

**Free
Seminar**

Nonproliferation and Export Controls for Metal & Alloy Exporters: 21st February 2012

Of interest to firms dealing with...

High-strength Aluminium & Alloys
Nickel & Alloys
Maraging Steels
Magnesium & Alloys
Titanium & Alloys
Niobium & Alloys
High-Purity / Fine Metal Powders

Agenda Includes:

Metals/Alloys Proliferation Brief

Ian J. Stewart

Compliance Overview

&

Metals / Alloys Controls Review

BIS Staff

Compliance in Practice

&

Non-proliferation in the Supply Chain
Industry Representatives

Who Should Attend:

Export Compliance Managers

Sales Directors / Managers

Business Development Directors

Legal / Risk Managers

FOR MORE INFORMATION

PLEASE VISIT:

www.antiproliferation.com

TO RSVP PLEASE EMAIL

Jenny Barratt-Jones

[jenny.barratt-](mailto:jenny.barratt-jones@namtec.co.uk)

jones@namtec.co.uk

01709 724 990



Libyan centrifuges displayed at a US facility after Gaddafi agreed to dismantle his WMD efforts in 2003

Certain metals and alloys offer desirable properties for use in military, missile and WMD programs (see left / over). National export controls exist in practically all countries to check proliferation-related trade in these materials, and companies operating in the metals and alloys sector need to have business-friendly export compliance systems in place to manage the legal, financial, and reputational risks of either exporting goods without a licence or inadvertently supplying goods to a programme of concern.

This free seminar will provide an up-to-date assessment of the proliferation threat posed to the UK metals and alloys industry and will highlight considerations for export compliance and risk management. Proliferation specialists, government officials, and industry experts will outline ways to effectively manage compliance requirements and best practices.

Tuesday 21st February, 10:00–16:00

Swinden House, Moorgate Road,
Rotherham, S60 3AR

Attendance: Free, Lunch provided

KING'S
College
LONDON



namtec
national metals technology centre

This event is made possible through funding from the British Government

Exporting controlled items without a license is illegal, can contribute to insecurity in the international community and carries business risk. While every effort has been made to ensure that this page reflects the control list at the time of publication, this information is provided only as background information. It is the responsibility of the exporter to check the status of their export against the extant control list.

	Specification		Control	Concern?	Note
Aluminium	460MPa +	Specifically designed for use in uranium enrichment.	0B001b	Nuclear	1
Aluminium alloys	460MPa + @ 20°C T/S 240MPa + @200°C T/S 415MPa + @25°C	Tubes, cylindrical, solid form (inc forgings)o/d>75mm Al-Mg-X, Al-X-Mg, Al-Zn-X, Al-X-Zn, Al-Fe-X, Al-X-Fe	1C202a 1C002b4a 1C002b4b 1C002C1d	Nuclear Nuclear Nuclear	2
Aluminides: nickel Titanium	Nickel. 15—38% Al 10% + Al	With at least one alloying element With at least one alloying element	1C022a1 1C022a2		
Maraging Steel	2050MPa+ 2050MPa+ 1500MPa @20°C	Specifically designed for uranium enrichment? If bigger than 75 mm in all directions Sheet, plate, tubing (less than 5mm think)	0B001b 1C216 1C116	Nuclear Nuclear Nuc.missile	1
Magnesium Magnesium alloys	T/S > 345 MPa @	Corrosion rate <1%pa in sodium chloride Mg-Al-X or Mg-X-Al alloys	1C002b5 1C002	Nuclear	- 2
Titanium alloys (Defined as 900MPa @20°C)	900MPa @20°C 200MPa stress 400MPa stress	Tubes, cylindrical, solid form (inc forgings)>75mmO/D Ti-Al-X, Ti-X-Al. Stress rupture 10,000 hours @ 450°C Low cycle fatigue failure or 10000 cycles @ 550°C	1C002b3a 1C002b3b	Nuclear Nuclear	2
Titanium-stabilized duplex stainless steel	17-23% chromium 4.5—7.0 % nickel >0.10 weight titanium	Ingots (100>mm3) Sheets (600mm and not exceeding 3mm think) Tubes (600o/d and not exceeding 3mm think) Ferritic- austenitic microstructure >10% austenitic	1C118	Missile	
Niobium Niobium alloys	400MPa stress 700MPa stress	Stress rupture 10,000 hours @ 800°C Low cycle fatigue failure or 10,000 cycles @ 700°C Nb-Al-X, Nb-X-Al, Nb-Si-X, Nb-X-Si, Nb-Ti-X, Nb-X-Ti	1C002b2 1C002b2 1C002C1b	Missile Missile Missile	-
Nickel alloys Porous nickel	676MPa stress 1095MPa stress	Stress rupture 10,000 hours @ 650°C Low cycle fatigue failure or 10000 cycles @ 550°C Ni-Al-X, Ni-X-Al qualified for turbine engines Made from 99% purity, <10µm	1C002b1 1C002b1 1C002C1a 1C240b	Missile Missile Missile Nuclear	2
Uranium-titanium or Uranium-tungsten alloys with matrix based on iron, nickel, or copper		Density > 12.5g/CM ³ , Elastic limit >800MPa UT/S > 1270MPa, Elongation exceeding 8%	1C004	Munitions?	

High-purity metals: regardless of mechanical, properties, some high-purity metals are also subject to export controls for nuclear, missile, or military purposes.

Powders: Some powder metals are controlled. These controls usually relate either to materials that can aid burning of rocket fuel, that can be cast, or that can be used as diffusion barriers in nuclear enrichment.

Material	Purity	Control		
Bismuth (n)	>99.9% Bismuth, <10ppm silver	1C229	60% + Nickel alloy (n) Aluminum Oxide (n)	99%+ purity <10µm specifically designed for uranium enrichment
Magnesium (n)	<200ppm calcium, <10ppm boron	1C228	Nickel	99% purity, <10µm
Calcium (n)	<1,000ppm magnesium, <10ppm boron	1C227	Beryllium (m) Zirconium (m) Boron/Boron Carbide (m)	<60µm 97% (99% for ML) <60µm >99% <60µm >85% <60µm >97% (99% is ML)
Beryllium (n)	>50% Beryllium (metals and alloys)	1C230	Magnesium (m)	
Hafnium (n)	>60%	1C231		
Zirconium (n)	Less than 1-500 part hafnium 50% Zirconium or more by weight	1C234	Aluminum (m)	<200µm, >97% purity (if 10% < 63µm)
(n) relates to nuclear concern, (m) relates to missile concern ML refers to the UK Military List			Military spec aluminum	<60µm >99% purity
			Iron (m)	<3µm

Note 1. This item is controlled by the Nuclear Suppliers Group trigger list. Note 2. When made using any of the following processes: vacuum atomized, gas atomized, rotary atomized, splat quenching, met spin/extradition and comminution, mechanical alloying. Note 3: The dual use control is at 97%, but for 99% or more a military list control also exists. (ML8c5 also control alloys of these).