



WINDLASS ENGINEERS & SERVICES, INC.

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sales@windlassoilequipment.com
www.windlassengineers.com

Material Certificate

Item Description: Hammer Union, 6" Fig 200, Threaded Ends, Std Service

Cold Working Pressure: 2000

Batch Number: HU210033

Quantity: 50 Nos.

Bill of Material

Item	Material Grade	Heat Number
Male	ASTM A 105	AAO9
Female	ASTM A 105	AAL2
Nut	ASTM A 105	AAM5I

Checked By Manager QA

Windlass Engineers & Services

Material Test Certificate

Certificate No. : WMTR_065559

**WE HEREBY CONFIRM THAT THE CERTIFICATE COMPLIES TO THE REQUIREMENTS OF
BS EN ISO 10204:2004 - 3.1**

This certificate has been issued by a QA Department independent of the Manufacturing Department

- We hereby certify that the equipment described below was manufactured and tested in accordance with the requirements of API 6A for the stated cold working pressure.
- Surface NDT has been carried out by ASNT Level II operator in accordance with ASTM E709 for ferromagnetic materials or ASTM E165 for non-ferromagnetic materials. Acceptance criteria in accordance with API 6A PSL 3.
- The equipment has been manufactured in accordance with requirements of NACE MR 0175 for H2S Service.

We hereby conclude that the equipment is fit for service and pressure as indicated below.

WSD No.		Batch No.	BID210927
Cust PO No.		Cust PO Dt.	
Customer			
Item	Male Sub, 6" FIG 200, Threaded Ends, Std. Service		
Max CWP (PSI)	2000		
Service	Standard Service		
Quantity	50		
Heat No.	AAD9		
Material Grade	ASTM A 105		

Chemical Analysis & Mechanical Properties

C %	Mn %	Si %	S %	P %	Cr %	Mo %	Ni %	V %	Al %
0.304	0.748	0.195	0.019	0.028	-	-	-	-	-
Hardness (BHN)	Tensile Strength (N/Sq.mm)	Yield Strength (N/Sq.mm)	Elongation (%)	Reduction in Area (%)	Impact Test Temp. (Deg C)	Impact (Joules) J1	Impact (Joules) J2	Impact (Joules) J3	Impact (Joules) Avg
154.000	497.630	269.390	37.400	64.040	-	-	-	-	-

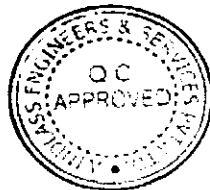
Heat Treat Condition

Normalizing at 900 °C, Media Air - 2 Hours.

CVN Specimen Size : 10 mm x 10 mm

Remarks

Date: 03-06-2021



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Certified By Manager QA

Windlass Engineers & Services Pvt. Ltd.



WINDLASS ENGINEERS & SERVICES PVT. LTD.

VPO Balawala, Haridwar Road, Dehradun, India - 248 161

Ph : +91-135-2686470, Fax : +91-135-2686622, E-mail : sales@windlassengineers.com

Material Test Certificate

Certificate No. : WMTR_065560

**WE HEREBY CONFIRM THAT THE CERTIFICATE COMPLIES TO THE REQUIREMENTS OF
BS EN ISO 10204:2004 - 3.1**

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- We hereby certify that the equipment described below was manufactured and tested in accordance with the requirements of API 6A for the stated cold working pressure.
- Surface NDT has been carried out by ASNT Level II operator in accordance with ASTM E709 for ferromagnetic materials or ASTM E165 for non-ferromagnetic materials. Acceptance criteria in accordance with API 6A PSL 3.
- The equipment has been manufactured in accordance with requirements of NACE MR 0175 for H2S Service.

We hereby conclude that the equipment is fit for service and pressure as indicated below

WSD No.		Batch No.	BID210904
Cust PO No.		Cust PO Dt.	
Customer			
Item	Female Sub, 6" FIG 200, Threaded Ends, Std. Service		
Max CWP (PSI)	2000		
Service	Standard Service		
Quantity	50		
Heat No.	AAL2		
Material Grade	ASTM A 105		

Chemical Analysis & Mechanical Properties

C %	Mn %	Si %	S %	P %	Cr %	Mo %	Ni %	V %	Al %
0.329	0.701	0.170	0.018	0.018	-	-	-	-	-
Hardness (BHN)	Tensile Strength (N/Sq.mm)	Yield Strength (N/Sq.mm)	Elongation (%)	Reduction in Area (%)	Impact Test Temp. (Deg C)	Impact (Joules) J1	Impact (Joules) J2	Impact (Joules) J3	Impact (Joules) Avg
156.000	536.482	340.321	35.760	65.190	-	-	-	-	-

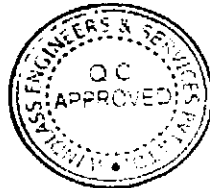
Heat Treat Condition

Normalizing at 900 °C, Media Air - 2 Hours.

CVN Specimen Size : 10 mm x 10 mm

Remarks

Date: 03-06-2021



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Material Test Certificate

Certificate No. : WMTR_065564

**WE HEREBY CONFIRM THAT THE CERTIFICATE COMPLIES TO THE REQUIREMENTS OF
BS EN ISO 10204:2004 - 3.1**

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- We hereby certify that the equipment described below was manufactured and tested in accordance with the requirements of API 6A for the stated cold working pressure.
- Surface NDT has been carried out by ASNT Level II operator in accordance with ASTM E709 for ferromagnetic materials or ASTM E165 for non-ferromagnetic materials. Acceptance criteria in accordance with API 6A PSL 3.
- The equipment has been manufactured in accordance with requirements of NACE MR 0175 for H2S Service.

We hereby conclude that the equipment is fit for service and pressure as indicated below.

WSD No.		Batch No.	BID210966
Cust PO No.		Cust PO Dt.	
Customer			
Item	Nut, 6" FIØ 200, Std. Service		
Max CWP (PSI)	2000		
Service	Standard Service		
Quantity	10		
Heat No.	AAM51		
Material Grade	ASTM A 105		

Chemical Analysis & Mechanical Properties

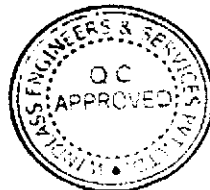
C %	Mn %	Si %	S %	P %	Cr %	Mo %	Ni %	V %	Al %
0.305	0.724	0.161	0.027	0.024	-	-	-	-	-
Hardness (BHN)	Tensile Strength (N/Sq.mm)	Yield Strength (N/Sq.mm)	Elongation (%)	Reduction in Area (%)	Impact Test Temp. (Deg C)	Impact (Joules) J1	Impact (Joules) J2	Impact (Joules) J3	Impact (Joules) Avg
156.000	576.710	402.270	34.650	74.360	-	-	-	-	-

Heat Treat Condition: Normalizing at 900 °C, Media Air - 2 Hours.

CVN Specimen Size : 10 mm x 10 mm

Remarks:

Date: 03-08-2021



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Material Test Certificate

Certificate No. : WMTR_065563

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- Surface NDT has been carried out by ASNT Level II operator in accordance with ASTM E709 for ferromagnetic materials or ASTM E165 for non-ferromagnetic materials. Acceptance criteria in accordance with API 6A PSL 3.
- The equipment has been manufactured in accordance with requirements of NACE MR 0175 for H2S Service.

We hereby conclude that the equipment is fit for service and pressure as indicated below.

WSO No.		Batch No.	BID205074
Cust PO No.		Cust PO Dt.	
Customer			
Item	Nut, 6" FIG 200, Std. Service		
Max CWP (PSI)	2000		
Service	Standard Service		
Quantity	20		
Heat No.	AAM51		
Material Grade	ASTM A 105		

Chemical Analysis & Mechanical Properties

C %	Mn %	Si %	S %	P %	Cr %	Mo %	Ni %	V %	Al %
0.305	0.724	0.161	0.027	0.024	-	-	-	-	-
Hardness (BHN)	Tensile Strength (N/Sq.mm)	Yield Strength (N/Sq.mm)	Elongation (%)	Reduction in Area (%)	Impact Test Temp. (Deg C)	Impact (Joules) J1	Impact (Joules) J2	Impact (Joules) J3	Impact (Joules) Avg
156.000	576.710	402.270	34.650	74.360	-	-	-	-	-

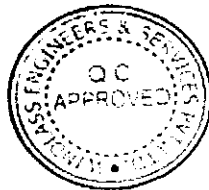
Heat Treat Condition

Normalizing at 900 °C, Media Air - 2 Hours.

CVN Specimen Size : 10 mm x 10 mm

Remarks

Date: 03-06-2021



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Material Test Certificate

Certificate No. : WMTR_065562

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- Surface NDT has been carried out by ASNT Level II operator in accordance with ASTM E709 for ferromagnetic materials or ASTM E165 for non-ferromagnetic materials. Acceptance criteria in accordance with API 6A PSL 3.
- The equipment has been manufactured in accordance with requirements of NACE MR 0175 for H2S Service.

We hereby conclude that the equipment is fit for service and pressure as indicated below:

WSD No.		Batch No.	BID210740
Cust PO No.		Cust PO Dt.	
Customer			
Item	Nut, 6" Flg 200, Std. Service		
Max CWP (PSI)	2000		
Service	Standard Service		
Quantity	10		
Heat No.	AAM51		
Material Grade	ASTM A 105		

Chemical Analysis & Mechanical Properties

C %	Mn %	Si %	S %	P %	Cr %	Mo %	Ni %	V %	Al %
0.305	0.724	0.161	0.027	0.024	-	-	-	-	-
Hardness (BHN)	Tensile Strength (N/Sq.mm)	Yield Strength (N/Sq.mm)	Elongation (%)	Reduction in Area (%)	Impact Test Temp. (Deg C)	Impact (Joules) J1	Impact (Joules) J2	Impact (Joules) J3	Impact (Joules) Avg
158.000	576.710	402.270	34.650	74.360	-	-	-	-	-

Heat Treat Condition

Normalizing at 900 °C, Media Air - 2 Hours.

CVN Specimen Size : 10 mm x 10 mm

Remarks

Date: 03-06-2021



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Material Test Certificate

Certificate No. : WMTR_065561

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- Surface NDT has been carried out by ASNT Level II operator in accordance with ASTM E709 for ferromagnetic materials or ASTM E165 for non-ferromagnetic materials. Acceptance criteria in accordance with API 6A PSL 3.
- The equipment has been manufactured in accordance with requirements of NACE MR 0175 for H2S Service.

We hereby conclude that the equipment is fit for service and pressure as indicated below.

WSD No.		Batch No.	BID205603
Cust PO No.		Cust PO Dt.	
Customer			
Item	Nut, 6" FIG 200, Std. Service		
Max CWP (PSI)	2000		
Service	Standard Service		
Quantity	10		
Heat No.	AAM51		
Material Grade	ASTM A 105		

Chemical Analysis & Mechanical Properties

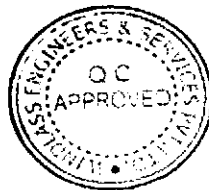
C %	Mn %	Si %	S %	P %	Cr %	Mo %	Ni %	V %	Al %
0.305	0.724	0.161	0.027	0.024	-	-	-	-	-
Hardness (BHN)	Tensile Strength (N/Sq.mm)	Yield Strength (N/Sq.mm)	Elongation (%)	Reduction in Area (%)	Impact Test Temp. (Deg C)	Impact (Joules) J1	Impact (Joules) J2	Impact (Joules) J3	Impact (Joules) Avg
156.000	576.710	402.270	34.650	74.360	-	-	-	-	-

Heat Treat Condition: Normalizing at 900 °C, Media Air - 2 Hours.

CVN Specimen Size : 10 mm x 10 mm

Remarks:

Date: 03-06-2021



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