



# MILL TEST CERTIFICATE

PANTECH STAINLESS & ALLOY INDUSTRIES SDN. BHD. (733428W)  
(A MEMBER OF PANTECH GROUP HOLDINGS BERHAD, LISTED ON MAIN MARKET OF BURSA MALAYSIA)

FTD 204334, JALAN PLATINUM UTAMA,  
KAWASAN PERINDUSTRIAN PASIR GUDANG, ZON 12R, 81700 PASIR GUDANG  
JOHOR DARUL TAKZIM, MALAYSIA  
Tel: +607-2518888 Fax: +607-2519999 E-mail: info@pantechsteel.com  
http://www.pantech-group.com



Cert. No.: PC0004871



Certified to NSF/ANSI 61



Cert. No.: ISO9001-0047465



Sarabhaijaya Perlehdimalan Air Mesera  
NO. SUIL PENDAFTARAN: SPAN/BR/300-10/553/A/W-1

MATERIAL MANUFACTURER APPROVAL ACCORDING TO PED 2014/68/EU ANNEX 1, PAR 4.3.  
PED CERTIFICATE NO.: 0038/PED/MUM/1110006/1

Customer : Unimech Engineering (M) Sdn Bhd  
Product : Welded Austenitic Stainless Steel Pipe

Certificate No : PSA2-25837  
Date : 31/12/2020

INSPECTION DOCUMENT: EN 10204: 2004 Type 3.1

PO No.	Invoice No.	Product Specification		Dimensional & Inspection Specification				Delivery Condition				
		ASTM A312/A312M - 19 / ASME SA312/SA312M - 19	ASTM A999/A999M - 18 / ASME SA999/SA999M - 19	B 36.19M-04 & B36.10M-04	Solution Treated, Pickled-Passivated, Plain Ends Square Cuf	Hydrostatic Test	Dimensional / PMI/ Visual Inspection					
Heat No.	Size	Grade	Quantity (Length)	Non Destructive Test		Inter-Granular Corrosion Test	Pressure / Hold	Result	Dimensional / PMI/ Visual Inspection			
JG096-10	1 1/2 inch Sch 40S x 6M	TP 304/304L	41	Eddy Current	Flattening	PASSED	2500 PSI. 5s	PASSED	GOOD			
JG101-10	1 1/2 inch Sch 40S x 6M	TP 304/304L	12	PASSED	PASSED	PASSED	2500 PSI. 5s	PASSED	GOOD			
Specification	Chemical Composition (%)											
	C	Si	Mn	P	S	Cr	Ni	Pb	YS (ksi / MPa)	TS	E (%)	Hardness, HRB
Max	1.00	2.00	0.045	0.030	20.00	11.00	-	-	-	-	90	
Min	-	-	-	-	-	18.00	8.00	-	205	515	35	
Heat No.	0.024	0.43	1.19	0.025	0.001	18.17	8.04	< 0.01	356	644	51	
JG096-10	0.027	0.42	1.20	0.028	0.001	18.24	8.03	< 0.01	367	690	50	
JG101-10												

WE HEREBY CERTIFY THAT THE PRODUCT DESCRIBED HEREIN HAS BEEN MANUFACTURED, SAMPLED, TESTED & INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE SPECIFICATION & PURCHASE ORDER.

AND WAS FOUND SATISFIED TO THE REQUIREMENTS. MATERIAL IS FREE FROM MERCURY & RADIOACTIVE CONTAMINATION.

TENSILE REQUIREMENT: CONFORMS TO ASTM A370 - 12a STANDARD, SPECIMEN GAUGE WIDTH 19.7MM. FOR 1" ABOVE, 1" INCLUDE AND BELOW DIRECT TEST FROM PIPE. LONGITUDINAL DIRECTION, GAUGE LENGTH 2" (50mm)

NOTE: MADE IN MALAYSIA STEEL MAKING PROCESS: AOD / VOD

WELDED BY ELECTRIC FUSION WELDING WITH PROCESS WITH NO FILLER METAL

INTERGRANULAR CORROSION TEST ACCORDING TO ASTM A262-10 PRACTICE E

HARDNESS ACCORDING TO NACE-MR0175-2015 / ISO 15156-2012 & NACE-MR0103-2015

HEAT TREATMENT: SOLUTION TREATED AT MINIMUM 1050°C, RAPIDLY COOLED WITH WATER

CHEMICAL COMPOSITION CAPTURED FROM RAW MATERIALS HEAT ANALYSIS

\*1: YS: YIELD STRENGTH TS: TENSILE STRENGTH E: ELONGATION

\*2: NH: Not Hydrostatically Tested

EDDY CURRENT ACCORDING TO ASTM E476-98 (Reapproved 2003),<sup>†</sup> REQUIREMENTS (REFERENCE TO ASTM A999/A999M-12 REQUIREMENTS, DISCONTINUITY ACC. TO CLAUSE 22.3.8.4, PROCEDURE ACC. TO CLAUSE 22.3.9)

Head of Quality Assurance Department



# MILL TEST CERTIFICATE

PANTECH STAINLESS & ALLOY INDUSTRIES SDN. BHD. (733428W)  
(A MEMBER OF PANTECH GROUP HOLDINGS BERHAD, LISTED ON MAIN MARKET OF BURSA MALAYSIA)

PTD 204334, JALAN PLATINUM UTAMA,  
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http://www.pantech-group.com



Cert. No.: ISO9001-0047465

Certified to NSF/ANSI 61

MATERIAL MANUFACTURER APPROVAL ACCORDING TO PED 2014/68/EU, ANNEX 1, PAKA 4.3.  
PED CERTIFICATE NO.: 00936/PED/MUM/1110006/1



Suruhanjaya Perindustrian Ahi Kerajaan  
NO. SUJIL PENDAFTARAN : SPAN/BPI/300-10/553/A/W-1

INSPECTION DOCUMENT: EN 10204, 2004 Type 3.1

Customer : Unimech Engineering (M) Sdn Bhd  
Product : Welded Austenitic Stainless Steel Pipe

Certificate No : PSA2-25772  
Date : 21/12/2020

PO No.	Invoice No.	Product Specification	Dimensional & Inspection Specification	Delivery Condition								
APO-2010-0060	L000010912	ASTM A312/A312M - 19 / ASME SA312/SA312M - 19	ASTM A999/A999M - 18 / ASME SA999/SA999M - 19 B 36.19M-04 & B36 10M-04	Solution Treated, Pickled-Passivated, Plain Ends Square Cut								
Heat No.	Size	Grade	Quantity (Length)	Non Destructive Test								
JG099-10	4 Inch Sch 40S x 6M	TP 304/304L	14	Eddy Current PASSED Flattening PASSED								
				Inter-Granular Corrosion Test PASSED								
				Hydrostatic Test Pressure / Hold 2500 PSI, 5s PASSED								
				Dimensional / PMI / Visual Inspection GOOD								
Chemical Composition (%)												
Specification	C	Si	Mn	P	S	Cr	Ni	Pb	Tensile Test <sup>†1</sup>		Hardness, HRB	Remarks
	0.035	1.00	2.00	0.045	0.030	20.00	11.00	-	YS (+61 / MPa)	TS (%)		
Min	-	-	-	-	-	18.00	8.00	-	205	515	35	90
Heat No.						18.08	8.03	< 0.01	364	673	48	83
JG099-10												

WE HEREBY CERTIFY THAT THE PRODUCT DESCRIBED HEREIN HAS BEEN MANUFACTURED, SAMPLED, TESTED & INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE SPECIFICATION & PURCHASE ORDER, AND WAS FOUND SATISFIED TO THE REQUIREMENTS. MATERIAL IS FREE FROM MERCURY & RADIOACTIVE CONTAMINATION.

TENSILE REQUIREMENT: CONFORMS TO ASTM A370 - 12a STANDARD, SPECIMEN GAUGE WIDTH 19.2MM FOR 1" ABOVE, 1" INCLUDE AND BELOW DIRECT TEST FROM PIPE, LONGITUDINAL DIRECTION, GAUGE LENGTH 12" (50mm)

NOTE: MADE IN MALAYSIA STEEL MAKING PROCESS: AOD / VOD

WELDED BY ELECTRIC FUSION WELDING WITH PROCESS WITH NO FILLER METAL

INTERGRANULAR CORROSION TEST ACCORDING TO ASTM A262-10 PRACTICE E

HARDNESS ACCORDING TO NACE-MR0175-2015 / ISO 15156-2015 & NACE-MR0105-2015

HEAT TREATMENT: SOLUTION TREATED AT MINIMUM 1050°C, RAPIDLY COOLED WITH WATER

CHEMICAL COMPOSITION CAPTURED FROM RAW MATERIAL'S HEAT ANALYSIS

\*1: YS, YIELD STRENGTH TS, TENSILE STRENGTH E, ELONGATION

\*2: NEE Not Hydrostatically Tested

EDDY CURRENT ACCORDING TO ASTM E26-98 (Reapproval 2009)<sup>†1</sup> REQUIREMENTS (REFERENCE TO ASTM A999/A999M-12 REQUIREMENTS, DISCONTINUITY ACC. TO CLAUSE 22.3.3 & 4, PROCEDURE ACC. TO CLAUSE 22.3.9)

OAC  
MANAGER  
HASSANUDDIN  
PANTECH STAINLESS & ALLOY INDUSTRIES SDN. BHD.

Head of Quality Assurance Department



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http://www.pantech-group.com



Cert. No.: PC004871



Suruhanjaya Perkhidmatan Air, Regulator  
NO. SIJIL PENDAFTARAN : SPAN/PP/300-10/553/A/W-1



Certified to NSF/ANSI 61



Cert. No.: ISO9001-0047465

MATERIAL MANUFACTURER APPROVAL ACCORDING TO PED 2014/68/EU, ANNEX 1, PARA 4.3.  
PED CERTIFICATE NO.: 0038/PED/MUM/1110006/1

Certificate No : PSA2-25777  
Date : 21/12/2020

Customer : Unimech Engineering (M) Sdn Bhd  
Product : Welded Austenitic Stainless Steel Pipe

INSPECTION DOCUMENT: EN 10204: 2004 Type 3.1

PO No.	Invoice No.	Product Specification		Dimensional & Inspection Specification						Delivery Condition																																																																																																																					
		ASTM A312/A312M - 19 / ASME SA312/SA312M - 19	ASTM A999/A999M - 18 / ASME SA999/SA999M - 19	ASTM A999/A999M - 18 / ASME SA999/SA999M - 19	B 36.19M-04 & B36.10M-04	Solution Treated, Pickled-Passivated, Plain Ends Square Cut	Hydrostatic Test		Dimensional /PMI/ Visual Inspection																																																																																																																						
Heat No.	Size	Grade	Quantity (Length)	Non Destructive Test		Inter-Granular Corrosion Test		Pressure / Hold		Result																																																																																																																					
JG095-10	1 inch Sch 40S x 6M	TP 304/304L	27	Eddy Current	Flattening	PASSED	PASSED	2500 PSI, 5s	2500 PSI, 5s	PASSED	GOOD																																																																																																																				
JS130-10	1 inch Sch 40S x 6M	TP 304/304L	64	PASSED	PASSED	PASSED	PASSED	2500 PSI, 5s	2500 PSI, 5s	PASSED	GOOD																																																																																																																				
<table border="1"> <thead> <tr> <th rowspan="2">Specification</th> <th colspan="10">Chemical Composition (%)</th> <th colspan="2">Tensile Test<sup>1</sup></th> <th rowspan="2">Hardness, HRB</th> <th rowspan="2">Remarks</th> </tr> <tr> <th>C</th> <th>Si</th> <th>Mn</th> <th>P</th> <th>S</th> <th>Cr</th> <th>Ni</th> <th>Pb</th> <th>YS (KSI) / MPa</th> <th>TS</th> <th>E (%)</th> </tr> </thead> <tbody> <tr> <td>Max</td> <td>0.035</td> <td>1.00</td> <td>2.00</td> <td>0.045</td> <td>0.030</td> <td>20.00</td> <td>11.00</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>90</td> <td></td> <td></td> </tr> <tr> <td>Min</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>18.00</td> <td>8.00</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td></td> <td></td> </tr> <tr> <td>Heat No.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>JG095-10</td> <td>0.024</td> <td>0.43</td> <td>1.19</td> <td>0.025</td> <td>0.001</td> <td>18.17</td> <td>8.04</td> <td>&lt; 0.01</td> <td>205</td> <td>515</td> <td>35</td> <td>83</td> <td></td> <td></td> </tr> <tr> <td>JS130-10</td> <td>0.018</td> <td>0.45</td> <td>1.04</td> <td>0.030</td> <td>0.001</td> <td>18.11</td> <td>8.01</td> <td>&lt; 0.01</td> <td>348</td> <td>660</td> <td>54</td> <td>83</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>410</td> <td>793</td> <td>50</td> <td>83</td> <td></td> <td></td> </tr> </tbody> </table>												Specification	Chemical Composition (%)										Tensile Test <sup>1</sup>		Hardness, HRB	Remarks	C	Si	Mn	P	S	Cr	Ni	Pb	YS (KSI) / MPa	TS	E (%)	Max	0.035	1.00	2.00	0.045	0.030	20.00	11.00	-	-	-	-	90			Min	-	-	-	-	-	18.00	8.00	-	-	-	-	-			Heat No.															JG095-10	0.024	0.43	1.19	0.025	0.001	18.17	8.04	< 0.01	205	515	35	83			JS130-10	0.018	0.45	1.04	0.030	0.001	18.11	8.01	< 0.01	348	660	54	83												410	793	50	83		
Specification	Chemical Composition (%)										Tensile Test <sup>1</sup>		Hardness, HRB	Remarks																																																																																																																	
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TENSILE REQUIREMENT: CONFORMS TO ASTM A370 - 12a STANDARD. SPECIMEN GAUGE WIDTH 19.2MM FOR 1" ABOVE, 1" INCLUDE AND BELOW DIRECT TEST FROM PIPE. LONGITUDINAL DIRECTION. GAUGE LENGTH 2" (50mm)

NOTE: MADE IN MALAYSIA STEEL MAKING PROCESS: AOD / VOD

WELDED BY ELECTRIC FUSION WELDING WITH PROCESS WITH NO FILLER METAL

INTERGRANULAR CORROSION TEST ACCORDING TO ASTM A262-10 PRACTICE E

HARDNESS ACCORDING TO NACE-MR0175-2015 / ISO 15156-2015 & NACE-MR0163-2015

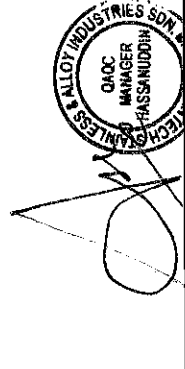
HEAT TREATMENT: SOLUTION TREATED AT MINIMUM 1030°C, RAPIDLY COOLED WITH WATER

CHEMICAL COMPOSITION CAPTURED FROM RAW MATERIAL'S HEAT ANALYSIS

\*1: YS: YIELD STRENGTH TS: TENSILE STRENGTH E: ELONGATION

\*2: NH: Not Hydrochemically Treated

EDDY CURRENT ACCORDING TO ASTM E426-98 (Reapproved 2003)<sup>41</sup> REQUIREMENTS (REFERENCE TO ASTM A999/A999M-12 REQUIREMENTS, DISCONTINUITY ACC. TO CLAUSE 22.3.8.4. PROCEDURE ACC. TO CLAUSE 22.3.9)



Head of Quality Assurance Department

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 Product : Welded Austenitic Stainless Steel Pipe



Cert. No.: ISO9001-0047465

Certified to NSF/ANSI 61

MATERIAL MANUFACTURER APPROVAL ACCORDING TO PED 2014/68/EU, ANNEX 1, PARA 4.3.  
 PED CERTIFICATE NO.: 0038/PED/MUM/1110006/1



Suruhanjaya Perkhidmatan Air Negara  
 NO. SIUL PENDAFTARAN: SPAN/BPI/300-10/553/A/W-1

Certificate No : PSA2-25946  
 Date : 20/01/2021

PO No.	Invoice No.	Product Specification	Dimensional & Inspection Specification	Delivery Condition										
APO-2012-0039	L000011090	ASTM A312/A312M - 19 / ASME SA312/SA312M - 19	ASTM A999/A999M - 18 / ASME SA999/SA999M - 19 B 36.19M- 2018 & B36.10M-2018	Solution Treated, Pickled-Passivated, Plain Ends Square Cut										
Heat No.	Size	Grade	Quantity (Length)	Non Destructive Test			Inter-Granular Corrosion Test		Hydrostatic Test		Dimensional / PMI / Visual Inspection			
				Eddy Current	Flattening	Flattening	PASSED	PASSED	PASSED	Pressure / Hold		Result		
JG162-10	1 inch Sch 40S x 6M	TP 304/304L	11	PASSED	PASSED	PASSED	PASSED	PASSED	2500 PSI, 5s	PASSED	GOOD			
JG165-10	1 inch Sch 40S x 6M	TP 304/304L	216	PASSED	PASSED	PASSED	PASSED	PASSED	2500 PSI, 5s	PASSED	GOOD			
JG166-10	1 inch Sch 40S x 6M	TP 304/304L	46	PASSED	PASSED	PASSED	PASSED	PASSED	2500 PSI, 5s	PASSED	GOOD			
Specification		Chemical Composition (%)												
		C	Si	Mn	P	S	Cr	Ni	Pb	Tensile Test <sup>1)</sup>		Hardness, HRB		Remarks
Max	0.035	1.00	0.41	2.00	0.045	0.030	20.00	11.00	-	YS	TS	E	(%)	
Min	-	-	-	-	-	-	18.00	8.00	-	-	-	-	90	
Heat No.										205	515	35	-	
JG162-10										355	653	60	88	
JG165-10										352	651	52	89	
JG166-10										350	662	58	84	

WE HEREBY CERTIFY THAT THE PRODUCT DESCRIBED HEREIN HAS BEEN MANUFACTURED, SAMPLED, TESTED & INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE SPECIFICATION & PURCHASE ORDER.

AND WAS FOUND SATISFIED TO THE REQUIREMENTS. MATERIAL IS FREE FROM MERCURY & RADIOACTIVE CONTAMINATION.

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NOTE: MADE IN MALAYSIA STEEL MAKING PROCESS: AOD / VOD

WELDED BY ELECTRIC FUSION WELDING WITH PROCESS WITH NO FILLER METAL

INTERGRANULAR CORROSION TEST ACCORDING TO ASTM A362-10 PRACTICE E

HARDNESS ACCORDING TO NACE-MR0175-2015 / ISO 15156-2015 & NACE-MR0103-2015

HEAT TREATMENT: SOLUTION TREATED AT MINIMUM 1050°C, RAPIDLY COOLED WITH WATER

CHEMICAL COMPOSITION CAPTURED FROM RAW MATERIAL'S HEAT ANALYSIS

\*1: YS: YIELD STRENGTH TS: TENSILE STRENGTH E: ELONGATION

EDDY CURRENT ACCORDING TO ASTM F426-98 (Reapproved 2003) \*2: REQUIREMENTS (REFERENCE TO ASTM A999/A999M-18 REQUIREMENTS, DISCONTINUITY ACC. TO CLAUSE 2.3.3.8.4, PROCEDURE ACC. TO CLAUSE 2.3.3.9)

\*2: NH: Non Hydrostatically Tested

*(Signature)*  
 CAQC MANAGER  
 HASANAUDDIN  
 PANTECH STAINLESS & ALLOY INDUSTRIES SDN. BHD.

Head of Quality Assurance Department