

## CRÍTICA A LA CARTA DE F. M GRANADA ( RESPECTO A DUREZA DE MATERIAL)

- 1- La crítica mas importante es que indica un procedimiento(ISO 3878) que está derogado internacionalmente y también por el boe , tal y como figura en la carta de 31 octubre de 2023.
- 2- Se ve que ni fm granada ni Mecánica de precisión tejedor se dieron cuenta de dicha derogación.

Por lo tanto, se realiza los ensayos de laboratorio según la norma ISO 6507-2018

Tanto Xiamen Golden egret alloy como Sgs aplican el procedimiento ISO 6507-2018 y se olvidan de las normas derogadas y de los procedimiento de determinación de dureza derogados Realizan informe de ensayo de laboratorio conforme a dicha norma ISO(6507-2018).

Adjuntamos contestación a mecánica de precisión Tejedor el día 31/10/2023.

Fm granada envía su carta el día 6 de noviembre con fecha 30/10/2023 para intentar simular que no ha podido leer dichas contestaciones,

Se aporta certificado de análisis de material de XIAMEN GOLDEN EGRET e informe de SGS.

Se requieren 3 probetas que posteriormente serán empleadas en el ensayo de compresión (anexo 3, marca C).

- En el certificado de XIAMEN no se indica la norma según la cual se ha determinado la densidad ni el número de probetas, ni su forma ni dimensiones.
- En el informe de SGS solo se indica el resultado de 2 probetas.
- Los valores de densidad obtenidos son aceptables en ambos informes.
- En ninguno de los dos informes se indica de dónde se han obtenido las probetas ni su forma ni dimensiones. No existe trazabilidad del material.

- 3.7. DUREZA s/ 5.2.3.3.

Se requiere un mínimo de 16 medidas por lote, sobre una única barra de material en las dos series y con las probetas especificadas en el apartado 5.2.3.3.

Se aporta certificado de análisis de material de XIAMEN GOLDEN EGRET e informe de SGS. Los valores de dureza obtenidos son conformes, pero:

- En el informe de XIAMEN solo se indica un resultado, y en el informe de SGS solo se indica 3 resultados de 1 probeta. No se han realizado las series requeridas.
- En ninguno de los dos informes se indican las dimensiones de las probetas ni de dónde se han obtenido estas. Por lo tanto, no hay trazabilidad del material.

- 3.8. DEFECTOS DE MATERIAL s/ 5.1.2: ENSAYOS NO DESTRUCTIVOS. ULTRASONIDOS

Se requiere ensayo por ultrasonidos al 100% de las barras para garantizar la ausencia de defectos internos y externos.

Se aporta informe de detección de defectos de XTC, de fecha 20/07/2023 s/ norma GBT4162-2022: *Method for ultrasonic testing of forged and rolled steel bars*. En dicho informe se indica que se cumplen los requerimientos estándar. No obstante:

- No se aporta el ensayo al 100% de las piezas. Se indica: Lote nº 1; Cantidad: 100 Pcs., pero no se indica la cantidad de piezas ensayadas.
- No se indica la señal empleada como contraste.
- No se indica el defecto de patrón.
- No se indican las referencias para aceptación y rechazo.
- No se indica la cualificación del personal.
- No se indica el marcado de las piezas indicado en el apartado 3.1 de la EMAT-13010991.

En el informe de SGS se incluye inspección por líquidos penetrantes, s/ ISO 3452-1 a una sola barra, en lugar de la inspección por ultrasonidos al 100% solicitada.



A 31 de octubre del 2023

Att de MECANICA DE PRECISION TEJEDOR S.A.

Resultados de las observaciones de MECANICA DE PRECISIÓN TEJEDOR S.A. DE FECHA EL 19 DE OCTUBRE DEL 2023 referente a las certificaciones de las empresas SGS Y XIAMEN GOLDEN EGRET enviados por HERRAMIENTAS LORENZO SALVADOR ESPAÑA S.L.

### 3.7 DUREZA

Os indico que lo que se ha presentado es un certificado de fabricante final de las piezas en este caso XIAMEN GOLDEN EGRET y además la empresa certificadora SGS que es una entidad auditora .

1-La norma por la cual se rige el requerimiento para la prueba de dureza NORMA ISO 3878 del año 1983 es una norma OBSOLETA anulada por el BOE el martes 14 de mayo del 2019.

El ensayo de dureza realizado por la certificadora SGS se rige según la ultima norma ISO 6507-1:2018

-Los valores presentados en su informe por la certificadora de las tres probetas ensayadas son los siguientes.

Probeta -1 Valor 379 HV

Probeta -2 Valor 372 HV

Probeta -3 Valor 373 HV

Valor medio aportado por XIAMEN- Valor de 366 HV

En sus observaciones mezclan valores valores de las distintas certificadoras siendo todos VALIDOS.

Estos son los valores medios por probeta, ustedes exigen que se indiquen los 16 valores de una Norma anulada con el consiguiente error que habrá cometido su departamento de calidad, ya que la norma aplicada exige una manera de realizar dicho ensayo el cual no se puede hacer a la ligera por incumplir dicha norma, sorprende a la certificadora SGS y a XIAMEN GOLDEN EGRET el departamento de calidad de MECANICA DE PRECISION TEJEDOR S.A el desconocimiento de dicha norma que tienen al exigir esos valores que según norma se han de cumplir y no hace falta recalcarlos ya que la norma exige hacerlos ,de todas maneras se les adjunta un pequeño recorte de la norma.

Se adjunta algunos ejemplos.

En el requerimiento solicita 350 HV30 esto significa que cada probeta se somete una carga de 30 Kg durante un tiempo según norma de 10 a 15 segundos, adjunto documento de la norma.

El método estándar se realiza bajo las siguientes condiciones:

Indentador	Pirámide de diamante $\alpha = 136^\circ$
Carga (PF)	1...120 kgf
Duración de la carga (t):	10...15 s.

El número de dureza Vickers se denota como HV. Ejemplos:

440 HV 30

Esta notación indica una dureza Vickers de 440 bajo carga de 30 kgf. Aplicada por un tiempo de 10 a 15 s.

2-Lo referente a 7 medidas por probeta ya viene especificado según norma.

3-Las dimensiones de la probeta es la medida que indica el requerimiento, para hacer el ensayo micrográfico.

Se adjunta recorte de la norma de como se efectúa dicho ensayo de dureza según norma.

*Elaborado por Gabriel Calle y Edison Henao*

**Microscopio.** Según el estándar el microscopio debe poseer una resolución de 0,05 mm, cifra que se puede considerar cumplida por el microscopio incorporado en la máquina WPM HP-250.

#### REALIZACIÓN DEL ENSAYO

Como el ensayo se realiza bajo la estricta supervisión y dirección del profesor y monitor, sólo se darán aquí algunas recomendaciones adicionales.

1. Se selecciona en la máquina una carga de 60 kgf. para todas las probetas.
2. Cada vez que se realice cambio de indentador la primera impronta obtenida no será tenida en cuenta, esto para permitir el asentamiento del sistema indentador, montura y porta indentador.
3. Se realizarán entre 5 y 10 indentaciones por probeta, teniendo en cuenta que la separación del borde de la probeta y de una huella al borde de la otra debe ser mayor a 2,5 veces la diagonal de la huella.



#### Distancia mínima de las indentaciones en el método Vickers según ISO 6507

La norma ISO 6507 define las distancias mínimas entre las huellas de ensayo (indentaciones) y el borde de la probeta para el método de ensayo Vickers. La norma define estos distancias mínimas que deben aplicarse las indentaciones de los resultados de dureza que resultan de la deformación de la estructura del material.

Los valores mínimos que deben respetarse según las normas se indican en el diagrama de la izquierda.

Con ello queda resuelto el punto 3.7 de ensayo de dureza.

Se indica que cualquier ampliación de cualquier ensayo estamos a su entera disposición para poder subsanarlo de todas maneras se esta editando toda la documentación de nuevo par que no haya errores.

Herramientas Lorenzo Salvador España, s.l

C/ Sor María de Ágreda, 47 Duplicado Local 1

28017 Madrid

Móvil 666640519

## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 1 of 14



CUSTOMER NAME: HERRAMIENTAS LORENZO SALVADOR,S.L  
ADDRESS: C/SOR MARÍA DE AGREDA 47 DUPL, Z.C-28017 MADRID,SPAIN

Sample Name : TUNGSTEN THREADED ROD J2H231WX434001  
Product Specification :  $\phi 22.5 \times 434$   
Manufacturer : XIAMEN GOLDEN EGRET SPECIAL ALLOY CO., LTD  
Buyer : Herramientas Lorenzo Salvador,s.l  
Material and Mark : GH231

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client.

\*\*\*\*\*

SGS Ref. No. : SNT23081725, TJIN2308003321ML01-1\_CN, SHIN2308013630ML01-1\_CN  
Other Ref. No. : SHIN2308013630ML01-2\_CN  
Date of Receipt : 2023-08-11  
Testing Period : 2023-08-11 ~ 2023-09-12  
Test result(s) : For further details, please refer to the following page(s)  
(Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

Signed for  
SGS-CSTC Standards Technical  
Services Co.,Ltd. Xiamen Branch.

Hank Li  
Authorized signatory



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## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 2 of 14

### 1. Tensile test

Test method: ISO 6892-1:2019

Sample No.	Specimen type	Tensile strength ( $R_m$ ) (MPa)	Proof strength ( $R_{P0.2}$ ) (MPa)	Elongation after fracture (A) $L_o = 5.65\sqrt{S_0}$ (%)
003	Round specimen $d_0=5\text{mm}$	1062	940	21.0

### 2. Density test

Test method: ISO 3369:2006

Test conditions: distilled water

Environmental temperature: 25.4 °C

Sample No.	Test result
001-1	17.56g/cm <sup>3</sup>
001-2	17.57g/cm <sup>3</sup>

Note: The liquid density was 0.9970g/cm<sup>3</sup>



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Xiamen Branch Testing Center Materials Laboratory

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## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 3 of 14

### 3. Chemical composition analysis\*

Element	Test method	Result 005 (%)
Co	ASTM E1473-09	0.29
Fe	ASTM E1473-09	2.43
Mn	ASTM E1473-09	0.04
Ni	ASTM E1473-09	4.23

### 4. Hardness test\*

Test method: ISO 6507-1:2018

Sample No.	Test position	Result (HV30)		
002	Core	379	372	373



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## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 4 of 14

### 5. Metallographic analysis\*

Reference standard: GB/T13298-2015

Etching reagent: Copper chloride hydrochloric acid aqueous solution

Step 1. Sampling from the specific site

Step 2. Mounting (Longitudinal / Transverse), Cleaning, polishing and etching.

Step 3. Observing with the microscope.

Test result:

Sample No.	Metallographic structure of the sample
002	Tungsten particles+bonding phase, as Figure 1

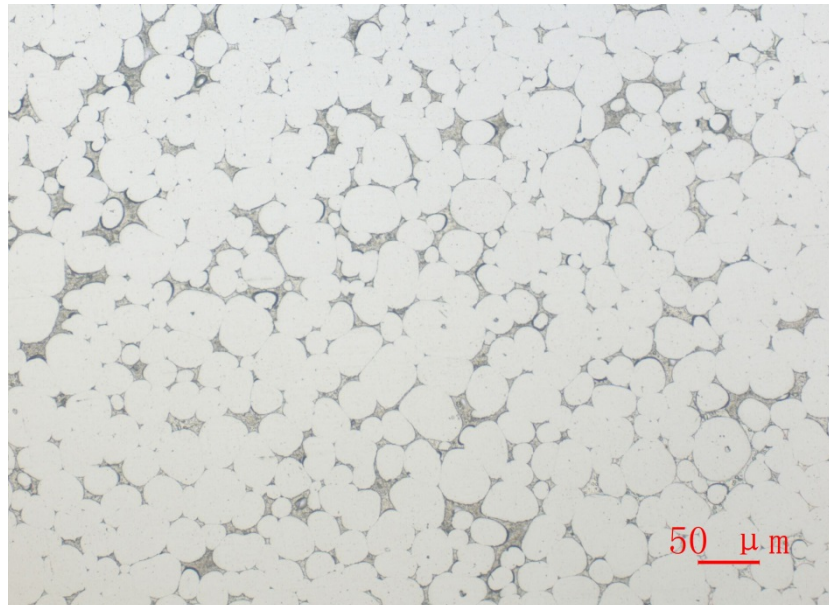


Figure 1 Metallographic Structure of Sample 200×



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## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 5 of 14

### 6. Dimension test\*

Test standard: Customer drawing

Test results:

Weight unit:g; Other unit:mm

Test Item		Theoretical Value			Results			Test equipment
NO	Dimension	Nominal	Tolerance (+)	Tolerance (-)	Measure	Out tol	Conclusion	
004-1: 20#								
1	Φ	16.9	0	0.02	16.893	----	OK	CMM
2	Φ	17.1	0	0.25	16.999	----	OK	CMM
3	Φ	26	0	0.05	25.993	----	OK	CMM
4	Φ	19	0	0.2	18.946	----	OK	CMM
5	Φ	25	0	0.1	24.929	----	OK	CMM
6	Φ	22.5	0	0.1	22.449	----	OK	CMM
7	----	16	0.2	0.2	15.898	----	OK	Projector
8	----	22	0.2	0.2	22.190	----	OK	Projector
9	----	84.4	0.3	0.3	84.420	----	OK	CMM
10	----	135.25	0.5	0.5	135.304	----	OK	CMM
11	----	259.5	0.5	0.5	259.443	----	OK	CMM
12	----	4.99	0.2	0.2	4.991	----	OK	CMM
13	----	5	0.2	0.2	4.995	----	OK	CMM
14	----	M19*1.5	6g	6g	----	----	OK	Go no go gauge
15	----	M21*1.5	6g	6g	----	----	OK	Go no go gauge



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## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 6 of 14

Test Item		Theoretical Value			Results			Test equipment
NO	Dimension	Nominal	Tolerance (+)	Tolerance (-)	Measure	Out tol	Conclusion	
16	----	19	0.2	0.2	18.868	----	OK	Projector
17	----	14	0.2	0.2	14.179	----	OK	Projector
18	----	434	0	0.5	433.928	----	OK	CMM
19	----	247.01	0.05	0	247.056	----	OK	Projector
20	Coaxiality	0	0.02	0	0.005	----	OK	CMM
21	Perpendicularity	0	0.02	0	0.004	----	OK	CMM
22	Coaxiality	0	0.02	0	0.009	----	OK	CMM
23	Φ	19	0	0.02	18.994	----	OK	CMM
24	Φ	22.5	0	0.05	22.491	----	OK	CMM
25	----	4.5	0.1	0.1	4.428	----	OK	CMM
26	Weight	3157	90	90	3090	----	OK	Electronic balance
004-2: 48#								
1	Φ	16.9	0	0.02	16.896	----	OK	CMM
2	Φ	17.1	0	0.25	17.010	----	OK	CMM
3	Φ	26	0	0.05	25.997	----	OK	CMM
4	Φ	19	0	0.2	18.958	----	OK	CMM
5	Φ	25	0	0.1	24.943	----	OK	CMM
6	Φ	22.5	0	0.1	22.451	----	OK	CMM
7	----	16	0.2	0.2	15.894	----	OK	Projector



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## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 7 of 14

Test Item		Theoretical Value			Results			Test equipment
NO	Dimension	Nominal	Tolerance (+)	Tolerance (-)	Measure	Out tol	Conclusion	
8	----	22	0.2	0.2	22.130	----	OK	Projector
9	----	84.4	0.3	0.3	84.361	----	OK	CMM
10	----	135.25	0.5	0.5	135.293	----	OK	CMM
11	----	259.5	0.5	0.5	259.448	----	OK	CMM
12	----	4.99	0.2	0.2	4.990	----	OK	CMM
13	----	5	0.2	0.2	4.997	----	OK	CMM
14	----	M19*1.5	6g	6g	----	----	OK	Go no go gauge
15	----	M21*1.5	6g	6g	----	----	OK	Go no go gauge
16	----	19	0.2	0.2	19.133	----	OK	Projector
17	----	14	0.2	0.2	13.888	----	OK	Projector
18	----	434	0	0.5	433.925	----	OK	CMM
19	----	247.01	0.05	0	247.043	----	OK	Projector
20	Coaxiality	0	0.02	0	0.009	----	OK	CMM
21	Perpendicularity	0	0.02	0	0.006	----	OK	CMM
22	Coaxiality	0	0.02	0	0.010	----	OK	CMM
23	Φ	19	0	0.02	18.998	----	OK	CMM
24	Φ	22.5	0	0.05	22.498	----	OK	CMM
25	----	4.5	0.1	0.1	4.450	----	OK	CMM
26	Weight	3157	90	90	3085	----	OK	Electronic balance



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## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 8 of 14

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NO	Dimension	Nominal	Tolerance (+)	Tolerance (-)	Measure	Out tol	Conclusion	
004-3: 80#								
1	Φ	16.9	0	0.02	16.890	----	OK	CMM
2	Φ	17.1	0	0.25	16.997	----	OK	CMM
3	Φ	26	0	0.05	25.994	----	OK	CMM
4	Φ	19	0	0.2	18.958	----	OK	CMM
5	Φ	25	0	0.1	24.947	----	OK	CMM
6	Φ	22.5	0	0.1	22.452	----	OK	CMM
7	----	16	0.2	0.2	15.917	----	OK	Projector
8	----	22	0.2	0.2	22.194	----	OK	Projector
9	----	84.4	0.3	0.3	84.399	----	OK	CMM
10	----	135.25	0.5	0.5	135.283	----	OK	CMM
11	----	259.5	0.5	0.5	259.483	----	OK	CMM
12	----	4.99	0.2	0.2	4.998	----	OK	CMM
13	----	5	0.2	0.2	4.994	----	OK	CMM
14	----	M19*1.5	6g	6g	----	----	OK	Go no go gauge
15	----	M21*1.5	6g	6g	----	----	OK	Go no go gauge
16	----	19	0.2	0.2	18.873	----	OK	Projector
17	----	14	0.2	0.2	14.173	----	OK	Projector



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## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 9 of 14

Test Item		Theoretical Value			Results			Test equipment
NO	Dimension	Nominal	Tolerance (+)	Tolerance (-)	Measure	Out tol	Conclusion	
18	----	434	0	0.5	433.946	----	OK	CMM
19	----	247.01	0.05	0	247.014	----	OK	Projector
20	Coaxiality	0	0.02	0	0.008	----	OK	CMM
21	Perpendicularity	0	0.02	0	0.004	----	OK	CMM
22	Coaxiality	0	0.02	0	0.007	----	OK	CMM
23	Φ	19	0	0.02	18.995	----	OK	CMM
24	Φ	22.5	0	0.05	22.487	----	OK	CMM
25	----	4.5	0.1	0.1	4.481	----	OK	CMM
26	Weight	3157	90	90	3090	----	OK	Electronic balance

Note: Drawing of the sample(s) measured in this report please refer to annex.



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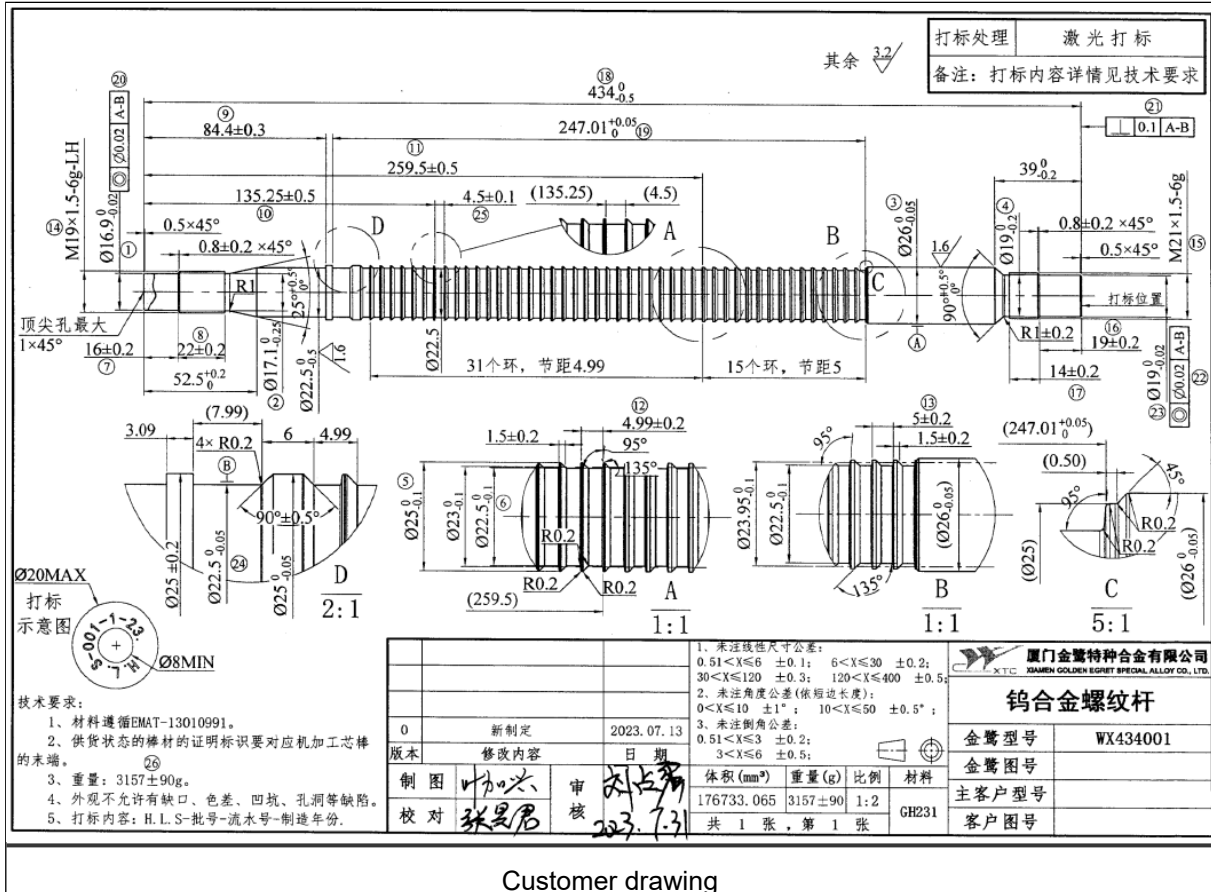
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No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 10 of 14



Customer drawing



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## TEST REPORT

No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 11 of 14

### 7. Dye Penetrant Testing (NDT)\*

Sample Name	Tungsten Threaded Rod J2H 231WX434001	Product Specification	φ22.5*434
Material and Mark	GH231	Product or Lot No.	001
Testing Method	II-C-e	Testing time	Designated by the client
Penetrant Type	HP-ST	Area Tested	Visible surface
Penetration Time	10 Min.	Surface Condition	clean
Remover	HR-ST	Sensitivity Block	B5
Developer Type	HD-ST	Viewing Condition	1565lux
Development Time	10 Min.	Testing Temperature	25°C
Testing Standard	ISO 3452-1:2021	Acceptance Criteria	Describe the actual findings
<b>Conclusion:</b> PT has been performed to 1 piece of Tungsten Threaded Rod J2H 231WX434001 based on the requirement of the client and testing standard ISO 3452-1, and no defect has been found during this testing.			

No.	Sample No.	Indication No.	Indication Type	Indication Size (mm)	Result	Remark
1.	SNT23081725	---	---	---	---	

Note:

Acc. — Acceptable	Rej. — Rejected
-------------------	-----------------

Note: \* test project/method was carried out by subcontractors.



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No. : XMIN2308001889ML01\_EN

Date : 2023-09-12

Page: 12 of 14

Attached Photos:



Fig. 1: SNT23081725 before PT

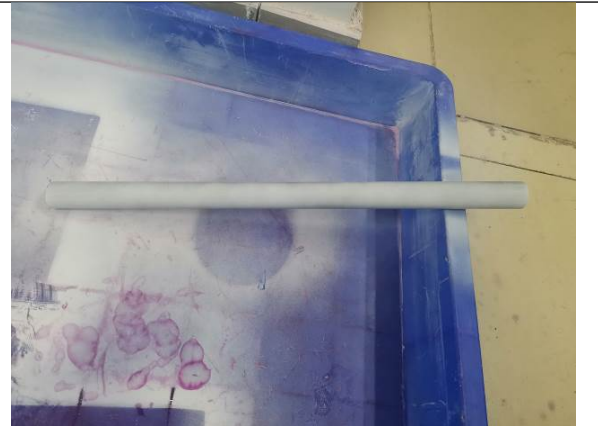


Fig. 2: SNT23081725 after PT

Photos:



Sample 001



Sample 002

## TEST REPORT

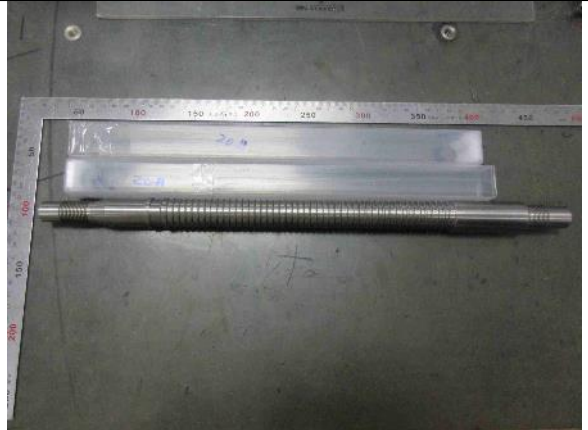
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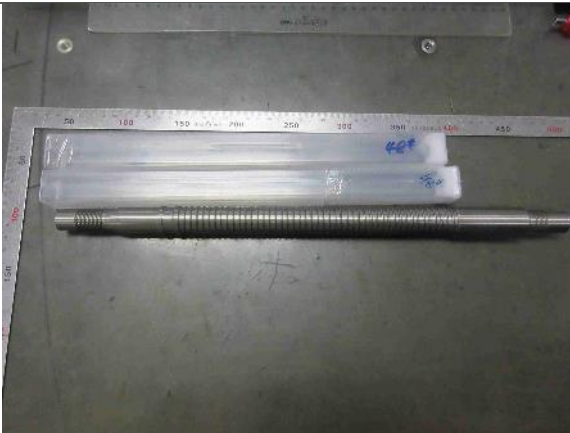
Page: 13 of 14



Sample 003



Sample 004-1



Sample 004-2



Sample 004-3



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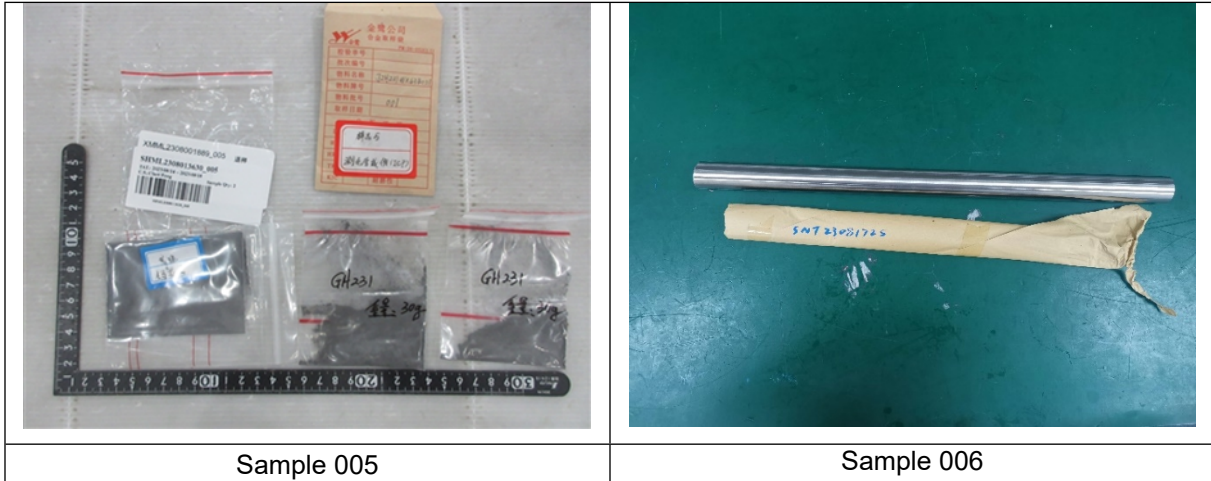
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Date : 2023-09-12

Page: 14 of 14



\*\*\*\*\*End of report\*\*\*\*\*



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