

LOTE 18				
TIPO	Ø EXT.	ESPESSURA	COMPRIMENTO	QUANT. TUBOS
S355J2H	76,1	6,3	12,69	10
	76,1	6,3	6,64	1
	76,1	6,3	11,62	1
	168,3	6,3	10,50	5
	168,3	6,3	12,20	1
	168,3	6,3	9,14	1
	168,3	6,3	1,90	1
	168,3	6,3	2,10	1
	168,3	6,3	5,30	1
	139,7	12,5	11,20	1
	139,7	12,5	11,95	2
	139,7	12,5	11,90	1
	139,7	12,5	12,30	2
	139,7	12,5	12,43	1
	139,7	12,5	12,05	1
	139,7	12,5	7,40	1
	TOTALS			31



Vallourec Tubos do Brasil S.A.
BARRILHO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1453



Inspection Certificate
(According to DIN EN 10204.3.1)

Nº: 0030032314

Sheet: 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396503

Work Order: 355172 / 30

Customer Order: P03017587

Customer Material No (CMN): 157417414

NF- 000.444.972

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED ✓

DIMENSIONS: 139,70 mm X 7,10 mm GRADE: S355J2H ✓

STANDARD: METALLURGY EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006 ✓

CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011 ✓

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR ✓

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -1,397 mm / +1,397 mm WALL THICKNESS: -0,710 mm ✓

LENGTH: RANDOM 12000,00 mm - 13000,00 mm ✓

STANDARD MARKING: Paint stenciled in the pipe body: MANUFACTURER EN 10210 S355J2H 139,70 X 7,10 HEAT NUMBER ✓

Heat	Pieces	Length(m)	Weight (kg)
131930	15	189,60	4520
Total	15	189,60	4520

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C+Mn/6+ (Cr+Mo+V)/5 + (Ni+Cu)/15

CE1: Nb + V + Ti

CE2: Cu + Cr + Mo + Ni

CE3: Nb + V

		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Cu ₁	CE1	CE2	CE3
Heat Analysis	Min										0,020								
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,430	0,135	0,800	0,130
Product Analysis	Min										0,020								
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,430	0,135	0,800	0,130
Heat	Control Lot																		
131930	030002457233	0,11	1,45	0,015	0,003	0,29	0,01	0,05	0,08	0,030	0,010	0,087	0,031	0,002	0,0101	0,356	0,119	0,141	0,119
	Check 1	0,11	1,45	0,014	0,003	0,29	0,01	0,05	0,08	0,033	0,008	0,086	0,032	0,002	0,0101	0,197	0,120	0,142	0,118
	Check 2	0,11	1,43	0,014	0,003	0,28	0,01	0,05	0,08	0,031	0,007	0,085	0,031	0,002	0,0108	0,302	0,118	0,144	0,116

Ceq: Carbon Equivalent; CE: Combined Elements;

INSPEÇÃO DE RECEBIMENTO	
RIR Nº:	4-15
DATA: 08/10/15	NF: 000444972
COD: 157417414	PO: 3517587
QTOE: 15	RESP: Marcos



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0030032314

Sheet: 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO= A5

YS Method: 0,50 %

Type of Specimen

Area YS TS
(MM²) (MPa) (MPa)

Required: Min
Max

355 490 22 ✓
630

Heat Control Lot

131930 030002457233

STRIP WIDTH 25,4 MM

192,3 ✓ 444 ✓ 558 ✓ 33 ✓
189,7 ✓ 440 ✓ 557 ✓ 33 ✓

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Impact Test

Test Specimen: CHARPY 10X55X5 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

AE1 AE2 AE3 AE4 AES AE Avg
(J) (J) (J) (J) (J) (J)

Required: Min
Max

18 18 18 24

Heat Control Lot

131930 030002457233

81 ✓ 94 ✓ 93 ✓ 93 ✓

AE - Absorbed Energy;

Remarks:

acc to Liebherr specification 10019728

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for other products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (65-31) 2928-2676

e-mail:luiz.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - 07E-ENG-48834-D
TECHNICAL RESPONSIBLE

DATE
12.16.2014

Eco TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 4,5 ton(s) of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 8,1 ton(s) of Carbon Dioxide CO2 in the atmosphere.



Vallourec Tubos do Brasil S.A.
USINA BARREIRO - Belo Horizonte - MG - Brasil
CEP: 30161-970 - Caixa Postal: 1433



Certificado de Inspeção
(De acordo com DIN EN 10204.3.1)
Nº: 0030032793 / 1 Folha: 1 / 2

Cliente: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

País: Brasil

Cod.Material: 396790

Pedido Utiliz: 370412 / 10

Pedido Cliente: PQ-014814

Num.Material Cliente (NCMI): 157431514

Inspeção: VALLOUREC TUBOS DO BRASIL S.A.

PRODUTO: TUBO DE AÇO SEM COSTURA, LAMINADO À QUENTE, PONTA LISA, NORMALIZADO ✓
DIMENSÕES: 139,70 mm X 12,50 mm GRAU DO AÇO: S355MH ✓
NORMAS: METALÚRGICA: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006 ✓
ESPECIFICAÇÃO DE CLIENTE: LIEBHERR 10019728, 22.07.2011 ✓
PROTEÇÃO SUPERFICIAL: EXTERNA: SEM PROTEÇÃO DE PONTAS: S/ PROTEÇÃO ✓
TOLERÂNCIAS: DIÂMETRO EXTERNO (CORPO TUBO): -1,397 mm / + 1,397 mm PAREDE: -1,250 mm ✓
COMPRIMENTO: FAIXA 12000,00 mm - 13000,00 mm ✓
MARCAÇÃO DE NORMA: Estencilhado no corpo do tubo: FABRICANTE EN 10210 S355MH 139,70 X 12,50 NÚMERO DA CORRIDA ✓

Corrida	Ano fabricado	Peças	Comprimento(m)	Peso (Kg)
131930	0014082730	5	61,20	2454
Total		5	61,80	2454

O PRODUTO FOI APROVADO NOS SEGUINTES TESTES/INSPEÇÕES: DIMENSIONAL # VISUAL # MAGNETISMO RESIDUAL: MAX 30 GAUSS # TESTE ELETROMAGNÉTICO: CONFORME DIN EN 10246-1 #

Composição Química (%)

Processo: Forno básico a oxigênio, aço acuminado

Ceq: C + Mn/5 + (Cr + Mo + V)/5

EC1: Nb + V + Ti

EC2: Cu + Cr + Mo + Ni

EC3: Nb + V

+ (Ni + Cu)/15

		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	EC1	EC2	EC3
Análise de Corrida	Mín									0,020									
	Máx	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,050	0,350	0,120	0,050		0,0150	0,430	0,135	0,800	0,130
Análise de Produto	Mín									0,020									
	Máx	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,050	0,350	0,120	0,050		0,0150	0,430	0,135	0,800	0,130
Corrida		Tela Controle																	
131930		030002452236	0,11	1,45	0,015	0,003	0,29	0,01	0,05	0,08	0,030	0,010	0,087	0,031	0,002	0,010	0,396	0,121	0,144
Check 1			0,11	1,47	0,016	0,004	0,30	0,01	0,05	0,08	0,033	0,005	0,089	0,031	0,002	0,0097	0,400	0,127	0,145
Check 2			0,12	1,47	0,016	0,004	0,33	0,01	0,05	0,08	0,033	0,005	0,089	0,032	0,002	0,0096	0,405	0,123	0,145

Ceq: Carbono Equivalente; EC: Elementos Combinados;

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 92-15	
DATA: 01/3/15	Nº: 00457475
COD: 157431514	PQ: 4014814
QTOE: 5	RESP: Marcos



Certificado de Inspeção
(De acordo com DIN EN 10264.3.1)
Nº: 0030032793 / 1 Folha: 2 / 2

Ensaio de Tração

Direção do Corpo de Prova: Longitudinal		Temperatura: Ambiente	Medida L0: L0= A5	Método LE: Along. Total Sob Carga 6,50 %		
		Corpo de Prova		Área (mm ²)	LE (MPa)	RT (MPa)
						AL (%)
		Especificado: Min			355	72
		Max				630
Corrida	Lote Controle	Nº				
		Tubo				
131930	030002457236	2	TIRA LARGURA 25,4 MM	320,4 ✓	407 ✓	542 ✓
		2	TIRA LARGURA 25,4 MM	320,4 ✓	407 ✓	542 ✓

LE-Limite de Escoamento; RT-Resistência à Tração; AL-Alongamento;

Ensaio de Impacto

Corpo de Prova: CHARPY 10X55X10		Direção do Corpo de Prova: Longitudinal		Temperatura: -20°C	Rate do Martelo: 8 mm
ENTALHE EM V		EA1	EA2	EA3	EA4
		(J)	(J)	(J)	(J)
		EAS	EA5	EA6	EA7
		(J)	(J)	(J)	(J)
		EAM			
		(J)			
		Especificado: Min			
		Max			
Corrida	Lote Controle	Nº			
		Tubo			
131930	030002457236	2	366 ✓	368 ✓	358 ✓
		2	366 ✓	368 ✓	358 ✓

EA-energia absorvida;

Observações:

Certificamos que este material foi produzido e inspecionado de acordo com todas as exigências destas normas e especificações, e todos os resultados considerados satisfatórios. Este Certificado é processado por sistema informatizado e é válido sem assinatura.

DEPARTAMENTO DE CONTROLE DE QUALIDADE

FAX: (31) 3328-2276

e-mail: liz.silva@vallourec.com

DATA
24.02.2015

ENG. LUIZ FERNANDO DA SILVA - PNEU-48834-D
RESPONSÁVEL TÉCNICO

TUBOS VERDES: Os tubos da Vallourec do Brasil S.A. são fabricados com aço, cujo processo de produção utiliza o carvão vegetal como fonte de energia. Para reduzir o consumo de mais de 100.000 ha de florestas plantadas pela Vallourec Florestal Ltda., com a aquisição de 2,5 toneladas(s) de tubo de aço da Vallourec do Brasil S.A., sua empresa contribuiu para a redução do efeito estufa, ao evitar o acúmulo de 1,5 toneladas(s) de CO₂ na atmosfera.



Vallourec Tubos do Brasil S.A.
BARREIRO PLANT - Rolo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1453



Inspection Certificate

(According to DIN EN 10204.1)

Nº: 0050620406 / A

Sheet: 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 306799

Work Order: 355169 / 150

Customer Order: P03014607

Customer Material No (CMN): 152459714

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED ✓
DIMENSIONS: 219,10 mm X 7,10 mm GRADE: S355J2H ✓
STANDARD: METALURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006 ✓
CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011 ✓
SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTION: NO PROTECTOR ✓
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -2,191 mm / +2,191 mm WALL THICKNESS: -0,710 mm ✓
LENGTH: RANDOM 12305,00 mm - 13000,00 mm
STANDARD MARKING: Paint stenciled by the pipe body: 355169/150 MANUFACTURER EN 10210 S355J2H 219,10 X 7,10 HEAT NUMBER LENGTH WEIGHT ✓

Heat	Plates
✓127696	11
Total	11

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C + Mn/64 (Cr + Mo + V)/5 + (Ni + Cu)/15 ✓ CE1: Nb + V + Ti ✓ CE2: Cu + Cr + Mo + Ni ✓ CE3: Nb + V ✓

Heat Analysis	Min														0,020				
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,0150	0,430	0,14	0,80	0,13	
Product Analysis	Min																		
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,0150	0,430	0,14	0,80	0,13	

Heat	Control Lot																			
127696	010002149202	✓0,10	✓1,43	✓0,013	✓0,001	✓0,28	✓0,01	✓0,04	✓0,08	✓0,030	✓0,010	✓0,084	✓0,020	✓0,002	✓0,0076	✓0,380	✓0,11	✓0,14	✓0,12	
	Check 1	✓0,10	✓1,42	✓0,013	✓0,001	✓0,26	✓0,01	✓0,04	✓0,08	✓0,028	✓0,007	✓0,085	✓0,029	✓0,002	✓0,0078	✓0,379	✓0,11	✓0,14	✓0,12	
	Check 2	✓0,10	✓1,43	✓0,013	✓0,001	✓0,27	✓0,01	✓0,04	✓0,08	✓0,028	✓0,007	✓0,086	✓0,029	✓0,002	✓0,0076	✓0,377	✓0,12	✓0,14	✓0,12	

Ceq: Carbon Equivalent; CE: Combined Elements;

INSPEÇÃO DE RECEBIMENTO	
RIR Nº:	377-14
DATA: 10/03/14	Nº: 380791
COD: 157459714	PO: 3014607
QTD: 5334 kg	RESP: M. O. A. B.



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050620406 / A

Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO= A5

YS Method: 0,50 %

Type of Specimen	Area (mm ²)	YS (MPa)	TS (MPa)	E (%)
Required: Min		355	400	22
Max			630	

Heat Control Lot

127696 03000349202

STRIP WIDTH 38,1 MM

273,6

✓ 452

✓ 339

✓ 32

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Impact Test

Test Specimen: CHARPY 10X35X5 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

	AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)
Required: Min	18	18	18			24
Max						

Heat Control Lot

127696 03000349202

✓ 148

✓ 132

✓ 136

✓ 139

AE - Absorbed Energy

Remarks:

NOTA FISCAL: 000386904 386791

acc to Lichter specification 10019728

Obs: O Valor de CGT foi arredondado para 0,14 sendo o especificado 0,135.

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (55-31) 3328-2817

e-mail: gustavo.pinhoiro@vallourec.com

DATE

03.12.2014

DR. GUSTAVO ALVES PINHEIRO - CREA/MG-1081700

TECHNICAL RESPONSIBLE

ECO-TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 5,3 ton(s) of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 5,5 ton(s) of Carbon Dioxide CO2 in the atmosphere.



Vallourec Tubos do Brasil S.A.

BARREIRO PLANT - Belo Horizonte - MG - Brazil

CEB: 30161970 - PO BOX: 1453



ISO 9001
2015
SISTEMA
DE GESTÃO
DE QUALIDADE



Inspection Certificate

(According to DIN EN 10204 3.1)

Nº: 0050627463 / A

Sheet 1 / 2

Customer: LIEBHERR BRASILE QUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396296

Customer Material No (CMN): 15741814

Work Order: 355169 / 139

Customer Order: P03014507

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED

DIMENSIONS: 177,30 mm X 12,50 mm GRADE: S355J2H

STANDARD: METALLURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006

CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): $-1,776 \text{ mm}$ / $+1,778 \text{ mm}$ WALL THICKNESS: $-1,250 \text{ mm}$

LENGTH: RANDOM: 12300,00 mm - 13000,00 mm

STANDARD MARKING: Paint stencilled in the pipe body: MANUFACTURER EN 10210 S355J2H 177,80 X 12,50 HEAT NUMBER

Heat Pieces

127696

4

Total

4

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL VISUAL RESIDUAL MAGNETISM MAX 30 GAUSS ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Process Basic Oxygen Furnace, heats fully killed

Ceq: C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

CE1: Nb + V + Ti

CE2: Cu + Cr + Mo + Ni

CE3: Nb + V

		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3
Heat Analysis	Min									0,020									
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,150	0,430	0,135	0,890	0,130
Product Analysis	Min									0,020									
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,150	0,430	0,135	0,890	0,130
Heat	Control Lot																		
127696	030002365340	0,10	1,43	0,015	0,001	0,28	0,01	0,04	0,08	0,030	0,010	0,084	0,030	0,002	0,0074	0,380	0,116	0,140	0,114
	Check 1	0,10	1,43	0,015	0,001	0,27	0,01	0,04	0,08	0,030	0,008	0,079	0,027	0,002	0,0074	0,381	0,106	0,138	0,101
	Check 2	0,10	1,41	0,012	0,001	0,28	0,01	0,04	0,08	0,030	0,009	0,079	0,027	0,001	0,0074	0,378	0,106	0,139	0,104

Ceq: Carbon Equivalent; CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 521-14	
DATA: 20/04/14	Nº: 338346
COD: 15741814	PO: 3014607
QTD: 4 ps	RESP: Marcos



Vallourec Tubos do Brasil S.A.
BARREIRO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1453



Inspection Certificate
(According to DIN EN 10204.3.1)

Nº: 0050622312 / A

Sheet 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396787

Work Order: 355169 / 10

Customer Order: PQ3014607

Customer Material No (CMN): 157751314

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED ✓
DIMENSIONS: 76,10 mm X 4,00 mm GRADE: S355J2H ✓
STANDARD: METALLURFICAT: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006 ✓
CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011 ✓
SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR ✓
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,761 mm / +0,761 mm WALL THICKNESS: -0,400 mm ✓
LENGTH: RANDOM 12900,00 mm - 13000,00 mm ✓
STANDARD MARKING: Paint stencilled in the pipe body: MANUFACTURER EN 10210 S355J2H 76,10 X 4,00 HEAT NUMBER ✓

Heat	Pieces
✓ 127696	22
Total	22

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL ✓ VISUAL ✓ RESIDUAL MAGNETISM ✓ MAX 30 GAUSS ✓ ELECTROMAGNETIC TEST : / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15		VCE1: Nb + V + Ti										VCE2: Cu + Cr + Mo + Ni					VCE3: Nb + V		
		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3
Heat Analysis	Min										0,020								
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,430	0,14	0,80	0,13
Product Analysis	Min										0,020								
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,430	0,14	0,80	0,13
Heat	Control Lot																		
127696	050002355538	✓ 0,10	✓ 1,43	✓ 0,013	✓ 0,001	✓ 0,28	✓ 0,01	✓ 0,04	✓ 0,08	✓ 0,030	✓ 0,010	✓ 0,084	✓ 0,030	✓ 0,002	✓ 0,0074	✓ 0,380	✓ 0,12	✓ 0,14	✓ 0,11
	Check 1	✓ 0,09	✓ 1,45	✓ 0,013	✓ 0,001	✓ 0,27	✓ 0,01	✓ 0,04	✓ 0,08	✓ 0,029	✓ 0,011	✓ 0,083	✓ 0,031	✓ 0,002	✓ 0,0074	✓ 0,373	✓ 0,11	✓ 0,14	✓ 0,11
	Check 2	✓ 0,10	✓ 1,45	✓ 0,013	✓ 0,001	✓ 0,27	✓ 0,01	✓ 0,04	✓ 0,08	✓ 0,029	✓ 0,011	✓ 0,083	✓ 0,029	✓ 0,002	✓ 0,0074	✓ 0,383	✓ 0,11	✓ 0,14	✓ 0,11

Ceq: Carbon Equivalent; CE: Combined Elements;

INSPEÇÃO DE RECEBIMENTO	
R/R Nº: 374-14	
DATA: 20/03/14	MF: 383926
COD: 157751314	PO: 3014607
QTD: 2018Ks	RESP: Marcelo



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050622312 / A

Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal ✓

Temperature: Room Temperature

Gage Length: LG= A5

YS Method: 0,50 %

	Acta (MPa)	YS (MPa)	TS (MPa)	E (%)
Required: Min		355	490	22
Max			650	

Heat Control Lot

127606 01000233328

✓ 92,2 ✓ 479 ✓ 551 ✓ 31

YS-Yield Strength TS-Tensile Strength E-Elongation

Remarks:

NOTA FISCAL: 000389925

see to Liebherr specification 10019728

Obs: Ordem de CEF esta anexada para o 14 sendo que o especificado é 0,135

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (55-31) 3328-2687

e-mail: lutz.silva@vallourec.com

DATE

04.17.2014

ENG. LUIZ FERNANDO DA SILVA - CREA-MG-58834-D

TECHNICAL RESPONSIBLE

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Fluminense Ltda. With the acquisition of 2,0 tons of ex steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 3,6 tons of Carbon Dioxide CO2 in the atmosphere.



Vallourec Tubos do Brasil S.A.
BARREIRO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1433



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050621438 / A

Sheet 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 356801

Work Order: 355169 / 170

Customer Order: FO3014607 ✓

Customer Material No (CMN): 15780851# V

Inspection: VALLOURREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED ✓

DIMENSIONS: 273,00 mm X 12,50 mm GRADE: S355J2H ✓

STANDARD: METALLURGICAL: EN 10210-1, 07.2005 DIMENSIONAL: EN 10210-2, 07.2006 ✓

CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011 ✓

SURFACE PROTECTION: EXTERNAL: RARE PIPE PROTECTOR: NO PROTECTOR ✓

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -2,730 mm / +2,730 mm WALL THICKNESS: -1,250 mm ✓

LENGTH: RANDOM 12300,00 mm - 13000,00 mm

STANDARD MARKING: Plain stenciled in the pipe body: 355169/170 MANUFACTURER EN 10210 S355J2H 273,00 X 12,50 HEAT NUMBER LENGTH WEIGHT ✓

Heat	Pieces
127573	7
Total	7

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ✓ CE1: Nb + V + Ti ✓ CE2: Cu + Cr + Mo + Ni ✓ CE3: Nb + V ✓

Heat Analysis	Min	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3
		Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,0150	0,430	0,14	0,80	0,13
Product Analysis	Min	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,0150	0,430	0,14	0,80	0,13

Heat	Control Lot	127573	030002354811	0,11 ✓	1,46 ✓	0,918 ✓	0,003 ✓	0,28 ✓	0,02 ✓	0,05 ✓	0,10 ✓	0,034 ✓	0,010 ✓	0,090	0,032 ✓	0,002 ✓	0,0118 ✓	0,404 ✓	0,12 ✓	0,19 ✓	0,12 ✓
Check 1				0,11 ✓	1,44 ✓	0,917 ✓	0,003 ✓	0,29 ✓	0,03 ✓	0,06 ✓	0,10 ✓	0,031 ✓	0,007 ✓	0,058	0,031 ✓	0,001 ✓	0,0113 ✓	0,403 ✓	0,12 ✓	0,20 ✓	0,12 ✓
Check 2				0,11 ✓	1,45 ✓	0,918 ✓	0,003 ✓	0,30 ✓	0,03 ✓	0,08 ✓	0,10 ✓	0,031 ✓	0,007 ✓	0,091	0,034 ✓	0,002 ✓	0,0118 ✓	0,403 ✓	0,13 ✓	0,20 ✓	0,13 ✓

Ceq: Carbon Equivalent; CE: Combined Elements;

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 369-14	
DATA: 03/14	Nº: 388380
COD: 157808514	PO: 3014607
QTD: 4374 Ks	RESP: Marcelo



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050621438 / A

Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO-A5

YS Method: 0,50 %

	Type of Specimen	Area		YS		TS		E	
		(mm ²)	(MPa)	(MPa)	(MPa)	(MPa)	(MPa)	(%)	(%)
Required: Min				315		490		12	
Max						630			

Heat	Control Lot	STRIP WIDTH 38,1 MM	✓ 511,8	✓ 430	✓ 557	✓ 27
127573	030002354811	STRIP WIDTH 38,1 MM	✓ 515,2	✓ 439	✓ 561	✓ 27
	030002354812					

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Impact Test

Test Specimen: CHARPY 10X55X10 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

	AE1	AE2	AE3	AE4	AE5	AE Avg
	(J)	(J)	(J)	(J)	(J)	(J)
Required: Min	27	27	27			36
Max						

Heat	Control Lot	✓ 293	✓ 289	✓ 295	✓ 293
127573	030002354811	✓ 295	✓ 289	✓ 295	✓ 293
	030002354812				

AE - Absorbed Energy;

Remarks:

NOTA FISCAL: 090368380 ✓

acc to Liebherr specification 10019728

Obs: O Valor do CEI foi arredondado para 0,14 sendo o especificado 0,135.

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

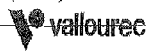
FAX: (66-21) 3328-2617

e-mail: gustav@vallourec.com

DATE
03.18.2014

DR. GUSTAVO ALVES PINHEIRO - CREA/RG-103170/D
TECHNICAL RESPONSIBLE

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 7,4 tons of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 13,3 tons of Carbon Dioxide CO2 in the atmosphere.



Vallourec Tubos do Brasil S.A.
BAKREIRO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1433



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050621440 / A

Sheet: 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396507

Work Order: 355169 / 200

Customer Order: PO3014607

Customer Material No (CMN): 157754014

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED

DIMENSIONS: 273,00 mm X 20,00 mm GRADE: S355J2H

STANDARD: METALLURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006

CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -2,730 mm / +2,730 mm WALL THICKNESS: -2,000 mm

LENGTH: RANDOM 12300,00 mm - 13000,00 mm

STANDARD MARKING: Print stenciled in the pipe body: 355169/200 MANUFACTURER EN 10210 S355J2H 273,00 X 20,00 HEAT NUMBER LENGTH WEIGHT

Heat Pieces

127573 4

Total 4

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Req: C+Mn/61 (C+Mn+V)/5 + (Ni+Cu)/15

CE1: Nb + V + Ti

CE2: Cu + Cr + Mo + Ni

CE3: Nb + V

Heat Analysis Min C Mn P S Si Ni Cr Mo Al Cu V Nb Ti N Coq CE1 CE2 CE3

Max 0,200 1,600 0,025 0,015 0,550 0,500 0,300 0,100 0,050 0,350 0,120 0,050 0,0150 0,450 0,14 0,80 0,13

Product Analysis Min 0,070

Max 0,200 1,600 0,025 0,015 0,550 0,500 0,300 0,100 0,050 0,350 0,120 0,050 0,0150 0,450 0,14 0,80 0,13

Heat Control Lot

127573 030002354733 0,11 1,46 0,018 0,003 0,28 0,03 0,05 0,10 0,034 0,010 0,090 0,082 0,002 0,0118 0,404 0,12 0,19 0,12

Check 1 0,10 1,44 0,017 0,003 0,29 0,03 0,06 0,10 0,031 0,007 0,090 0,091 0,002 0,0123 0,392 0,12 0,20 0,12

Check 2 0,10 1,44 0,018 0,001 0,29 0,03 0,06 0,10 0,031 0,007 0,090 0,091 0,002 0,0115 0,392 0,12 0,20 0,12

Req: Carbon Equivalent; CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
R/R Nº:	367-14
DATA: 19/03/14	IMP: 390580
CÓD: 157754014	PO: 3014607
QTD: 18330 kg	RESP: Marcelo



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº.: 0050621440 / A

Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO= A5

YS Method: 0,50 %

Type of Specimen

Area

YS

TS

E

(MM²)

(MPa)

(MPa)

(%)

Required: Min

345

490

22

Max

630

Heat Control Lot

127573 030602354733

STRIP WIDTH 38,1 MM

√ 431,1

√ 410

√ 537

√ 27

YS-Yield Strength TS-Tensile Strength E-Elongation

Impact Test

Test Specimen: CHARPY 10X55X10 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

AE1

AE2

AE3

AE4

AFS

AE Avg

(J)

(J)

(J)

(J)

(J)

(J)

Required: Min

27

27

27

36

Max

Heat Control Lot

127573 030602354733

√ 300

√ 299

√ 207

√ 299

AE - Absorbed Energy

Remarks:

NOTA FISCAL: 000388382

acc to Liebherr specification 10019728

Obs: O tubo de CGT este autodeclarado para o 14 de acordo com a especificação de 9135

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (55-31) 3328-2817

e-mail: guotavo.plinheiro@vallourec.com

DATE

03.18.2014

DR. GUSTAVO ALVES PINHEIRO - CREA/MG-10917/00

TECHNICAL RESPONSIBLE

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Fluminense Ltda.. With the acquisition of 6,5 tons of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 11,7 tons of Carbon Dioxide CO₂ in the atmosphere.



Vallourec Tubos do Brasil S.A.
BARREIRO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1433



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050626801

Sheet: 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396502

Work Order: 355168 / 50

Customer Material No (CMN): M57753114

Customer Order: PCD014607

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED ✓
DIMENSIONS: 114,30 mm X 5,09 mm GRADE: S355J2H ✓
STANDARD: METALURFICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210 2, 07.2006 ✓
CUSTOMER SPECIFICATION: LIEBHERR 10019128, 22.01.2011 ✓
SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR ✓
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -1,143 mm / +1,143 mm WALL THICKNESS: -0,509 mm ✓
LENGTH: RANDOM 12000,00 mm - 12000,00 mm ✓
STANDARD MARKING: Paint stenciled in the pipe body: MANUFACTURER EN 10210 S355J2H 114,30 X 5,09 HEAT NUMBER ✓

Heat	Pieces
✓ 127699	✓ 20
Total	20

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST (According to DIN EN 10246.1 #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 √		CE1: Nb + V + Ti √								CE2: Cu + Cr + Mo + Ni √						CE3: Nb + V √			
		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3
Heat Analysis	Min									0,020									
	Max	0,200	1,650	0,025	0,015	0,550	0,509	0,309	0,100	0,060	0,350	0,120	0,050		0,0150	0,438	0,135	0,800	0,150
Product Analysis	Min									0,020									
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,438	0,135	0,800	0,150
Heat	Control Lot																		
127699	030002354730	✓ 0,11	✓ 1,47	✓ 0,015	✓ 0,001	✓ 0,30	✓ 0,01	✓ 0,03	✓ 0,06	✓ 0,032	✓ 0,010	✓ 0,081	✓ 0,031	✓ 0,001	✓ 0,0079	✓ 0,395	✓ 0,110	✓ 0,130	✓ 0,110
	Check 1	✓ 0,12	✓ 1,43	✓ 0,015	✓ 0,002	✓ 0,29	✓ 0,01	✓ 0,03	✓ 0,09	✓ 0,035	✓ 0,011	✓ 0,080	✓ 0,051	✓ 0,001	✓ 0,0096	✓ 0,406	✓ 0,110	✓ 0,130	✓ 0,110
	Check 2	✓ 0,12	✓ 1,48	✓ 0,015	✓ 0,002	✓ 0,29	✓ 0,01	✓ 0,03	✓ 0,09	✓ 0,035	✓ 0,011	✓ 0,079	✓ 0,051	✓ 0,001	✓ 0,0098	✓ 0,465	✓ 0,110	✓ 0,130	✓ 0,110

Ceq: Carbon Equivalent; CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
RIR Nº:	361-14
DATA: 28/04/14	Nº: 397703
COD: 157753114	PO: 394667
QTD: 20 peças	RESP: /Nogueira



Inspection Certificate
(According to DIN EN 10204.3.1)

Nº: 0050626801

Sheet: 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: L₀ - A₅

YS method: 0,50 %

Type of Specimen

Area

YS

TS

E

(mm²)

(MPa)

(MPa)

(%)

Required: Min

355

490

22

Max

630

Heat Control Lot

127699 03002354730

STRIP WIDTH 25,4 MM

√ 148,5

√ 455

√ 550

√ 32

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Remarks:

NOTA FISCAL: 000397703

see to Lichere specification 10619778

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others' purposes are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (65-31) 3328-2587

e-mail: qc@vallourec.com

DATE

04.17.2014

ENG. LUIZ FERNANDO DA SILVA - CREA MG 50834/D
TECHNICAL RESPONSIBLE

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 3,6 (tons) of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 6,5 (tons) of Carbon Dioxide CO₂ in the atmosphere.



Vallourec Tubos do Brasil S.A.
BARRERO PLANT - Belo Horizonte - MG - Brazil
CNPJ: 30161-970 - PO BOX 1433



ISO 9001
CERTIFIED
MANUFACTURING
SYSTEM
DIN EN ISO 9001
Certification



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050622308 / A

Sheet: 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATIZVES LTDA.

Country: Brazil

Material Number: 396503

Work Order: 335169 / 120

Customer Material No (CMN): V157433914

Customer Order: PQ3014607

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED ✓

DIMENSIONS: 168,30 mm X 6,30 mm GRADE: S355J2H ✓

STANDARD: METALLURFICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006 ✓

CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011 ✓

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR; NO PROTECTOR ✓

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -1,683 mm / +1,683 mm WALL THICKNESS: -0,630 mm ✓

LENGTH: RANDOM 12000,00 mm - 13000,00 mm ✓

STANDARD MARKING: Paint stenciled in the pipe body: MANUFACTURER EN 10210 S355J2H 168,30 X 6,30 HEAT NUMBER ✓

Heat Pieces

V127699 7

Total 7

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL ✓ VISUAL ✓ RESIDUAL MAGNETISM ✓ MAX 30 GAUSS ✓ ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C + Mn/61 (Cr + Mo + V) / 5 + (Ni + Cu) / 15 ✓

CE1: Nb + V + Ti ✓

CE2: Cu + Cr + Mo + Ni ✓

CE3: Nb + V ✓

	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3
--	---	----	---	---	----	----	----	----	----	----	---	----	----	---	-----	-----	-----	-----

Heat Analysis	Min								0,020									
---------------	-----	--	--	--	--	--	--	--	-------	--	--	--	--	--	--	--	--	--

	Max	0,200	1,650	0,025	0,015	0,350	0,300	0,100	0,050	0,250	0,120	0,050		0,0150	0,430	0,14	0,80	0,13
--	-----	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--	--------	-------	------	------	------

Product Analysis	Min								0,020									
------------------	-----	--	--	--	--	--	--	--	-------	--	--	--	--	--	--	--	--	--

	Max	0,200	1,650	0,025	0,015	0,350	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,430	0,14	0,80	0,13
--	-----	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--	--------	-------	------	------	------

Heat Control Lot

V127699 030002357243 ✓ 0,11 ✓ 1,47 ✓ 0,015 ✓ 0,001 ✓ 0,30 ✓ 0,01 ✓ 0,03 ✓ 0,08 ✓ 0,012 ✓ 0,010 ✓ 0,081 ✓ 0,031 ✓ 0,002 ✓ 0,0099 ✓ 0,395 ✓ 0,11 ✓ 0,13 ✓ 0,11

Check 1 ✓ 0,11 ✓ 1,46 ✓ 0,014 ✓ 0,001 ✓ 0,30 ✓ 0,01 ✓ 0,04 ✓ 0,07 ✓ 0,034 ✓ 0,006 ✓ 0,081 ✓ 0,031 ✓ 0,002 ✓ 0,0100 ✓ 0,401 ✓ 0,11 ✓ 0,15 ✓ 0,11

Check 2 ✓ 0,11 ✓ 1,46 ✓ 0,014 ✓ 0,001 ✓ 0,30 ✓ 0,01 ✓ 0,04 ✓ 0,08 ✓ 0,035 ✓ 0,006 ✓ 0,081 ✓ 0,033 ✓ 0,002 ✓ 0,0099 ✓ 0,404 ✓ 0,11 ✓ 0,15 ✓ 0,11

Ceq: Carbon Equivalent; CE: Combined Elements;

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 371-14	
DATA: 30/03/14	NP: 387626
COD: 157433014	PO: 3014607
QTDE: 2278 Ks	RESP: M. Cel.



Sheet:2 / 2

YS Method: 0,50 %

E

(%)

127699 03000235/243

STRIP WIDTH 25,4 MM

 $\sqrt{175.9}$

✓ 468

1.30

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Striking type: 8 mm

4vg

(j)

(J)

Required: Min

Heat Control Lot

127699 030002357243

١١٢

1114 Y

3

V 113

AE = Absorbed Energy;

Remarks;
NOTA FISCAL: 000389919

ate to Liebherr specification 10019728

Obs: O valor do CEI foi arredondado para 0,14 sendo que o especificado é 0,135.

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system, and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2587

e-mail: luiz.siiva@vallopprac.com

DATE
04.17.2014

ENG. LUIZ FERNANDO DA SILVA - CREA-MG 58834-D
TECHNICAL RESPONSIBLE

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100,000 ha of forest planted by Vallourec Florestal Ltda. With the acquisition of 2.3 tons) as steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 4.1 tons) of Carbon Dioxide CO2 in the atmosphere.



Vallourec Tubos do Brasil S.A.
BARRERO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1433



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050622591 / A

Sheet: 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396/93

Work Order: 355169 / 100

Customer Order: P03014607

Customer Material No (CKN): 157497314

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED
DIMENSIONS: 168,30 mm X 12,50 mm GRADE: S355J2H
STANDARD: METALURGICAL EN 10210-1, 07.2006 DIMENSIONAL EN 10210-2, 07.2006
CUSTOMER SPECIFICATION: LIEBHERR 10014728, 22.07.2011
SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -1,683 mm / +1,683 mm WALL THICKNESS: -1,250 mm
LENGTH: RANDOM 12000,00 mm - 13000,00 mm
STANDARD MARKING: Pipe stenciled in the pipe body: MANUFACTURER EN 10210 S355J2H 168,30 X 12,50 HEAT NUMBER

Heat	Pieces
V127697	5
Total	5

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL VISUAL RESIDUAL MAGNETISM: MAX 30 GAUSS ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15
CE1: Nb + V + Ti
CE2: Cu + Cr + Mo + Ni
CE3: Nb + V

	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3
Heat Analysis	Min																	
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,050	0,350	0,120	0,050	0,0150	0,430	0,14	0,80	0,13
Product Analysis	Min																	
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,050	0,350	0,120	0,050	0,0150	0,430	0,14	0,80	0,13
Heat	Control Lot																	
V127697	030003352806	0,11	1,46	0,015	0,001	0,30	0,01	0,04	0,10	0,030	0,010	0,086	0,031	0,002	0,0082	0,400	0,12	0,16
	Check 1	0,11	1,44	0,014	0,001	0,28	0,01	0,04	0,10	0,027	0,005	0,083	0,028	0,002	0,0077	0,395	0,12	0,16
	Check 2	0,11	1,45	0,015	0,002	0,31	0,01	0,04	0,10	0,030	0,005	0,083	0,028	0,003	0,0080	0,397	0,12	0,16

Ceq: Carbon Equivalent; CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 360-14	
DATA: 13/03/14	Nº: 350483
CÓD: 157497314	PO: 3014607
QTD: 5510 Ks	RESP: MOC



Inspection Certificate (According to DIN EN 10204.3.1)	
Nº: 0050622591 / A	Sheet: 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO- A5

YS Method: 0.50 %

Type of Specimen	Area (MM²)	YS (MPa)	TS (MPa)	E (%)
Required: Min		355	490	22
Max			630	
STRIP WIDTH 25.4 MM	320.0	432	558	30

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Impact Test

Test Specimen: CHARPY 10X55X10 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

	AE1 (J)	AE2 (J)	AE3 (J)	AE4 (J)	AE5 (J)	AE Avg (J)
Required: Min	27	27	27			36
Max						

Heat Control Lot

127697 020002352806

365 384 360 370

AE - Absorbed Energy;

Remarks:

NOTA FISCAL: 000390485

acc to Liebherr specification 10019728

Obs: O Valor do CEI foi arredondado para 0,14 sendo que o especificado é 0,15

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (55-31) 3328-2587

e-mail: lutz.silva@vallourec.com

DATE
04.17.2014

ENG. LUIZ FERNANDO DA SILVA - 0164-MS-58834-D
TECHNICAL RESPONSIBLE

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 3,1 tons of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 5,6 tons of Carbon Dioxide CO2 in the atmosphere.



Vallourec Tubos do Brasil S.A.
BARREIRO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1453



Inspection Certificate (According to DIN EN 10204.3.1)

Nº: 0050622313 / A

Sheet: 1 / 2

Customer: LIEBHERR BRASIL, GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396788

Work Order: 355169 / 20

Customer Order: P03014607

Customer Material No (CMN): 157433714

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED
DIMENSIONS: 76,10 mm X 6,30 mm GRADE: S3552H
STANDARD: METALLURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006
CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011
SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTION: NO PROTECTOR
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): $-0,761 \text{ mm} / +0,761 \text{ mm}$ WALL THICKNESS: $-0,630 \text{ mm}$
LENGTH: RANDOM 12000,00 mm - 13000,00 mm
STANDARD MARKING: Print stenciled in the pipe body. MANUFACTURER EN 10210 S3552H 76,10 X 6,30 HEAT NUMBER

Heat	Pieces
N127697	16
Total	16

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL / VISUAL / RESIDUAL MAGNETISM / MAX 30 GAUSS / ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: $C + \frac{Mn}{6} + \frac{(Cr + Mo + V) \times 5}{16} + \frac{(Ni + Cu) \times 15}{16}$		NCE1: Nb + V + Ti								NCE2: Cu + Cr + Mo + Ni					NCE3: Nb + V				
		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3
Heat Analysis	Min									0,020									
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,050	0,350	0,120	0,050		0,0150	0,430	0,14	0,80	0,13
Product Analysis	Min									0,020									
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,050	0,350	0,120	0,050		0,0150	0,430	0,14	0,80	0,13
Heat	Control Lot																		
N127697	030002353603	0,11	1,46	0,015	0,001	0,39	0,01	0,04	0,10	0,030	0,010	0,086	0,031	0,002	0,0082	0,400	0,12	0,16	0,12
	Check 1	0,12	1,46	0,014	0,001	0,29	0,01	0,04	0,10	0,027	0,010	0,082	0,029	0,002	0,0082	0,408	0,12	0,16	0,12
	Check 2	0,10	1,45	0,014	0,001	0,28	0,01	0,04	0,10	0,027	0,009	0,080	0,028	0,003	0,0082	0,386	0,12	0,16	0,12

Ceq: Carbon Equivalent; CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
AIR Nº: 375-14	
DATA: 20/03/14	NF: 389926
COD: 157433714	PO: 3014607
QTDE: 2247 KS	RESP: Marcelo



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050622313 / A

Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO= A5

YS Method: 0.50 %

Type of Specimen

Area

YS

TS

E

(MM²)

(N/FA)

(N/FA)

(%)

Required: Min

355

490

22

Max

630

Heat Control Lot

127697 030002353663

STRIP WIDTH 19.05 MM

136.3

✓479

✓538

✓29

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Impact Test

Test Specimen: CHARPY 10X34X5 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

AE1

AE2

AE3

AE4

AE5

AE Avg

(J)

(J)

(J)

(J)

(J)

(J)

Required: Min

18

18

18

24

Max

Heat Control Lot

127697 030002353663

✓120

✓122

✓134

✓125

AE - Absorbed Energy

Remarks:

NOTA FISCAL: 000389926

acc to Liebherr specification 10019728

Obs: O valor do CE1 foi arredondado para 0,14 sendo que o especificado é 0,135.

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (55-31) 3328-2587

e-mail: luiz.alva@vallourec.com

DATE

04.17.2014

ENG. LUIZ FERNANDO DA SILVA - 036A MG 58834-D

TECHNICAL RESPONSIBLE

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This eco tubes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 2,2 tons of eco tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 4,0 tons of Carbon Dioxide CO2 in the atmosphere.



Vallourec Tubos do Brasil S.A.
BARREIRO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1453



Inspection Certificate

(According to DIN EN 10204,3.1)

Nº: 0050622309 / A

Sheet: 1 / 2

Customer: LIEBHERR BRASIL GUNDASTIES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 206798

Work Order: 355169 / 140

Customer Material No (CMN): 157404314

Customer Order: PO3014607

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED ✓
DIMENSIONS: 219,10 mm X 14,20 mm GRADE: S355J2L1 ✓
STANDARD: METALLURGICAL: EN 10210-1, 01.2005 DIMENSIONAL: EN 10210-2, 07.2006 ✓
CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011 ✓ Rev 06
SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR ✓
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -2,191 mm / +2,191 mm WALL THICKNESS: -1,420 mm ✓
LENGTH: RANDOM 12700,00 mm - 12800,00 mm
STANDARD MARKING: Point stenciled in the pipe body: 355169/140 MANUFACTURER EN 10210 S355J2H 219,10 X 14,20 EBA1 NUMBER LENGTH WEIGHT ✓

Heat	Pieces
127574	4
Total	4

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST: /- #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C+Mn/64 (Cr+Mo+V)/5 + (Ni+Cu)/15 ✓																	CE1: Nb + V + Ti ✓					CE2: Cu + Cr + Mo + Ni ✓					CE3: Nb + V ✓		
		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3										
Heat Analysis	Min																												
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,430	0,14	0,30	0,13										
Product Analysis	Min																												
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,430	0,14	0,30	0,13										
Heat	Control Lot																												
127574	030002355406	✓0,10	✓1,44	✓0,018	✓0,004	✓0,27	✓0,01	✓0,06	✓0,07	✓0,033	✓0,010	✓0,088	✓0,032	✓0,002	✓0,0115	✓0,385	✓0,12	✓0,15	✓0,12										
	Check 1	✓0,11	✓1,42	✓0,018	✓0,004	✓0,28	✓0,01	✓0,07	✓0,07	✓0,031	✓0,006	✓0,088	✓0,031	✓0,002	✓0,0110	✓0,392	✓0,12	✓0,16	✓0,12										
	Check 2	✓0,11	✓1,43	✓0,018	✓0,004	✓0,28	✓0,01	✓0,07	✓0,07	✓0,030	✓0,006	✓0,087	✓0,029	✓0,001	✓0,0110	✓0,389	✓0,12	✓0,16	✓0,12										

Ceq: Carbon Equivalent; CE: Combined Elements;

INSPEÇÃO DE RECEBIMENTO	
R/R Nº: 373-14	
DATA: 20/03/14	HF: 387126
COD: 157404314	PO: 3014607
QTD: 4643 kg	RESP: Marcelo



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050622309 / A

Sheet: 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO= A5

YS Method: 0,30 %

Type of Specimen

Area

YS

TS

E

(MM²)

(MPa)

(MPa)

(%)

Required: Min

355

490

22

Max

630

Heat Control Lot

127574 03000235496

STRIP WIDTH 38,1 MM

~561,7

~426

~561

~25

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Impact Test

Test Specimen: CHARPY 10X55X10 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

AE1

AE2

AE3

AE4

AE5

AE Avg

(J)

(J)

(J)

(J)

(J)

(J)

Required: Min

27

27

27

36

Max

Heat Control Lot

~127574 03000235496

~206

~208

~302

~299

AE - Absorbed Energy;

Remarks:

NOTA FISCAL: 000389206

acc to Lichter specification 10019728

Obs: O bal de CEI foi omedido para 9,14 sendo que o especificado é 9,135.

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (55-31) 3328-3617

e-mail:gustavo.pinhem@vallourec.com

DR. GUSTAVO ALVES PINHEIRO - CREAMG-109170D

TECHNICAL RESPONSIBLE

DATE

03.18.2014

ECO-TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 3,7 tons of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 6,7 tons of Carbon Dioxide CO₂ in the atmosphere.



Vallourec Tubos do Brasil S.A.
BARBEIRO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - P.O. BOX: 1433



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050621445 / A

Sheet 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396506

Work Order: 355169 / 150

Customer Material No (CMN): 157763914

Customer Order: PO3014607

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED ✓
DIMENSIONS: 273,00 mm X 17,50 mm GRADE: S355J2H ✓
STANDARD: METALLURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006 ✓
CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011 ✓
SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR ✓
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -2,730 mm / +2,730 mm WALL THICKNESS: -1,750 mm ✓
LENGTH: RANDOM 12300,00 mm + 13000,00 mm ✓
STANDARD MARKING: Print stenciled in the pipe body: 355169/150 MANUFACTURER EN 10210 S355J2H 273,00 X 17,50 HEAT NUMBER LENGTH WEIGHT ✓

Heat	Pieces
127572	6
Total	6

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ✓

CE1: Nb + V + Ti ✓

CE2: Cu + Cr + Mo + Ni ✓

CE3: Nb + V ✓

	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3
Heat Analysis	Min								0,020									
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,0150	0,450	0,14	0,80	0,13
Product Analysis	Min								0,020									
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,0150	0,450	0,14	0,80	0,13

Heat Control Lot

127572	030002354463	✓ 0,11	✓ 1,46	✓ 0,016	✓ 0,003	✓ 0,32	✓ 0,06	✓ 0,06	✓ 0,08	✓ 0,030	✓ 0,010	✓ 0,088	✓ 0,052	✓ 0,002	✓ 0,0140	✓ 0,404	✓ 0,12	✓ 0,21	✓ 0,12
Check 1		✓ 0,11	✓ 1,44	✓ 0,015	✓ 0,002	✓ 0,32	✓ 0,06	✓ 0,05	✓ 0,08	✓ 0,029	✓ 0,007	✓ 0,087	✓ 0,030	✓ 0,002	✓ 0,0140	✓ 0,400	✓ 0,12	✓ 0,21	✓ 0,12
Check 2		✓ 0,11	✓ 1,46	✓ 0,016	✓ 0,003	✓ 0,33	✓ 0,07	✓ 0,06	✓ 0,08	✓ 0,028	✓ 0,007	✓ 0,088	✓ 0,030	✓ 0,002	✓ 0,0140	✓ 0,405	✓ 0,12	✓ 0,22	✓ 0,12

Ceq: Carbon Equivalent; CE: Combined Elements;

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 368-14	
DATA: 03/14	NC: 387495
COD: 157763914	PQ: 3014607
QTD: 17048Kt	RESP: Manoel



Vallourec Tubos do Brasil S.A.
BARROCKA PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-070 PO BOX: 1153



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0030032320 - A

Sheet: 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396802

Work Order: 355172-7-50

Customer Material No (CMN): 157429114

Customer Order: 203817587

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED

DIMENSIONS: 273.00 mm X 14.70 mm GRADE: S235J2H

STANDARD: METALLURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006

CUSTOMER SPECIFICATION: LIEBHERR 1401971X, 22.07.2011

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -2.730 mm / +2.730 mm WALL THICKNESS: -1.420 mm

LENGTH: RANDOM 12300,00 mm - 13000,00 mm

STANDARD MARKING: Plain steels in the pipe body: 355172/50 MANUFACTURER EN 10210 S235J2H 273.00 X 14.30 HEAT NUMBER LENGTH WEIGHT

Heat	Plates
131235	25
132457	25
Total	36

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL, VISUAL, RESIDUAL MAGNETISM, MAX 30 GAUSS, ELECTROMAGNETIC TEST, #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

CEq: C + Mn/6 + Cr + Mo/5 + Ni/6 + Cu/15

CE1: Nb + V + Ti

CE2: Cu + Cr + Mo + Ni

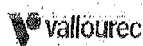
CE3: Nb + V

	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	CEq	CE1	CE2	CE3
Heat Analysis	Min									0,020								
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,430	0,135	0,800
Product Analysis	Min									0,020								
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050		0,0150	0,430	0,135	0,800

Heat	Control Lot	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	CEq	CE1	CE2	CE3
131235	030002462404	0,10	1,46	0,010	0,002	0,29	0,01	0,04	0,08	0,032	0,010	0,080	0,031	0,002	0,0048	0,380	0,115	0,146	0,111
	Check 1	0,11	1,44	0,009	0,002	0,30	0,01	0,04	0,08	0,029	0,011	0,075	0,028	0,002	0,0052	0,386	0,109	0,141	0,103
	Check 2	0,10	1,45	0,009	0,002	0,30	0,01	0,04	0,08	0,029	0,011	0,075	0,028	0,002	0,0052	0,385	0,105	0,141	0,103
132457	030002462340	0,10	1,45	0,008	0,001	0,29	0,01	0,04	0,07	0,033	0,010	0,082	0,030	0,001	0,0072	0,383	0,113	0,136	0,112
	Check 1	0,11	1,46	0,009	0,002	0,28	0,01	0,04	0,09	0,034	0,009	0,083	0,031	0,001	0,0077	0,391	0,110	0,119	0,114
	Check 2	0,11	1,44	0,009	0,002	0,30	0,01	0,04	0,07	0,034	0,008	0,082	0,031	0,002	0,0072	0,389	0,118	0,118	0,111

CEq: Carbon Equivalent, CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
RIR Nº:	4-15
DATA:	8/10/15
Nº:	0044494
COD:	157429114
PO:	3017587
QYDE:	25
RESP:	Manoel



Inspection Certificate	
(According to DIN EN 10204.3.1)	
Nº: 0030032320 / A	Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Tested at: Room Temperature

Gage Length: 100 ± 5

YS Method: 0.50 %

		Type of Specimen	Area (mm ²)	YS (MPa)	YS (MPa)	R (%)
		Required: Min		355	490	22
		Max			630	
Heat	Control Lot					
131325	030002462404	STRIP WIDTH 38.1 MM	588.3 ✓	392 ✓	519 ✓	27 ✓
132457	030002462240	STRIP WIDTH 38.1 MM	568.3 ✓	405 ✓	534 ✓	29 ✓
	030002462241	STRIP WIDTH 38.1 MM	599.0 ✓	406 ✓	527 ✓	26 ✓

YS-Yield Strength TS-Tensile Strength E-Elongation

Impact Test

Test Specimen: CHARPY 10X5X10 V-NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

		AE1	AE2	AE3	AE4	AE5	AE Avg
		(J)	(J)	(J)	(J)	(J)	(J)
		Required: Min	27	27	27		30 ✓
		Max					
Heat	Control Lot						
131325	030002462404	254 ✓	268 ✓	252 ✓			258 ✓
132457	030002462240	236 ✓	255 ✓	239 ✓			243 ✓
	030002462241	239 ✓	256 ✓	238 ✓			244 ✓

AE - Absorbed Energy

Remarks:

due to Lotmark specification 10019728

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration is not for other products are regarded as falsification of documents and will be subject to criminal jurisdiction.

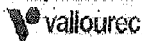
QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2017

e-mail: gustavo.philipino@vallourec.com

DR: GUSTAVO ALVES PHILIPINO - 03/2015/1001728
TECHNICAL RESPONSIBLE

DATE
01.08.2015

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 400,000 ha of forest planted by Vallourec Fluorcel Ltda. With the acquisition of 43.1 tons of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 776.5 tons of Carbon Dioxide CO₂ in the atmosphere.



Vallourec Tubos do Brasil S.A.
BARRILERO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-900 - PO BOX: 1433



Inspection Certificate
(According to DIN EN 10204.3.1)

Nº: 0030032319.1 A

Sheet 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATIZES LTDA.

Country: Brazil

Material Number: 356005

Work Order: 353727-40

Customer Material No (Part): 151715344

Customer Order: P03017387

Inspection: VALLUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED

DIMENSIONS: 273,00 mm X 10,00 mm GRADE: S355J2H

STANDARD: METALLURGICAL: EN 10210-1, 01.2005 DIMENSIONAL: EN 10210-2, 07.2005

CUSTOMER SPECIFICATION: LIEBHERR 100/978, 77 07 7011

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -2,730 mm / +2,730 mm WALL THICKNESS: -1,000 mm

LENGTHS: RANDOM 12500,00 mm - 13000,00 mm

STANDARD MARKING: Print swelled in the pipe body: 35517240 MANUFACTURER EN 10210 S355J2H 273,00 X 10,00 HEAT NUMBER LENGTH WEIGHT

Heat	Pieces
131325	15
132457	13
Total	28

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL & VISUAL & RESIDUAL MAGNETISM: MAX 30 GAUSS & ELECTROMAGNETIC TEST

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Req: C: Mn: P: S: Si: Ni: Cr: Mo: Al: Cu: V: Nb: Ti: N: Co: CE1: CE2: CE3

CE1: Nb + V + Ti

CE2: Cu + Cr + Mo + Ni

CE3: Nb + V

Heat Analysis

Min

0,020

Product Analysis

Min

0,020

Heat Control Lot

131325

030022462401

Check 1

Check 2

132457

030002432172

Check 1

Check 2

CE1: Carbon Equivalent, CE2: Combined Element

INSPEÇÃO DE RECEBIMENTO	
RIR Nº:	3 - 15
DATA:	8/01/15
CPF:	57753574
PO:	3017587
QTE:	15
RESP:	Marcos



Inspection Certificate

(According to DIN EN 10204.3.1)

N°: 0030032319 / A

Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO=45

YS Min/Max: 0,50 %

		Type of Specimen	Area (mm ²)	YS (MPa)	TS (MPa)	E (%)
				335	430	22
					610	
Heat	Control Lot					
131325	030002462401	STRIP WIDTH 38.1 MM	444,3	388	521	28
132457	030002462171	STRIP WIDTH 38.1 MM	445,4	409	525	23
	030002462172	STRIP WIDTH 38.1 MM	387,6	417	536	20

YS-Yield Strength; TS-Tensile Strength; E-Elongation

Impact Test

Test Specimen CHARPY 10X55X7.5 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

		AE1	AE2	AE3	AE4	AE5	AE Avg
		(J)	(J)	(J)	(J)	(J)	(J)
		23	23	23			30
Heat	Control Lot						
131325	030002462401	198	200	189			195
132457	030002462171	198	210	206			205
	030002462172	174	188	187			183

AE - Absorbed Energy

Remarks:

acc. to Lichter specification 10019728

We hereby certify that this product has been manufactured and certified in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This statement and certificate respectively is recorded by a computer system and is valid without signature, alteration or use for other products. are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (51-31) 3128-2817

e-mail: gustavo.phalco@vallourec.com

DATE

01.08.2015

DR. GUSTAVO ALVES PHALCO - CREANG-4081700

TECHNICAL RESPONSIBLE

ECO TUBES: The tubes from Vallourec de Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. The coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda. With the acquisition of 24,1 tons of steel tubes from Vallourec de Brasil S.A., your company contributes to the reduction of the greenhouse effect, avoiding the accumulation of 43,4 tons of Carbon Dioxide (CO₂) in the atmosphere.



Vallourec Tubos do Brasil S.A.

BARROCO PLANT, Belo Horizonte, MG, Brazil

CEP: 30161-970 PO BOX: 1453



ISO 9001
ISO 14001
2010 UNIFORM
Certification



Inspection Certificate

(According to DIN EN 10204-3.1)

Nº.: 0050635801

Sheet 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396309

Work Order: 355171 / 20

Customer Order: P03017585

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

Customer Material No (CMM): 157418614

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED

DIMENSIONS: 101.60 mm X 4.00 mm GRADE: S355J2H

STANDARD: METALURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006

CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011

SURFACE PROTECTION: EXTERNAL: RARE-PIPE-ENDS PROTECTOR NO PROTECTOR

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -1.016 mm / +1.016 mm WALL THICKNESS: -0.400 mm

LENGTH: RANDOM: 12000.00 mm - 13000.00 mm

STANDARD MARKING: Value stamped in the pipe body: MANUFACTURER EN 10210 S355J2H 101.60 X 4.00 HEAT NUMBER

Heat Pieces

128521 78

Total 78

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL / VISUAL / RESIDUAL MAGNETISM: MAX. 30 GAUSS / ELECTROMAGNETIC TEST: /

Chemical Composition (%)

Process: Basic-Oxygen Furnace, heats fully killed

Ceq: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

CE1: Nb + V + Ti

CE2: Cu + Cr + Mo + Ni

CE3: Nb + V

Heat Analyses Min C Mn P S Si Ni Cr Mo Al Cu V Nb N Ceq CE1 CE2 CE3

Max 0.200 1.650 0.025 0.015 0.550 0.500 0.300 0.100 0.050 0.350 0.120 0.050 0.0150 0.430 0.135 0.800 0.130

Product Analyses Min 0.020

Max 0.200 1.650 0.025 0.015 0.550 0.500 0.300 0.100 0.050 0.350 0.120 0.050 0.0150 0.430 0.135 0.800 0.130

Heat Control Lot

128521 030002402951 0.11 1.44 0.015 0.001 0.31 0.01 0.05 0.01 0.038 0.010 0.033 0.030 0.0381 0.394 0.115 0.149 0.113

Check 1 0.11 1.42 0.012 0.000 0.30 0.01 0.06 0.07 0.035 0.006 0.079 0.028 0.0033 0.338 0.108 0.146 0.107

Check 2 0.12 1.42 0.012 0.000 0.30 0.01 0.06 0.07 0.038 0.006 0.079 0.028 0.0030 0.390 0.108 0.146 0.107

Ceq: Carbon Equivalent; CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 708-14	
DATA: 10/07/14	Nº: 00041869
COD: 157418614	PO: 3017585
QTDE: 78	RESP: Marcos



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº.: 0050635801

Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: 100 mm

YS Method: 0.50 %

Type of Specimen	Area (mm ²)	YS (MPa)	TS (MPa)	E (%)
Required: Min		355	490	22 ✓
Max			630	

Heat Control Lot

128321 030002402061

STRIP WIDTH 25.4 MM

106.3

469

601

28 ✓

YS: Yield Strength; TS: Tensile Strength; E: Elongation;

Remarks:

NOTA FISCAL: 000413897

see to Liebherr specification 16019728

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (55-31) 3328-3575

e-mail: tulz.silva@vallourec.com

DATE
07.09.2014

ENG. LUIZ FERNANDO DA SILVA - 0964861024-0
TECHNICAL RESPONSIBLE

ECO-TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec do Brasil Ltda. With the acquisition of 9,5-ton(9)-cs-steel-tubes-from-Vallourec-do-Brasil-S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 17,6 ton(s) of Carbon Dioxide CO₂ in the atmosphere.



Vallourec Tubos do Brasil S.A.
HARBORO PLANT - Reta Horizonte - MG - Brazil
CNP: 30.61-970 - PJ N°: 1453



Inspection Certificate

(According to DIN EN 10203.3.1)

Nº: 0030031670

Sheet: 1 / 2

Customer: LIEBHERR BRASH, GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396795

Work Order: 353171 / 50

Customer Material No (CMN): 157457514

Customer Order: P03017585

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED

DIMENSIONS: 168,30 mm X 16,00 mm GRADE: S355J2H

STANDARD: METALLURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006

CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -1,683 mm / +1,683 mm WALL THICKNESS: -1,600 mm

LENGTH: RANDOM 12000,00 mm - 13000,00 mm

STANDARD MARKING: Print stencilled in the pipe body: MANUFACTURER: EN 10210 S355J2H 168,30 X 16,00 HEAT NUMBER

Heat	Pieces	Length(m)	Weight (kg)
129818	7	89,10	5424
Total	7	89,10	5424

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Coq: C: Mn/Si + (Nb + V) / 5 + (Ni + Cu) / 15

CE1: Nb + V + Ti

CE2: Cu + Cr + Mo + Ni

CE3: Nb + V

C: Mn P S Si Ni Cr Mo Al Cu V Nb Ti N Cq CE1 CE2 CE3

Heat Analysis Min 0,200 1,650 0,025 0,015 0,350 0,500 0,300 0,100 0,060 0,350 0,120 0,050 0,0150 0,430 0,135 0,800 0,130

Product Analysis Min 0,200 1,650 0,025 0,015 0,350 0,500 0,300 0,100 0,060 0,350 0,120 0,050 0,0150 0,430 0,135 0,800 0,130

Heat Control Lot 129818 030092416838 0,10 1,43 0,010 0,002 0,28 0,02 0,04 0,07 0,031 0,010 0,081 0,030 0,000 0,0060 0,379 0,112 0,221 0,111

Check 1 0,11 1,43 0,011 0,002 0,28 0,02 0,04 0,07 0,034 0,007 0,078 0,023 0,001 0,0060 0,388 0,108 0,215 0,107

Check 2 0,11 1,45 0,010 0,002 0,28 0,02 0,04 0,08 0,034 0,007 0,085 0,031 0,001 0,0056 0,390 0,117 0,232 0,116

Coq: Carbon Equivalent; CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 1090-14	
DATA: 31/01/14	NF: 025434139
COD: 57457514	PO: 3017585
QTD: 7	RESP: Marcos



Inspection Certificate (According to DIN EN 10204.3.1)	
Nº: 0030031670	Sheet: 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO = A5

YS Method: 0,50 %

Type of Specimen

Area

YS

YS

E

(MM²)

(MPa)

(MPa)

(%)

Required: Min

355 ✓

490 ✓

22 ✓

Max

630 ✓

Heat Control Lot Heat Pipe N° Position Tr. Lot

129818 030002416858 A 10007 Bottom

STRIP WIDTH 25,4 MM

404,5 ✓

394 ✓

523 ✓

33 ✓

YS: Yield Strength; TS: Tensile Strength; E: Elongation;

Impact Test

Test Specimen: CHARPY 10X55X10 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: E mm

AE1

AE2

AE3

AE4

AE5

AE Avg

(J)

(J)

(J)

(J)

(J)

(J)

Required: Min

27

27

27

36

Max

Heat Control Lot Heat Pipe N° Position Tr. Lot

129818 030002416858 A 10007 Bottom

258 ✓

264 ✓

284 ✓

269 ✓

AE - Absorbed Energy

Remarks

see to technical specification 10019728

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (88 33) 3228-2676

e-mail: lutz.silve@vallourec.com

DATE
09.22.2014
ING. LOUIZ FERNANDO DA SILVA JORGE
TECHNICAL RESPONSIBLE

ECO-TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100,000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 5,4 tons of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 9,7 tons of Carbon Dioxide CO₂ in the atmosphere.



Vallourec Tubos do Brasil S.A.
BARRILHO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1453



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº.: 0050639598

Sheet 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 996591

Customer Material No (CMN): 15/116734

Work Order: 355171 / 10

Customer Order: PO3017585

Inspector: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED

DIMENSIONS: 101,60 mm X 5,60 mm GRADE: S355J2H

STANDARD: METALLURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006

CUSTOMER SPECIFICATION: LIEBHERR-10019728, 22.07.2011

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -1,016 mm / +1,016 mm WALL THICKNESS: -0,560 mm

LENGTH: RANDOM 12000,00 mm - 13000,00 mm

STANDARD MARKING: Paint stenciled in the pipe body: MANUFACTURER EN 10210 S355J2H 101.60 X 5.60 HEAT NUMBER

Heat	Pieces
129966	4
Total	4

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST: / #

Chemical Composition (%) Process: Basic Oxygen Furnace, heats fully killed

Ceq: C+Mn/6+(Cr+Mo+V)/5 +(Ni+Cu)/15										CE1: Nb + V + Ti				CE2: C + Cr + Mo + Ni				CE3: Nb + V		
	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3		
Heat Analysis	Min								0,020											
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,0150	0,430	0,135	0,800	0,130		
Product Analysis	Min								0,020											
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,0150	0,430	0,135	0,800	0,130		
Heat	Control Lot																			
129966	030002414013	0,10	1,45	0,014	0,003	0,27	0,02	0,04	0,06	0,034	0,010	0,084	0,033	0,001	0,0068	0,384	0,118	0,234	0,117	
	Check 1	0,10	1,47	0,014	0,003	0,28	0,01	0,04	0,08	0,035	0,009	0,091	0,034	0,002	0,0068	0,390	0,127	0,230	0,125	
	Check 2	0,10	1,47	0,014	0,003	0,28	0,01	0,04	0,08	0,036	0,009	0,091	0,033	0,002	0,0068	0,393	0,126	0,230	0,124	

Ceq: Carbon Equivalent; CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 862-14	
DATA: 17/08/14	NF: 000420144
COD: 15341414	PO: 3017585
QTD: 04	RESP: Marcos



ISO 9001
2015
01842 1801
BUREAU VERITAS
Certified



Inspection Certificate

(According to DIN EN 10201.3.1)

N°: 0050639598

Sheet: 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: 111=AS

YS Method: 0,30 %

Type of Specimen

Area

YS

TS

E

(MM²)

(MPa)

(MPa)

(%)

Required: Min

355

490

22✓

Max

630

Heat Control Lot

120966 030002414013

STRIP WIDTH 25,4 MM

173,7

457

560

30✓

YS: Yield Strength; TS: Tensile Strength; E: Elongation;

Remarks:

NOTA FISCAL: 000420144

acc to Liebherr specification 10019728

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (65-31) 3328-2575

e-mail: lutz.silva@vallourec.com

ENG LUIZ FERNANDO J. SILVA - 0054MS-00033-D
TECHNICAL RESPONSIBLE

DATE
08.15.2014

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100,000 kg of forest planted by Vallourec Florestal Ltda.. With the acquisition of 0,7 ton(s) of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 1,3 ton(s) of Carbon Dioxide CO₂ in the atmosphere.



Valloirec Tubos do Brasil S.A.
BARCELLO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - PO BOX: 1423



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050622314 / A

Sheet: 1 / 2

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396789

Work Order: 955169 / 68

Customer Material No (CMN): 157765414 V

Customer Order: PQ3014607

Inspection: VALLOIREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED V

DIMENSIONS: 114,30 mm X 10,00 mm GRADE: S355J2H V

STANDARD: METALLURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006 V

CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011 V

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR; NO PROTECTOR V

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -1,143 mm / +1,143 mm WALL THICKNESS: -1,000 mm V

LENGTH: RANDOM 12000,00 mm - 13000,00 mm V

STANDARD MARKING: Print detailed in the pipe body: MANUFACTURER EN 10210 S355J2H 114,30 X 10,00 HEAT NUMBER V

Heat	Pieces
127695	15
Total	15

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL V VISUAL V RESIDUAL MAGNETISM V MAX 30 GAUSS V ELECTROMAGNETIC TEST: / g

Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 V

CE1: Nb + V + Ti V

CE2: Cu + Cr + Mo + Ni V

V CE3: Nb + V

Ceq: C Mn P S Si Ni Cr Mo Al Cu V Nb Ti N Ceq CE1 CE2 CE3

Heat Analysis Min 0,020

Max 0,200 1,650 0,025 0,015 0,550 0,500 0,300 0,100 0,060 0,350 0,120 0,050 0,0150 0,430 0,14 0,80 0,13

Product Analysis Min 0,020

Max 0,200 1,650 0,025 0,015 0,550 0,500 0,300 0,100 0,060 0,350 0,120 0,050 0,0150 0,430 0,14 0,80 0,13

Heat Control Lot

127695 030002354167 V 0,10 V 1,47 V 0,011 V 0,001 V 0,28 V 0,01 V 0,04 V 0,07 V 0,028 V 0,010 V 0,083 V 0,032 V 0,001 V 0,0078 V 0,385 V 0,12 V 0,13 V 0,12

Check 1 V 0,11 V 1,47 V 0,011 V 0,002 V 0,28 V 0,01 V 0,04 V 0,07 V 0,025 V 0,006 V 0,082 V 0,031 V 0,001 V 0,0073 V 0,395 V 0,12 V 0,13 V 0,12

Check 2 V 0,11 V 1,48 V 0,011 V 0,003 V 0,28 V 0,01 V 0,04 V 0,07 V 0,026 V 0,006 V 0,083 V 0,030 V 0,001 V 0,0073 V 0,397 V 0,12 V 0,13 V 0,12

Ceq: Carbon Equivalent; CE: Combined Elements;

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 355-14	
DATA: 13/03/14	Nº: 383917
COD: 157765414	PO: 3014607
QTD: 4902 K8	RESP: Marcelo



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0050622314 / A

Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: 10- A5

YS Method: 0,50 %

Type of Specimen

Area

YS

TS

E

(MM²)

(MPA)

(MPA)

(%)

Required: Min

Max

355

490

22

630

Heat Control Lot

127695 030002354167

STRIP WIDTH 25,4 MM

~256,5

~449

~559

~28

YS-Yield Strength TS-Tensile Strength E-elongation

Impact Test

Test Specimen: CHARPY 10X55X7,5 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

AE1

AE2

AE3

AE4

AE5

AE Avg

(J)

(J)

(J)

(J)

(J)

(J)

Required: Min

Max

23

23

23

30

Heat Control Lot

127695 030002354167

~209

~297

~295

~294

AE - Absorbed Energy

Remarks:

NOTA FISCAL: 000389927

acc to Liebherr specification 10019728

Obs: Ordem do CE: foi acrescentada para 9,14 sendo que o especificado é 9,135.

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (56-31) 3328-2587

e-mail: silva@vallourec.com

DATE

04.17.2014

ENG. LUIZ FERNANDO DA SILVA - OEA-MS 58834-D

TECHNICAL RESPONSIBLE

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda. With the acquisition of 5,0 tons of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 9,8 tons of Carbon Dioxide CO₂ in the atmosphere.



Inspection Certificate

(According to DIN EN 10204.3.1)

Nº: 0030029721

Sheet: 1 / 2

Vallourec Tubos do Brasil S.A.

BARBILLO PLANT - Belo Horizonte - MG - Brazil

CPF: 30161.970 - PO BOX: 1451

Customer: LIEBHERR BRASIL GUINDASTES E MAQ. OPERATRIZES LTDA.

Country: Brazil

Material Number: 396792

Work Order: 355169 / 90

Customer Material No (CMN): 157422514

Customer Order: P03014607

Inspection: VALLOUREC TUBOS DO BRASIL S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED, PLAIN ENDS, NORMALIZED ✓

DIMENSIONS: 168.30 mm X 10.00 mm GRADE: S355J2H ✓

STANDARD: METALLURGICAL: EN 10210-1, 07.2006 DIMENSIONAL: EN 10210-2, 07.2006 ✓

CUSTOMER SPECIFICATION: LIEBHERR 10019728, 22.07.2011 ✓

SURFACE PROTECTION: EXTERNAL: BARE PIPE ENDS PROTECTOR: NO PROTECTOR ✓

TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -1,683 mm / +1,683 mm WALL THICKNESS: -1,000 mm ✓

LENGTH: RANDOM 12000,00 mm - 13000,00 mm ✓

STANDARD MARKING: Paint stenciled in the pipe body: MANUFACTURER EN 10210 S355J2H 168.30 X 10.00 HEAT NUMBER ✓

Heat	Pieces	Length(m)	Weight(kg)
128148	2	24,69	990
Total	2	24,69	990

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST: / #

Chemical Composition (%)

Protest: Basic Oxygen Furnace, heats fully killed

Ceq: C+ Mn/6+ (Cr+ Mo+ V)/5 + (Ni+ Cu)/15

CE1: Nb + V + Ti

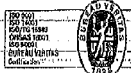
CE2: Cu + Cr + Mo + Ni

CE3: Nb + V

		C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	V	Nb	Ti	N	Ceq	CE1	CE2	CE3
Heat Analysis	Min									0,020			0,000						
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,008	0,0150	0,430	0,135	0,800	0,130
Product Analysis	Min									0,020			0,000						
	Max	0,200	1,650	0,025	0,015	0,550	0,500	0,300	0,100	0,060	0,350	0,120	0,050	0,008	0,0150	0,430	0,135	0,800	0,130
Heat	Control Lot																		
128148	030002365787	0,11	1,43	0,015	0,002	0,31	0,01	0,04	0,07	0,034	0,010	0,080	0,032	0,002	0,0095	0,388	0,114	0,210	0,112
	Check 1	0,10	1,43	0,014	0,001	0,30	0,01	0,04	0,07	0,033	0,009	0,078	0,029	0,000	0,0095	0,379	0,100	0,203	0,107
	Check 2	0,11	1,43	0,014	0,001	0,31	0,01	0,04	0,08	0,033	0,009	0,018	0,029	0,001	0,0095	0,388	0,109	0,217	0,107

Ceq: Carbon Equivalent; CE: Combined Elements

INSPEÇÃO DE RECEBIMENTO	
RIR Nº: 522-14	
DATA: 30/04/14	Nº: 000398945
COD: 157422514	PO: 3014607
QTDE: 2	RESP: Monzo



Inspection Certificate

(According to DIN EN 10204:3.1)

Nº: 0030029721

Sheet 2 / 2

Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Gage Length: LO-A5

YS Method: 0.50 %

Type of Specimen

Area

YS

TS

E

(MM²)

(MPa)

(MPa)

(%)

Required: Min

355

490

22

Max

630

Heat Control Lot

128148 030002365787

SLIP WIDTH 25,4 MM

254,0

419

542

33

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

Impact Test

Test Specimen: CHARPY 10X5X7.5 V NOTCH

Direction: Longitudinal

Temperature: -20°C

Striking tip: 8 mm

AE1

AE2

AE3

AE4

AE5

AE Avg

(J)

(J)

(J)

(J)

(J)

(J)

Required: Min

23

23

23

30

Max

Heat Control Lot

128148 030002365787

186

178

188

184

AK - Absorbed Energy

Remarks:

see to Liebherr specification 10019728

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT

FAX: (86-31) 3328-2687

e-mail: luiz.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - 00641018834-D

TECHNICAL RESPONSIBLE

DATE

04.23.2014

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda. With the acquisition of 1,0 ton(s) of steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 1,8 ton(s) of Carbon Dioxide CO2 in the atmosphere.