, indicate uni	used nere:					205		016		017		018	20	10	2020 /	YTD July
Record your total purchases for	this product category	by volume and value f	for each applicable year					Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
						Percentage of	Purchases that are Imported		115		016		017		018	20			
Supplier Name (in descending order by period	Country of Fabrication	Country of Feedstock Origin	Common Ownership	Primary Source of Disruption Experienced, If Applicable	Single/Sole Source?	Primary End-Use	Top Factor Influencing Purchase from Supplier												YTD July)
L. volume)	Fabrication	Feedstock Origin	With Your Organization?	Applicable	single/sole source?	Primary Line-Ose	Purchase from Supplier	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
1																			
3																			
5																			
6 7																			
8 9	_												-						
10						Vanadium Waye	ht and Unwrought (Excludin	g Master Alloys											
Identify your total number of su	ppliers for this produ	ct category. If none, in	put 0.			Table 1													
Record data in Kg contained van	adium Humahir to -	maide in Ke contribut	vanadism indicator	uned here:															
	to unusual 10 p							2	015	2	016	2	017	2	018	20	19	2020 (	YTD July)
Record your total purchases for	this product category	by volume and value f	for each applicable year					Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)		Value (\$000)	Volume	Value (\$000)		Value (\$000)
						Percentage of	Purchases that are imported								018	20			
Supplier Name (in	Country of Fabrication	Country of Feedstock Origin	Common Ownership	Primary Source of	Single/Sole Source?	Primary End-Use	Top Factor Influencing Purchase from Supplier	2	225	2	U16	2	01/	- 1	010				YTD July)
M. descending order by period volume)	Fabrication	Feedstock Origin	With Your Organization?	Disruption Experienced, If Applicable	angreyone source?	Primary Lno-Use	Purchase from Supplier	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
1																			
3																			
5																			
6 7								-				-	-		H				
8																			
20							1												
Comments:																			
						BUSINESS CONFIDENTIAL	Per Section 705(d) of the I	Defense Produc	tion Act										
							,.												

revious Page					5.	. Customers/Export	5									Next Pag
or each product category involving ecord \$ in Thousands USD, e.g. \$1	shipments by your or 2,000.00 = survey inp	ganization from 2015-20 ut of \$12	19, including U.S. internal and U.S. export shipment	but excluding shipments from non-U.S. lo	cations, record all h	eader criteria descri	bing the shipments	·.								
						ım Ores and Conce										
		Identify your total	I number of current customers for this product categ	gory. If none, input 0.												
	Re	cord data in Kg containe	d vanadium. If unable to provide data in Kg containe	ed vanadium, indicate unit used here:												
					20	15	21	016	2	017	20	18	2	019	2020 (	YTD July)
Customer Name (in descending order by period	Country Destination	Common Ownership With Your	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)		(						(		(		
volume)		Organization?			Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
1 2		Yes No	Steel - High Strength Low Alloy Steel - Full Alloy													
3		140	Steel - Carbon													
4 5			Steel - Other Vanadium-Redox Flow Battery													
6			Aerospace (Master Alloys)													
7			Chemical													
8 9			Other													
10																
						Vanadates										
		Identify your	total number of customers for this product category.	. If none, input 0.												
	De .	cord data in Ke containe	d vanadium. If unable to provide data in Kg contains	nd vanadium indicate unit used here:												
		cord data in ng containe	a variation. If analysis to provide data in hig contains	a variation, marcate and ascarriere.												
Customer Name (in	Country Doctination	Common Ownership	Drimon: End Hen of Dreduct	Industry/Sector Represented by	20	15	20	016	2	017	20	18	2	019	2020 (	YTD July)
descending order by period volume)	Country Destination	With Your Organization?	Primary End Use of Product	Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
1																
2 3																
4																
5																
6						-										
8																
9																
10					L .	Vanadium Carbides										
						variaulum carbides										
		Identify your t	total number of customers for this product category.	. If none, input 0.												
	Re	cord data in Kg containe	d vanadium. If unable to provide data in Kg contains	ed vanadium, indicate unit used here:												
Customer Name (in		Common Ownership			20	15	21	016	2	017	20	18	2	019	2020 (	YTD July)
descending order by period volume)	Country Destination	With Your Organization?	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
1		Organization:														
C. 2																
3 4																
5																
6 7																
8	-					_		-		-		-				
9																
10					L .	Vanadium Sulfates										
						vanadium Sulfates										
		Identify your	total number of customers for this product category.	. If none, input 0.												
	Re	cord data in Kg containe	d vanadium. If unable to provide data in Kg contains	ed vanadium, indicate unit used here:												
					20	15	20	016	2	017	20	18	2	019	2020 /	YTD July)
Customer Name (in descending order by period volume)	Country Pastination	Common Ownership With Your	Primary End Use of Product	Industry/Sector Represented by												
volume)	Country Destination	Organization?	Primary End Use of Product	Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
D. 1																
2 3																
4																
5																
6 7	1													-		
8																
9																
10	1	ı		I .	1	1		1	1	I .		1	1	1		1

	Vanadium Hydrides, Nitrides, Azides, Silicides, and Borides															
		Identify your	total number of customers for this product category.	If none, input 0.												
	Re	cord data in Kg contain	ed vanadium. If unable to provide data in Kg containe	d vanadium, indicate unit used here:												
Customer Name (in descending order by period volume)	Country Destination	Common Ownership With Your Organization?	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)	Volume 20:	Value (\$000)	Volume	Value (\$000)	Volume 20	Value (\$000)	Volume 20	Value (\$000)	Volume 2	Value (\$000)	Volume	(YTD July) Value (\$000)
E. 2																
4 5																
6 7																
8																
9 10																-
		Islantificación	total number of customers for this product category.	Mana insut 0	Vanadium Pe	ntoxide - Up to 99	% Vanadium							•		
	Re		ed vanadium. If unable to provide data in Kg containe													
Customer Name (in					201	15	2	016	20	017	20	18	2	019	2020	(YTD July)
Customer Name (in descending order by period volume)	Country Destination	With Your Organization?	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
1																
F. 2 3 4																
5																
7																
8																
10					High Purity Vana	dium Pentoxide - '	99%+ Vanadium									
		Identify your	total number of customers for this product category.	If none, input 0.												
	Re	cord data in Kg contain	ed vanadium. If unable to provide data in Kg containe	d vanadium, indicate unit used here:												
Customer Name (in descending order by period volume)	Country Destination	Common Ownership With Your Organization?	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume 20	Value (\$000)	Volume 2	Value (\$000)	Volume	(YTD July) Value (\$000)
G. 2																
3 4																
5																
7 8																
9																
10					ther Vanadium Oxide	s and Hydroxides	(Excluding Pentoxic	de)								
			total number of customers for this product category.													
			ed vanadium. If unable to provide data in Kg containe	d vanadium, indicate unit used here:	201	15	20	016	20	017	20	018	2	019	2020	(YTD July)
Customer Name (in descending order by period volume)	Country Destination	Common Ownership With Your Organization?	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
H. 2																<del>                                     </del>
4 5																
6																
7 8																
9 10																
		المسابل	total number of customers for this was dust		um-Bearing Feedstoo	ks (Ash, Residues,	, Spent Catalysts, Sl	ag, Etc.)								
			total number of customers for this product category.													
	Re	cord data in Kg contain	ed vanadium. If unable to provide data in Kg containe	d vanadium, indicate unit used here:	201	15	31	016	24	017	20	018		019	2020	(YTD July)
Customer Name (in descending order by period volume)	Country Destination	Common Ownership With Your Organization?	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
I. 2																
3 4																
5																
7																
8									1			1				



						Ferrovan	adium - 40-60% Va	anadium									
			Identify your	total number of customers for this product category.	If none, input 0.												
		Re	cord data in Kg containe	ed vanadium. If unable to provide data in Kg containe	d vanadium, indicate unit used here:												
						201	15	20	016	20	117	20	18	20	019	2020 (	/TD July)
	Customer Name	Country Destination	Common Ownership With Your	Primary End Use of Product	Industry/Sector Represented by												
	customer rume	country Destination	Organization?	Timary End Osc of Troduct	Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
1																	
J. 2																	
3																	
4																	
5																	
6																	
7 8																	
9																	
10																	
						Ferrova	nadium - 80%+ Vai	nadium							•		
			Identify your	total number of customers for this product category.	If none, input 0.												
		Re	cord data in Ke containe	ed vanadium. If unable to provide data in Kg containe	d vanadium, indicate unit used here:												
		RC	and an ing containe	and an analysis of provide data at hig contains	notate out uses liefe.	201	15	20	016	20	17	20	18	2	019	2020 (	/TD July)
			Common Ownership		Industry/Sector Represented by	20.		20	-10	20		20		20		2020 (	TO MIY)
	Customer Name	Country Destination	With Your Organization?	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
K. 2													-				
3																	
4																	
5																	
6																	
8																	
9																	
10																	
						Van	adium Master Allo	oys									
			Identify your	total number of customers for this product category.	If none, input 0.												
		Re	cord data in Kg containe	ed vanadium. If unable to provide data in Kg containe	d vanadium, indicate unit used here:												
						201	15	20	016	20	117	20	18	20	019	2020 (	/TD July)
	Customer Name	Country Destination	Common Ownership With Your	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)												
			Organization?		Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
. 1																	
2																	
3																	
5																	
6																	
7																	
8 9																	
9		<del>                                     </del>													-		
10	_				Va	nadium, Wrought ar	nd Unwrought (Exc	luding Master Alloy	ys)								
			Identifyyour	total number of customers for this product category.													
			identity your	total number of customers for this product category.	ii none, iiipac o.												
		Re	cord data in Kg containe	d vanadium. If unable to provide data in Kg containe	d vanadium, indicate unit used here:												
						201	15	20	016	20	117	20	18	20	019	2020 (	/TD July)
	Customer Name	Country Destination	Common Ownership With Your	Primary End Use of Product	Industry/Sector Represented by Customer (NAICS)												
	Customer Name	Country Destination	Organization?	Primary End Ose of Product	Customer (NAICS)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)	Volume	Value (\$000)
M. 1													-	-			
3															<u> </u>		
4																	
5																	
6	_							-					-		-		
8													<del>                                     </del>	<del>                                     </del>			
9																	
10				<u> </u>													
	Comments:																
					BUSINESS	CONFIDENTIAL - Pe	r Section 705(d) of	f the Defense Produ	ction Act								

Prev	<u>rious Page</u>		6. Financials				Next Page
Prov	ride the following financial line items for your loc	ation for the l	ast five years bel	ow.			
Soui	rce of Income Statement Items:						
Rep	orting Schedule:						
Inco	me Statement (Select Line Items)		Re	cord \$ in Thousand	ls, e.g. \$12,000.00	) = survey input o	f \$12
			2015	2016	2017	2018	2019
A.	Net Sales (and other revenue)						
	1 Defense-Related Sales Percentage						
	2 Non-U.S. Sales Percentage						
В.	Cost of Sales / Cost of Goods Sold						
C.	Depreciation and Amortization						
D.	Total Operating Income (Loss)						
E.	Earnings Before Interest and Taxes						
F.	Net Income						
Soui	rce of Balance Statement Items:			•	•	•	•
Rep	orting Schedule:						
Bala	nce Sheet (Select Line Items)		Re	cord \$ in Thousand	ls, e.g. \$12,000.00	) = survey input o	f \$12
			2015	2016	2017	2018	2019
A.	Cash						
В.	Inventories						
C.	Current Assets						
D.	Total Assets						
E.	Current Liabilities						
F.	Total Liabilities						
G.	Retained Earnings						
Н.	Total Owner's Equity						
Soui	rce of Other Items:				ļ		
Rep	orting Schedule:						
Oth	er Select Items		Re	cord \$ in Thousand	ls, e.g. \$12,000.00	) = survey input o	f \$12
			2015	2016	2017	2018	2019
A.	Research & Development (R&D) Expenditure						
	1 National Security/Critical Infrastructure-Relate Percentage (see Definitions tab)	ed R&D					
B.	Capital Expenditure (CapEx)						
	National Security/Critical Infrastructure-Relate Percentage (see Definitions tab)	ed CapEx					
C.	Total Security Expenditures						
	1 Cybersecurity Expenditures Percentage						
	2 Physical Security Expenditures Percentage						
	our organization involved in any R&D work with tense?	he U.S. Depai	tment of		If yes, ans	wer the following	questions.
	Program Name	Contra	ct Number				
Α.							
В.							
-							
C.							
	Comment:						
	BUSINESS CON	NFIDENTIAI -	Per Section 705/	l) of the Defense P	roduction Act		
_	235111255 651		2. 300	.,			

Data Confirmation
2019 Net Sales
None

rev	ious Page						Next I
				7. Employment			
ecc	ord the total number of full ti	me equivalent (FTE) emplo	yees and contractors for the 2015 to 2019 pe	riod for U.S. facilities that produce subje	ct products.		
			2015	2016	2017	2018	2019
	FTE Emp	loyees					
A	FTE Conti	ractors					
	Production Line FTE Emp	oloyees or Contractors					
en	tify the key workforce issues	your organization has expe	rienced or anticipates in the next five years.				
	Issu	ie	Primary Occupation Affected	Timeframe		Explain	
	Attracting Workers to Location	on	Engineers	Ongoing, Expected to Continue			
	Employee Turnover		Information Technology Workers	Past Only (Resolved)			
3	Finding Experienced Workers	s	Production Line workers	Expected In Future			
	Finding Qualified Workers		Scientists	No or Not Applicable			
	Finding U.S. Citizens		resting Operators, QC, & Support Technicians				
	Significant Portion of Workfo	orce Retiring	Other				
	Other	(specify)	None				
С	For 2019, indicate the percei organization's total operatin, personnel-related expenditu	g costs represented by					
)	Describe any significant char hiring and/or retension of hu consequence of volatile vana	uman capital as a					
E	If you resumed operations at facility, do you reasonably at hire or rehire workers? Provi long it would take to restore levels in the Explain box.	nticipate being able to ide an estimate of how		Explain:			
	Comment	ts:					
			BUSINESS CONFID	ENTIAL - Per Section 705(d) of the Defe	nse Production Act		

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Α	Sino	te 2015, has your organization directly or indirected to the next tab. If yes, complete sections	ectly supplied any of the subje B, C and D.	8 National Defense Si ect product categories for incorporati		or related installations? If no,			
	F	rom the list of U.S. Government agencies belo	w, select those whose systems	s you supported between 2015 and 2	020 YTD.				
		U.S. Air Force	Yes	U.S. Coast Guard		Department of Energy (including National Labs)			
В		U.S. Army	No	U.S. Intelligence Community (such as CIA, NGA, NRO, NSA)		Other	(Identify Agency)		
		U.S. Marine Corps		Missile Defense Agency (MDA)		Other	(Identify Agency)		
		U.S. Navy		Defense Logistics Agency		Other	(Write-In)		
	In a	ccordance with the header criteria, indicate w	hich product categories you di	irectly or indirectly provide for U.S. d	lefense systems, installations o	r known U.S. defense end uses.			
		Product	Defense Support?	Percentage of 2019 Sales Attributable to Defense Sales	Primary DOD ACAT/MDA	AP Supported, if known*	Comments		
	1	Vanadium Ores and Concentrates							
	2	Vanadates	Indirect						
	3	Vanadium Carbides	Both						
	4	Vanadium Sulfates	None						
	5	Vanadium Hydrides, Nitrides, Azides, Silicides, and Borides	Unknown						
С	6	Vanadium Pentoxide - Up to 99% Vanadium							
	7	High Purity Vanadium Pentoxide - 99%+ Vanadium							
	8	Other Vanadium Oxides and Hydroxides (Excluding Pentoxide)							
	9	Vanadium-Bearing Feedstocks (Ash, Residues, Spent Catalysts, Slag, Etc.)							
	10	Ferrovanadium - 40-60% Vanadium							
	11	Ferrovanadium - 80%+ Vanadium							
	12	Vanadium Master Alloys							
	13	Vanadium, Wrought and Unwrought (Excluding Master Alloys)							
*U.9	. De	partment of Defense Acquisition Category (ACA	AT) and Major Defense Acquisi	ition Program (MDAP)					
				DO Rated	DX Rated				
	1	Since 2018, provide the number of priority rathe Defense Priorities and Allocations System part 700) that you has received by their level	(DPAS) regulation (15 CFR						
D.	2	Since 2018, provide the number of priority ra have placed with other entities by their level	ted contracts or orders you of priority.						
	3	Since 2018, indicate which of your subject pro- frequently received a priority rated contract of	oduct categories has most or order.						
		Comments:							
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			9. Critical Infrastructure		
	Describe your organization's support for each Critical Infra	astructure Sector in accordance with the heade	r criteria.		
			Definitions of each sector may be found a	at: https://www.dhs.gov/cisa/critical-infrast	ructure-sectorsectors
	Critical Infrastructure Sector	Sector Support	Primary Product Support	Primary Customer Associated with Sector/Product Support	Explain
	Chemical Sector	Yes	Vanadium Ores and Concentrates		
	Commercial Facilites Sector	No	Vanadates		
	Communications Sector		Vanadium Carbides		
	Critical Manufacturing Sector		Vanadium Sulfates		
	Dams Sector	Vanadiu	m Hydrides, Sulfides, Nitrides, Silicides, and	Borides	
Α	Defense Industrial Base Sector		Vanadium Pentoxide - Up to 99% Vanadium	n	
	Emergency Services Sector	Hig	h Purity Vanadium Pentoxide - 99%+ Vanad	ium	
	Energy Sector	Other Va	nadium Oxides and Hydroxides (excluding P	entoxide)	
	Financial Services Sector	Vanadium-Be	aring Feedstocks (Ash, Residues, Spent Cata	lysts, Slag, Etc.	
	Food and Agriculture Sector		Ferrovanadium - 40-60% Vanadium		
	Government and Facilities Sector		Ferrovanadium - 80%+ Vanadium		
	Healthcare and Public Health Sector		Vanadium Master Alloys		
	Information Technology Sector	Vanadiur	n, Wrought and Unwrought (Excluding Mast	ter Alloys)	
	Nuclear Reactors, Materials, and Waste Sector		Other Vanadium-Related		
	Transportation Systems Sector				
	Waste and Wastewater Systems Sector				
	How have current market conditions involving the subject	product categories affected your ability to mee	t current Critical Infrastructure Sector requi	rements?	
В.					
	Do you recommend any actions by the U.S. Government to	o better facilitate your ability to meet current C	ritical Infrastructure Sector requirements?		
C.					
	Comments:				
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Pre	evious Page		10. Competition and Trade		Next Pa
	Since 2018, by subject product category and in accordance with	the header criteria, has		t competition? Do not limit your organ	nization's response to the categories in which you operate if you
	also have visibility into other product category imports.  Product Category	Change in Import Competition	Primary Source Country of Import Competition	Impact on Your Organization	Explain
	1 Vanadium Ores and Concentrates	Increase		Positive	
	2 Vanadates	Decrease		Negative	
	3 Vanadium Carbides	No Change		Neutral	
	4 Vanadium Sulfates				
	5 Vanadium Hydrides, Nitrides, Azides, Silicides, and Borides				
A.	6 Vanadium Pentoxide - Up to 99% Vanadium				
	7 High Purity Vanadium Pentoxide - 99%+ Vanadium				
	8 Other Vanadium Oxides and Hydroxides (Excluding				
	removide)				
	9 Vanadium-Bearing Feedstocks (Ash, Residues, Spent Catalysts, Slag, Etc.)				
	10 Ferrovanadium - 40-60% Vanadium				
	11 Ferrovanadium - 80%+ Vanadium				
	12 Vanadium Master Alloys				
	13 Vanadium, Wrought and Unwrought (Excluding Master Alloys)				
	Do you anticipate any impact on your business due to future imp will likely have on your organization, and explain.	oorts of subject products	into the United States from any country	y? Indicate your anticipated primary fu	uture source of import competition, the impact this competition
	Product Category	Brimany Euturo	Source of Import Competition	Primary Impact from Import	Explain
	1 Vanadium Ores and Concentrates	Fillial y Future	30urce of import competition	Competition	Explain
	Vanadium Ores and Concentrates     Vanadates			Positive Negative	
	3 Vanadium Carbides			Neutral	
	4 Vanadium Sulfates				
	5 Vanadium Hydrides, Nitrides, Azides, Silicides, and Borides				
В.					
	7 High Purity Vanadium Pentoxide - 99%+ Vanadium				
	8 Other Vanadium Oxides and Hydroxides (Excluding Pentoxide)				
	9 Vanadium-Bearing Feedstocks (Ash, Residues, Spent Catalysts, Slag, Etc.)				
	10 Ferrovanadium - 40-60% Vanadium				
	8 Ferrovanadium - 80%+ Vanadium 9 Vanadium Master Alloys				
	Vanadium, Wrought and Unwrought (Excluding Master				
	Alloys)				
	Identify the primary challenges/issues affecting your competitive the next most important issue/impact, etc.). Explain your respon	e position in the overall [	U.S. and non-U.S. J subject product mark	ets. Rank the leading 5 most significar	nt challenges (1 being the most important issue/impact; 2 being
	Challenge/Issue	Chal	lenge Experienced?	Rank Top 5	Explain
	Aging equipment, facilities, or infrastructure     Aging workforce		Yes No		
	3 Counterfeit parts				
	4 Cyber security 5 Domestic competition				
	6 Environmental regulations/remediation 7 Export controls/ITAR & EAR				
	8 Financing/credit availability				
	9 Foreign competition 10 Government acquisition process				
	11 Government purchasing volatility				
	12 Government regulatory burden 13 Healthcare				
C.	14 industrial espionage - domestic				
	15 Industrial espionage - foreign 16 Input availability				
	17 Intellectual property/patent infringement 18 Labor availability/costs				
	19 Natural disasters (including disease/quarantine)				
	20 Obsolescence 21 Pension costs				
	22 Proximity to customers 23 Proximity to suppliers				
	24 Qualifications/certifications				
	25 Quality of inputs 26 R&D costs				
	27 Reduction in USG demand				
	28 Taxes 29 Trade disputes/tariffs				
	30 Worker/skills retention 31 Other (specify)				
	32 Other (specify)				
	Describe one of the five leading challenges/issues affecting your challenge/issue has affected your competitive position in the ma	organization's competiti arketplace.	ve position in the marketplace for subject	ct product categories. Then, describe	in detail both how long and in what manner this leading
	Challenge/Issue	ı	How long and in what manner has this a	ffected your competitive position in t	he market for subject products? Describe.
D.	1 (specify)				
	2 How can the U.S. Government aid in the response to/mitigation of this challenge?				
	-				

Comments:	
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			11. COVII	D-19 Impacts					
	dentify any impacts or actions resulting from the COVID-19 pandemic at your organization, ranking the three most significant impacts and three most important actions (1 being the most important mpact/action; 2 being the next most important impact/action, etc.):								
Impacts Experienced		-Yes/No-	Rank Top 3	Actions Taken		Short Term/ Long Term	Rank Top 3		
Increased cost of materials	ncreased cost of materials			Reduce workforce		Short Term			
Inability to access work location	nability to access work location			Increase online/remote work capabilities		Long Term			
Inability to fulfill contracts	nability to fulfill contracts			Seek government assistance		Both			
Reduced sales	educed sales			Delay or reject new contracts					
Foreign supplier manufacturing de	oreign supplier manufacturing delays			Begin to produce pandemic-related products					
Domestic supplier manufacturing	Oomestic supplier manufacturing delays			Increase use of domestic suppliers					
Increased demand	creased demand			Reduce use of suppliers located in China					
Transportation-based disruptions	ransportation-based disruptions			Reduce use of suppliers located outside the U.S. and China					
Financing difficulties	inancing difficulties			Increase inventories					
abor shortages				Increase supplier redundancy					
Other	(specify)			Other	(specify)				
Other	(specify)			Other	(specify)				
Identify any USG actions that coul COVID-19 impacts to your organiz		ated							

Comments:

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12. Certification						
knowledge. It is a criminal offense to willfully m Government as to any matter within its jurisdict						
Once your organization has completed this surve your records and to facilitate any necessary edit	ey, save a copy and submit it via email to Vanadium232@bis.doc.gov. Be sure to retain your survey for					
your records and to racilitate any necessary edit	5 Of Clarifications.					
Organization Name						
Organization's Internet Address						
Name of Authorizing Official						
Title of Authorizing Official						
E-mail Address						
Phone Number and Extension						
Date Certified						
In the box below, provide any additional comme	ents or any other information you wish to include regarding this survey assessment.					
How many hours did it take to complete this sur	vey?					
BUSINESS (	CONFIDENTIAL - Per Section 705(d) of the Defense Production Act					

Prev	ious F	Page				11. 2018 Trade Remedy Impacts			Next Page
	Descr	scribe whether the trade remedies imposed on grain-oriented electrical steel as a result of the Section 232 Steel investigation in 2018 have impacted your organization's operations in the categories below.							
	Impact Category Organization Impact		If negative, has your organization made any changes to address this impact?	Have these changes helped your organization remain competitive?	Have these impacts been severe enough to warrant idling or shutting down facilities?	Without the changes your organization has implemented, would your organization be able to continue operations?	Explain		
	1 Operating Costs 2 Suppliers/Sourcing Decisions		Positive Impact	Yes					
Α.			Negative Impact	No					
	3	3 Customers/Contracts		No Change					
	4	Input Decisio using	ons (i.e. subsitutes for GOES)	N/A					
	5 (	Other	(Specify)						
	6 (	Other	(Specify)						
B.	Orier	Canada and Me nted Electric Ste nization?	xico's exemption from Grain- eel tariffs impacted your	Positive Impact/Negative Impact/No Change	Explain:				
	Comments:								
	BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act								