

TEST CERTIFICATE

MODISON METALS LTD.

G I D C, VAPI – 396195.

GUJARAT, INDIA.

TEL. NO.: 91-260-2424819

FAX NO.: 91-260-2429262

T.C No: 2K21 1500 DT: 29.10.2021

INV. NO.: EXP2100651 DT: 29.10.2021

DRG. NO.: 5EA.552.366

APPENDIX NO.: 80 dt.29.10.2021

contract no. 007-07122016

Consignee :

Energo profit LTD

CHAPAVE STR

14/16 OFF-9 EKATERINGBURG

6201202, RUSSIA

RUSSIA

QTY: 50 NOS

KIND ATTN: MS. ALEKSEI.N.SAIDALIEV
(TEL: +7 903 263 72 66)

PHYSICAL / CHEMICAL TESTS

COMPOSITION: WCu 25 + COPPER

WCu 25		Cu		
TEST	POWDER BATCH NO	TEST	REQUIRED	ACTUAL VALUE
Cu % BY WT.	2K21 288	Cu% BY WT.	MIN. 99.90	99.95
W % BY WT.	PLEASE REFER PAGE 2	TENSILE STRENGTH	MIN 250N/mm ²	316.23N/mm ²
DENSITY		% ELONGATION	MIN 15%	15.94 %
CONDUCTIVITY		HARDNESS	MIN 80 BHN	93 BHN
HARDNESS		CONDUCTIVITY	MIN 97 % IACS	99.8%IACS

MICROSTRUCTURE:

Uniform distribution of TUNGSTEN & COPPER particles observed. Microstructure okay. Insitu bonding of WCu with Cu found okay. E B Welding joint found okay.

DIMENSIONAL REPORT

DRAWING DIMENSION	TOLERANCE	ACTUAL DIMENSION	
		1	2
27	-0.21	26.91	26.89
Ø30	-0.21	29.92	29.90
Ø19.7	- 0.052	19.69	19.68
Ø5	+0.12	5.05	5.06
30		30.20	30.10
Ra 0.8		0.68	0.72
247	- 0.46	246.76	246.78
25	±0.5	25.2	25.1
30	±0.3	29.90	30.10
Ø10	+0.19	10.12	10.10
1x45°		OKAY	OKAY
30°		OKAY	OKAY
R1		OKAY	OKAY
R4		OKAY	OKAY
M20x1.5-6g		OKAY WITH GAUGE	
R0.5		OKAY	OKAY
3.5	±0.8	3.46	3.48
Ø17	-0.19	16.91	16.90

FNI-F-01

INSPECTED BY:


(Mahela R. R.)

SEEN BY:



TEST CERTIFICATE

CONFORMANCE TO MODISON'S WCu 25 SPECIFICATION

REFER T. C. No.: 2K21 1500 DT: 29.10.2021

FOR DRG NO.: 5EA.552.366

PROPERTIES	UNIT	REQUIRED VALUE	ACTUAL VALUE
			POWDER BATCH NO 2K21 288
Density	g/cm ³	14.6 - 15.2	14.85
Hardness	HB	180 - 220	197
Electrical Conductivity	% IACS	29.31MIN	34.5
Metallographic Aspect		Homogeneous	Homogeneous
• Grain size Distribution			
• Range	µm	1 - 15	1 - 15
• Mean size of grains of W	µm	4 - 6	4.9
Porosity			
• Quantity of pores	%	≤ 1.5	0.40
• Size of pores	µm	≤ 30	< 30

Chemical composition in %

Elements	Tungsten	Copper	Nickel	Traces
Required value	72 - 78	22 - 28	0.2 - 0.5	≤ 0.2
Actual value	74.59	24.96	0.37	0.08

NOTE:

VISUAL: Visual inspection includes surface finish, Pin holes, feed marks, burrs, dents, cracks, blow holes, inclusions, forging folds etc.

INSPECTED BY


(Mahela R. R.)

SEEN BY



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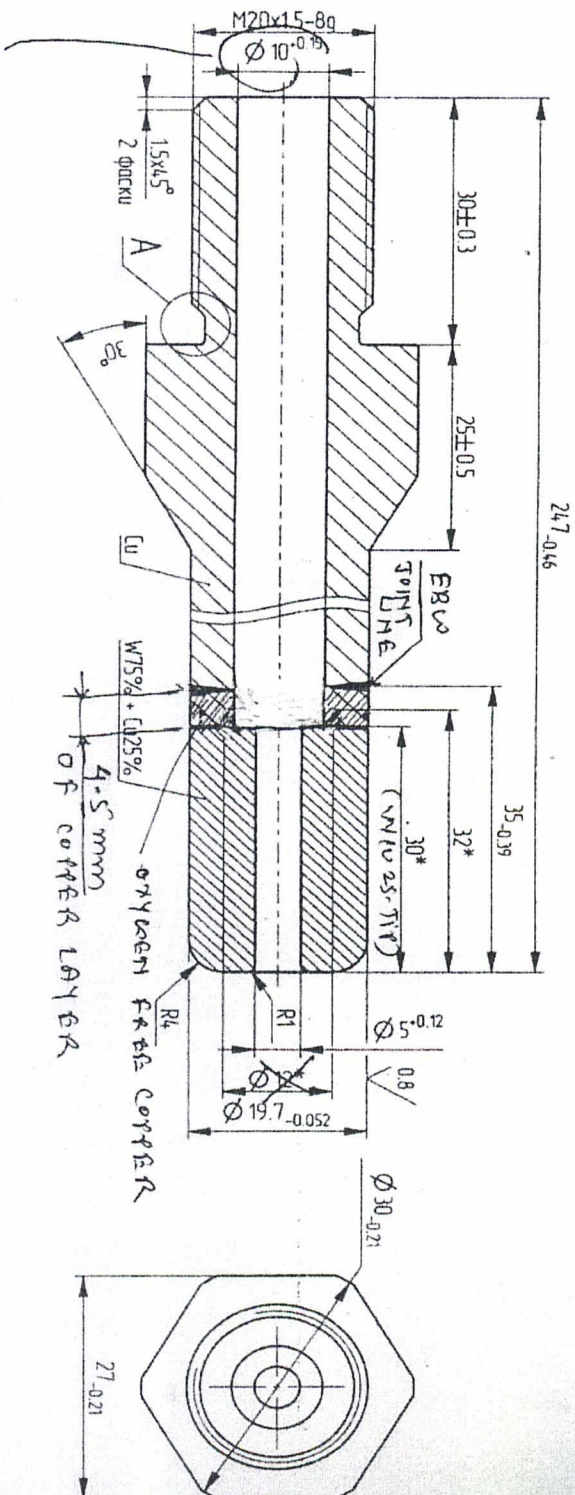
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ЗЕКУЗ 019 30KQ30

18.05.20

$$A(5:1)$$

EXTENDED BYTO CORREA TOMASTSEN
BACK SIDE



1. * Форма и размеры пазового (сварного) соединения корректируются взаимодополнением / Shape and dimensions of the brazed (welded) connection to be corrected by mutual complement

2. Острые кромок скруглять R0.2...0.5. / Blunt all sharp edges R0.2...0.5.