



BRK INDUSTRIES	MATERIAL TEST CERTIFICATE AS PER EN-10204 (2005) TYPE 3.1	QFM/QC/05 REV.STATUS:00
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BS EN 15048 PARTS 1 & 2: 2007

Party Name :-M/S. Customer. No.32	T.C. NO:-1357
Description:- Hex Set Screw /Hex Nut / Flat Washer / M16X30	Date:-25-07-2022
P.O. No:-6234582	Grade:-Set Screw-8.8SB / Hex Nut-8SB
Invoice No:- BRKEXP5036	Heat No:- 5036254 / 4856270 / 8027601
Stamped: Hex Set Screw-BRK-8.8SB/Hex Nut-BRK-8SB	Quantity:-8000Sets
Product Finish: -Electroplated	Raw Material Grade:-19MNB4
Manufacture – BRK INDUSTRIES	Assembly Batch/Lot No:-BR20220290

(1) CHEMICAL ANALYSIS MADE AS PER:BS EN-15048-1:2007 (E) & EN ISO 898-1:2013 (E) Table'2' & EN 20898-2:2012 Table'4'

HEX SET SCREW						
SIZE	Specified	C%	S%	P%	B%	Remarks
M16X30	Observation	0.29	0.004	0.018	0.002	OK

HEX NUT						
SIZE	Specified	C%	S%	P%	Mn%	Remarks
M16	Observation	0.41	0.014	0.019	0.69	OK

FLAT WASHER							
SIZE	Specified	C%	S%	P%	Mn%	Si%	Remarks
M16	Observation	0.11	0.014	0.017	0.54	0.13	OK

(2) MECHANICAL CHARACTERISTIC OF THE COMPONENT MADE AS PER:BS EN-15048-1:2007 (E) TABLE 12 BS EN-15048-2: 2007 (E) & EN ISO:898-1-2013 (E) TABLE-3

HEX SET SCREW M16X30										
Pieces Checked		Stress under Wedge Load (KN)	Stress Under Proof Load (KN)	Suitability Test Tensile resistance of Bolt & Nut assembly (KN)	Impact Strength (J)	Tensile Strength (MPa)	Stress at 0.2 % non proportional elongation (MPa)	Reduction of Area (%)	Elongation (%)	Rockwell Hardness (HRC)
5 Pcs for Each Test per Assembly Lot As Per: EN 15048-1 & 2:2007 (E),TABLE:16	Specified	130.000 Min	94.500-Min	130.000 Min	27J Av. Min. @ - 20 Deg. C	830-Min	660-Min	52-Min	12-Min	23-34
	Observation	142.700	95.500	143.900	N.A	N.A	N.A	N.A	N.A	30
		145.100	96.700	144.200	N.A	N.A	N.A	N.A	N.A	29
		143.400	97.100	145.300	N.A	N.A	N.A	N.A	N.A	31
		146.100	95.300	142.700	N.A	N.A	N.A	N.A	N.A	29
		143.300	95.800	143.200	N.A	N.A	N.A	N.A	N.A	28

HEX NUT AS PER – BS EN-15048-1:2007 (E) Table 13 / EN ISO 898- 2 :2012 Table 5 & 6

Size	Specified	Pieces Checked	Vickers Hardness (HV)	Stress Under Proof Load (KN)
HEX NUT M16	Observation	5Pcs for Each Test per Assembly Lot As Per EN 15048-1:2007 (E) TABLE:16	200-302	138.200
			252,255,259,262,266	140.100,141.800,139.800,140.800 ,139.500

FLAT WASHER AS PER – BS EN 15048 – 1: 2007 (E)

Size	Specified	Pieces Checked	Vickers Hardness 100HV-Min
Flat washer M16	Observation	5Pcs For Each Test Per Assembly Lot As Per: BS EN-15048-1: 2007 (E) TABLE:16	148,152,155,158,161





(3) DIMENSIONS CHECKED AS PER ISO:4017:2000 BS EN-15048-1:2007 (E) Table '9'

ITEM DESCRIPTION		HEX SET SCREW									
PARAMETERS		Pieces Checked	Width Across flats (s)	Width Across corners (e)	Head Height (K)	Major Dia (md)	Thread Length (b)	Shank Length (ls)	Grip Length (lg)	Total Length h (l)	Thread Dimensions
Specified »	Min »	200Pcs	23.67	26.75	9.82	15.68	N.A	N.A	N.A	± 0.42	Checked With Thread Ring Gauge Go - No Go M16-6g & found OK
	Max »		24.00	---	10.18	15.96	---	---	---		
HEX SET SCREW M16X30			23.76	27.05	9.92	15.77	N.A	N.A	N.A	30.05	
		23.97	27.26	10.16	15.85				30.40		

DIMENSIONS CHECKED AS PER ISO:4032:2000 / BS EN-15048-1:2007 (E) Table '10'

ITEM DESCRIPTION		HEX NUT				
PARAMETERS		Pieces Checked	Width Across Flats (s)	Width Across Corners (e)	Height (m)	Thread Dimensions
Specified »	Min »	200Pcs	23.67	26.75	14.10	Checked With Thread Plug Gauge Go-No-Go M16-6H & found OK
	Max »		24.00	---	14.80	
HEX NUT M16			23.78	27.09	14.35	
		23.97	27.28	14.76		

DIMENSIONS CHECKED AS PER ISO:7091:2000 / BS EN-15048-1:2007 (E) Table '11'

ITEM DESCRIPTION		Flat Washer			
PARAMETERS		Pieces Checked	Internal Diameter (ID)	Outside Diameter (OD)	Thickness (T)
Specified »	MIN »	200Pcs	17.50	28.70	2.40
	MAX »		17.93	30.00	3.60
FLAT WASHER M16			17.61	29.42	2.93
		17.86	29.78	3.16	

ELECTROPLATED COATING TEST AS PER :-ISO-4042:1999

ITEM DESCRIPTION	Pieces Checked	Coating Thickness Required Min 8µm	Coating Thickness Observation
HEX SET SCREW M16X30	05Pcs	8µm	11,13,15,14,16 µm
HEX NUT M16	05Pcs	8µm	12,14,16,17,15 µm
FLAT WASHER M16	05Pcs	8µm	11,13,15,14,16 µm

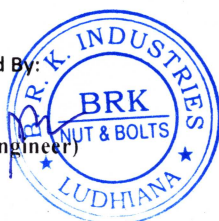
VISUAL INSPECTION AS PER ISO 6157-PART I & 6157- PART II

Observation: No Surface Discontinuities observed on the Material and Found Satisfactory.

ALL PRODUCTS HAVE BEEN TESTED AND COMPLY IN ALL ASPECTS TO BS EN 15048 PARTS 1 & 2.

We hereby certify that all the above results are original from our factories actual Testing and the products have proved to comply with the relevant standard.

Prepared By:



(Q.A. Engineer)

Approved By:

(Authorized)



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