

NP-O Nickel Wire

Purity 99.997%



Tritech Group a.s.

Engineering Management Consulting

PRODUCER



TOROZA

A NATURAL RESOURCE COMPANY

EXCLUSIVE REPRESENTATIVE

Nickel Wire 0.025 mm (dia)

- NP-0 Highest Purity Nickel Wire (99.981 – 99.997%)

Compared to

- NP-1 (99.90 - 99.98%) Nickel Purity
- NP-2 (99.80 – 99.89%) Nickel Purity

BENEFITS OF NP-0

- Significantly faster in performance than NP-1 and NP-2
- Ability to endure constant heavy loads
- Smooth clean surface - free from cracks, scratches, dents and bumps
- Ability to be (micro) soldered, brazed and/or welded
- Higher electrical conductivity - shielding against electromagnetic interference and in transducers stable electrical resistance
- Corrosion Resistant - high resistance to alkalis
- Functions at all temperatures from cryogenic to extremely high temperatures.

NP-0 Nickel Wire

- Tritech Group is a sole producer of 0.025 mm diameter NP-0 Nickel Wire.
- Benefit of production process and supplier partnerships allows sales price to be less than inferior NP-1 Nickel Wire.
- Approved by Testing and Certification Center (IASTS) “GIREDMET” (Russian Federation) and Analytical Certification Center of Rare Metals IGAS Research (Germany) - both internationally accepted institutions for rare and precious metals.
- Manufactured in accordance with GOST 2179-75, GOST 19241-80, GOST 849-97 and the Customs Union for Foreign Trade (CU HS) code KN 7505 21 00.

PRODUCTION

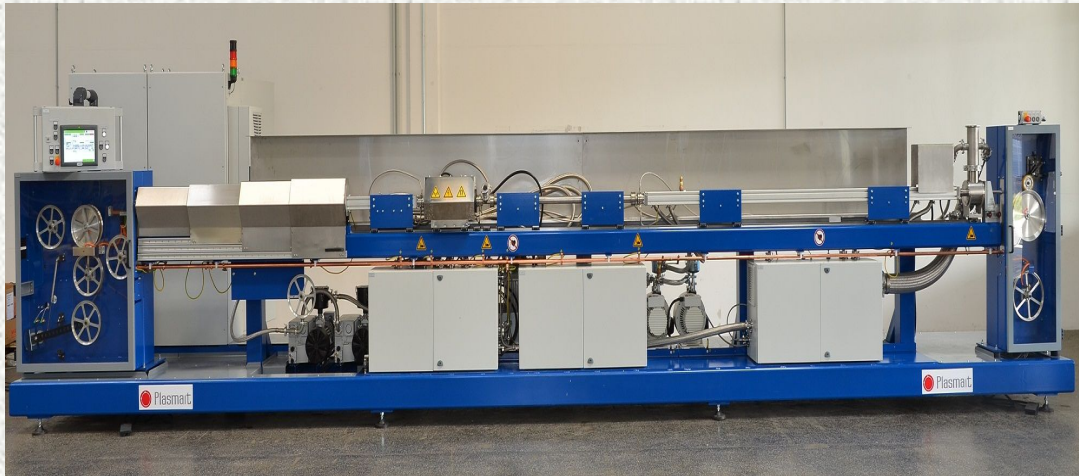
- Finished NP-1 Nickel Wire is brought into production plant for further processing into NP-0 of .025 mm dia.
- Processes are carried out under reduced pressure (“Zone Refining”) to separate the volatile metal components from the pollutants.
- Under reduced pressure, Nickel Wire, is resistively or inductively heated using plasma annealing process causing volatilization of pollutants.
- The metal deprived of the more volatile components gradually volatilizes itself leaving the remaining non-volatile impurities.
- During “Zone Refining” impurities soluble in the liquid metal migrate in the material structure, through multiple repetition impurities poorly soluble are concentrated at the inlet end of the wire. The central part of the material then reaches very high purity after the process is completed.



- Six Coils for a total of 734.9 grams of 0.025 mm NP-0 (Certificates provided).
- Each gram equates to 227 Linear meters of Nickel Wire.
- Production of Nickel Wire along with sampling and packaging takes 2-3 weeks yielding 1,000 grams of NP-0.



- Production plant and equipment. Facility is 2,152 sq. Feet.



- Plasma Annealer - an important part in producing NP-0.



Collection of samples for analysis, labeling of the coils and box, and sealing the box.

1 Consignor - Expéditeur - Expendedor Tritech Group a.s. Národní 33 110 00 Praha 1 Czech Republic IČ: 60192259	9 1 1 2 4 7	ORIGINAL
2 Consignee - Destinataire - Destinatario 	EUROPEAN COMMUNITY COMMUNAUTÉ EUROPÉENNE COMUNIDAD EUROPEA CERTIFICATE OF ORIGIN CERTIFICAT D'ORIGINE CERTIFICADO DE ORIGEN	
	3 Country of origin - Pays d'origine - País de origen Czech Republic	
4 Means of transport - Expédition - Expedición EXW Prague	5 Remarks - Remarques - Observaciones Certificate of Analysis No.0001750	
6 Item number, marks, numbers, number and kind of packages, description of goods <i>No d'ordre, marques, numéros, nombre et nature des colis, désignation des marchandises</i> <i>No de orden, marcas, numeración, número y naturaleza de los bultos, descripción de las mercancías</i> Nickel Wire 0,025mm dia, „NP0“ / Lot #3 Sealed wooden box #3 containing 6 coils : Coil No.13 = 119,6 g / Certificate No. 17380/ 7.12 Coil No.14 = 111,7 g / Certificate No. 17380/ 8.12 Coil No.15 = 117,7 g / Certificate No. 17380/ 9.12 Coil No.16 = 129,3 g / Certificate No. 17380/10.12 Coil No.17 = 127,0 g / Certificate No. 17380/11.12 Coil No.18 = 129,6 g / Certificate No. 17380/12.12 TOTAL : 734,9 g Sealed with „IGAS Research seals“ and „seals of Giredmet“		7 Quantity <i>Quantité</i> <i>Cantidad</i> BTTO 734,9 g
8 The undersigned authority certifies that the goods described above originate in the country shown in box 3 <i>L'autorité soussignée certifie que les marchandises désignées ci-dessus sont originaires du pays figurant dans la case No. 3</i> <i>La autoridad infrascrita certifica que las mercancías designadas son originarias del país indicado en la casilla No 3</i> PRAHA 12 -08- 2014  J. Holubová Place and date of issue, name, signature and stamp of competent authority <i>Lieu et date de délivrance, désignation, signature et cachet de l'autorité compétente</i> <i>Lugar y fecha de expedición, designación, firma y sello de la autoridad competente</i>		

ECCR

Certification of Origin



STATE RESEARCH CENTER OF THE RUSSIAN FEDERATION
JOINT-STOCK COMPANY
STATE SCIENTIFIC-RESEARCH AND DESIGN INSTITUTE
OF RARE-METAL INDUSTRY

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ИСПЫТАТЕЛЬНЫЙ АНАЛИТИКО-СЕРТИФИКАЦИОННЫЙ ЦЕНТР
GIREDMET TESTING ANALYTICAL CENTER

REPORT № 17380.12

on Impurities Determination

Certificate supplement 2890-12

Nickel Wire 0.025 mm dia. Lot “НПО Эви 0,025 КТ ГОСТ 19241-80”

Sampling was made by ANSERTECO Ltd.

The impurities evaluation was made by Spark Source Mass Spectrometry. The JMS-01-BM2 double focusing mass spectrometer manufactured by JEOL (Japan) was applied. The high resolution mass spectra were photographed on Ilford-Q plates. The relative standard deviation is 0.15-0.30.

The results are presented as Parts Per Million (1 ppm = 0.0001 %)

Element	ppm	Element	ppm	Element	ppm
H	ND	Zn	< 0.05	Pr	< 0.1
Li	< 0.01	Ga	< 0.05	Nd	< 0.1
Be	< 0.01	Ge	< 0.05	Sm	< 0.1
B	0.06	As	< 0.05	Eu	< 0.1
C	ND	Se	< 0.05	Gd	< 0.1
N	ND	Br	< 0.05	Tb	< 0.1
O	ND	Rb	< 0.05	Dy	< 0.1
F	0.4	Sr	< 0.05	Ho	< 0.1
Na	0.8	Y	< 0.05	Er	< 0.1
Mg	3	Zr	< 0.05	Tm	< 0.1
Al	4	Nb	< 0.05	Yb	< 0.1
Si	3	Mo	< 0.05	Lu	< 0.1
P	3	Ru	< 0.05	Hf	< 0.1
S	< 0.1	Rh	< 0.05	Ta	< 0.1
Cl	2	Pd	< 0.05	W	< 0.1
K	0.8	Ag	< 0.05	Re	< 0.1
Ca	3	Cd	< 0.05	Os	< 0.2
Sc	< 0.01	In	< 0.05	Ir	< 0.2
Ti	2	Sn	< 0.05	Pt	< 0.2
V	0.6	Sb	< 0.05	Au	< 0.2
Cr	3	Te	< 0.05	Hg	< 0.2
Mn	0.2	I	< 0.05	Tl	< 0.1
Fe	6	Cs	< 0.05	Pb	< 0.1
Co	2	Ba	< 0.05	Bi	< 0.2
Ni	MATRIX	La	< 0.1	Th	< 0.2
Cu	2	Ce	< 0.1	U	< 0.2

Chief of GIREDMET T&A Center
Professor Yu. Karpon



German G. Glavin
Ph.D. Head of MS Lab

January 31, 2012

C E R T I F I C A T E

of Chemical Contents #2890-12

Nickel Wire 0.025 mm dia on Bobbins

Lot "НПО Эви 0,025 КТ ГОСТ 19241-80"

Net Weight 1417.3 g, Length 322113.6 m**

2 Containers:

#2 – 6 bobbins (#07-#12), 682.4 g, 155090 m;

#3 – 6 bobbins (#13-#18), 734.9 g, 167022.7 m

The impurities contents of Nickel Wire on Bobbin for metallic impurities is not more **0.003 % wt** The purity grade of Nickel Wire on Bobbins is **99.997 % wt**.

The purity grade of Nickel Wire on Bobbin corresponds to **m4N7** grade according to ALFA Aesar Inorganic Research Chemicals and Metals catalogue of JOHNSON MATTEY.

Nickel Wire on Bobbins is radiological safe. The specific natural radioactivity of Nickel Wire on Bobbins is no more than 1.10^{-11} Ci/g.

Report of Sampling procedure #47-12 from January 30, 2012.

Container was plumbed by leads of "GAC/68".

The Report of Impurities Determination #17380.12 (please turn over).

** Net Weight and Length are corresponded to data of Customer packing list.

Director of ANSERTEKO Ltd.

Dr. T. Alekseeva

Chief of GIREDMET T&A Center

Professor Yu. Karpov

Order #47-12

Date January 31, 2012

Tritech Group AS
Company reg. No.: 60192259
Narodni 33
110 00 Prague 1
Czech Republic
Dipl. Ing. Jan Bergman
Chairman of the Board/CEO

Certificate of Analysis-No.:0001750

Date: 16.04.2013

Sampled Lots: **Nickel wire 0,025 mm dia, "NP0", Lot #3**

Total net weight: 734,9g*, Length: 167022,7m*
6 bobbins in 1 wooden case

*** Net weight and length according to information
by customer**

Sample: **Bobbin nos.: 13, 14, 15, 16, 17, 18
from Lot #3**

taken by IGAS research on 12.04.2013 in Moscow
sealed with "IGAS research seals"

Measured with ICP/MS and ICP/OES

Results of Analysis:

Element	Measured Value [ppm]
Ag	< 1
Al	5
As	2
Au	< 0,1
B	8
Ba	2
Be	< 0,1
Bi	< 1
Ca	243
Cd	< 0,1
Co	3
Cr	< 1
Cu	2
Fe	28
Ga	< 1
Ge	< 0,1
Hf	< 0,1

Element	Measured Value [ppm]
Hg	< 0,1
In	< 1
Ir	< 0,3
K	23
Li	< 1
Mg	50
Mn	< 0,5
Mo	< 1
Na	< 1
Nb	< 0,1
Ni	Matrix
Os	< 0,5
P	3
Pb	4
Pd	< 0,1
Pt	< 0,1
Re	< 0,5

Element	Measured Value [ppm]
Rh	< 0,1
Ru	< 0,1
S	37
Sb	< 0,5
Se	1
Si	22
Sn	< 0,1
Sr	1
Ta	< 0,1
Te	< 1
Tl	< 0,5
Ti	< 0,1
U	< 0,01
V	< 0,1
W	< 0,5
Zn	21
Zr	< 0,5

The concentration of impurities (As, Bi, Cd, Cu, Fe, Mg, Mn, P, Pb, S, Sb, Sn, Si, Zn) to be considered in this sample is 0,0169% by weight. The purity grade of this Nickel wire is:

99,9831%

IGAS 
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Inhaber
Dr. Ernst Joachim Martin

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St.-Nr.: 21/128/02253

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