

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO	
RAD: 14-52388- -8	FECHA: 2016-03-15 10:07:38
DEP: 2020 DIRECCION DE NUEVAS CREACIONES	EVE: 1 REGISTRO/DEPOSITO/CONCESION/DEPOSITO
TRA: 2 PATENTES DE INVENCION	FOLIOS: 10
ACT: 519 TRASLADOINFORME	

DIRECCIÓN DE NUEVAS CREACIONES

2020
Bogotá, D.C.,

Abogado(a)/Señor(a)
MARGARITA CASTELLANOS ABONDANO

Asunto: Radicación: 14-52388- -8
Trámite: 2
Evento: 1
Actuación: 519
Oficio: 2763
Folios: 10

Patente de Invención	X			Patente de Modelo de Utilidad	
Vía Nacional	X				
Vía PCT (Fase Nacional)		Capítulo I		Capítulo II	
No. Solicitud Internacional					
Fecha de Presentación Internacional					

Como resultado del examen de fondo realizado, con fundamento en el Artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se comunica:

1. Documentos estudiados

Descripción:	Rad. N° 14-052388-00000-0000	12/marzo/2014
Reivindicaciones:	Rad. N° 14-052388-00000-0000	12/marzo/2014
Dibujos:	Rad. N° 14-052388-00000-0000	12/marzo/2014
Prioridad:	61/783701	14/marzo/2013
	14/190886	26/febrero/2014

2. Objeto de la invención

De acuerdo con lo establecido en el numeral 1.2.2.2 del Capítulo Primero del Título X de la Circular Única para efectos del examen de patentabilidad, se tendrá en cuenta la tasa pagada por el solicitante al momento de comenzar el examen para las reivindicaciones adicionales; esto es que cuando la solicitud contenga más de diez (10) reivindicaciones y no se haya pagado la tasa complementaria, sólo se estudiarán las cubiertas por la tasa pagada. Por lo tanto sólo se estudiarán las reivindicaciones 1 a 22 del capítulo reivindicatorio (Radicado N°.12-052388-00000-0000).

Título de la solicitud: "Material de alto rendimiento para aplicaciones de tubos de conducción bobinados y método de producción" (Pág. 1, radicado N° 14-052388-00000-0000).

El problema planteado en esta solicitud consiste en la necesidad desarrollar tubos bobinados de alta resistencia con procesos simplificados con condiciones químicas y tratamientos térmicos apropiados que incluyen propiedades mecánicas axiales, uniformidad de microestructura, entre otras.

Para resolver este problema técnico, la solicitud en estudio proporciona un tubo de acero bobinado que comprende un límite elástico superior a 50 Ksi, en donde la composición de dicho tubo puede comprender carbono, manganeso, silicio, azufre, fósforo, el cual puede comprender una microestructura final de una mezcla de martensita y bainita templada. Dicho tubo es formado a partir de una pluralidad de tiras soldadas, puede incluir regiones de metal base, uniones soldadas y zonas afectadas por calor.

El objeto de la presente solicitud se relaciona con la Clasificación Internacional de Patentes (CIP): B21C 37/08, C21D 1/22, 8/10, 9/08, 9/14, 9/50.

3. De la solicitud de patente

Reivindicaciones (Art 30 D 486, Art 22 PCT)

- En las reivindicaciones 1, 12 y 17 los términos y/o frases: "*metal base*", "*hierro*", son escritos de carácter general y sugieren de forma imprecisa que la protección se extiende a otras posibles variaciones o modificaciones, se sugiere realizar las modificaciones respectivas utilizando términos que describan de forma menos general o definir claramente los rangos.
- Las reivindicaciones 1 a 13, 18 a 21 mencionan términos imprecisos y/o relativos como lo son: "*aproximadamente*", "*más de*", "*mínimo*", "*por lo menos*", "*inferior a*", "*menos que*", "*hasta*", "*superior*", "*mínimo*" utilizados para definir rangos, sin embargo le restan claridad, por cuanto dichos términos no permiten establecer un intervalo puntual para cada una de las características técnicas, no siendo estas precisas y por lo tanto no claras, ya que no permiten una comparación con el estado de la técnica.

- Las reivindicaciones 1 a 6, 13, 17 y 20 a 22 no son claras porque presenta resultados a alcanzar y/o efectos, al mencionar “...zonas afectadas por el calor es homogénea”, “La microestructura final comprende una distribución uniforme de carburos finos a través de las regiones de metal base, las uniones soldadas y las zonas por el calor” (r.1 a 6), “...da como resultado un límite elástico superior a aproximadamente 80 ksi” (r.13), “...en tanto la microestructura a través de todas las regiones de metal base, uniones soldadas, y las zonas afectadas por el calor es homogénea; y en tanto la microestructura comprende una distribución uniforme de carburos finos a través de las regiones de metal base...”, “...forma un tamaño de grano inferior a 20µm en las regiones de metal base...” (r.17), “... el tubo templado posee un límite elástico superior o igual a 125 ksi (...) 140 ksi (...) entre 125 y 140 ksi” (r.20 a 22), lo cual no es permitido. Las reivindicaciones deben caracterizar un producto por la forma o constitución del mismo y las partes que lo componen. No se aceptan reivindicaciones que caractericen resultados, usos, ventajas o efectos.
- La reivindicación 7 no es concisa ya que la materia caracterizada se encuentra contenida dentro del alcance de la reivindicación 1, se sugiere realizar las aclaraciones del caso.

4. Determinación del Estado de la Técnica

El estado de la técnica se determinó con base en la fecha de presentación de la solicitud de prioridad: marzo 14 de 2013 y se encontraron los siguientes documentos que anticipan el objeto de esta solicitud:

Ítem	Documento	Título	Fecha de Presentación*
D1	MX 2012002116	“Acero de ultra alta resistencia que tiene buena dureza”	05/septiembre/2012
D2	US2010/0136363	“Compact strip or thin slab processing of boron/titanium steels”	3/enero/2010
D3	US2012/186686	“Coiled tube with varying mechanical properties for superior performance and methods to produce the same by a continuous heat treatment”	26/julio/2012

El documento D1¹ divulga aceros al carbono y métodos de fabricación. En una forma de realización, se revela un procedimiento de austenización doble en el cual se forma una composición de acero seleccionada y se somete a tratamiento térmico para refinar la microestructura de acero (resumen).

¹http://worldwide.espacenet.com/publicationDetails/originalDocument?CC=MX&NR=2012002116A&KC=A&FT=D&ND=3&date=20120905&DB=&locale=en_EP

El documento D2² divulga un método para la fundición de medio carbono, B/Ti producto de acero mediante tratamiento de bandas compacta o el moldeo de láminas (resumen).

El documento D3³ divulga tubos en espiral con propiedades mejoradas, que pueden ser enrollados en carrete, se someten a un proceso de tratamiento térmico continuo y dinámico (CDHT) (resumen).

Examen de Patentabilidad (Art 14 D486)

Novedad (Art16 D486)

La reivindicación 1 consiste en “*Un tubo de acero bobinado formado por una pluralidad de tiras soldadas,...*” (Ver página 42 del radicado N° 14-052388-00000-0000).

Comparación de las características técnicas **esenciales**, con las del Estado de la Técnica:

Características Esenciales	D1	D2
Un tubo de acero bobinado (...) caracterizado porque comprende:	Un tubo de acero, caracterizado porque comprende (reivindicación 1).	Banda de acero (...) comprende (reivindicación 1).
Un límite elástico superior a aproximadamente 80 ksi	Un límite elástico mayor a aproximadamente 175 ksi (reivindicación 1).	Límite de elasticidad puede ser mayor a 95 ksi (Párr.62)
Una composición que comprende hierro	El resto de la composición puede comprender hierro (Fe), (Pág.14, línea 15).	Siendo el resto hierro e impurezas (reivindicación 19)
0,17 – 0,35 en peso de carbono	De aproximadamente 0,25 % en peso a aproximadamente 0,35 en peso de carbono (reivindicación 1).	0.2448 en peso de C (Tabla II, ensayo I).
0,30 – 2.00 en peso de manganeso	De aproximadamente 0,3 % en peso a aproximadamente 0,70% en peso de manganeso (reivindicación 1).	1,3626 en peso de Mn (Tabla II, ensayo I).
0,10 – 0,30 en peso de silicio	De aproximadamente 0,10 % en peso a aproximadamente 0,30% en peso de silicio (reivindicación 1).	0,1635 en peso de Si (Tabla II, ensayo I).
0,010 – 0,040 en peso de aluminio	De aproximadamente 0,01% en peso a aproximadamente 0,04% en peso de aluminio (reivindicación 1).	0,0263 en peso de Al (Tabla II, ensayo I).
Hasta 0,010 en peso de azufre; y	En ciertas formas de realización, la concentración de impurezas se puede reducir a la menor cantidad posible (...) azufre (S), fósforo (P) (Pág.14, líneas 16 a 19). Tabla 1 S (0 a 0,003) y P (0 a 0,010).	0,0019 en peso de S (Tabla II, ensayo I).
Hasta 0,015 en peso de fósforo; y		0,009 en peso de P (Tabla II, ensayo II)
Una microestructura final que comprende una mezcla de martensita y bainita templada;	La microestructura del tubo de acero comprende una cantidad	La combinación correcta de boro, titanio en los aceros mejora la templabilidad, se refleja en la

2<https://docs.google.com/viewer?url=patentimages.storage.googleapis.com/pdfs/US20100136363.pdf>

3

En tanto la microestructura final del tubo bobinado comprende más de 90% en volumen martensita templada en las regiones de metal base, las uniones soldadas, y las zonas afectadas por el calor;	mayor o igual a aproximadamente 95% de martensita en volumen. El resto de la microestructura consiste esencialmente de bainita reivindicaciones 5 y 6).	formación de los contenidos de martensita elevados (Párr.005).
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Los documentos D1 y D2 se consideran el estado de la técnica cercano a la invención definida en la reivindicación 1 porque divulgan un tubo de acero ultra alta resistencia que tiene buena dureza (resumen).

Así mismo, el documento D1 divulga las características de las reivindicaciones dependientes así:

Reivindicaciones 4 y 5: Un límite elástico mayor a aproximadamente 175 ksi (reivindicación 1).

Reivindicaciones 6, 11 y 12: en el caso particular, la composición corresponde en todos sus aspectos con la composición revelada en D1, por tanto, con toda probabilidad tendría el mismo valor para este parámetro, si se midiera.

Reivindicación 7: La microestructura del tubo de acero comprende una cantidad mayor o igual a aproximadamente 95% de martensita en volumen. El resto de la microestructura consiste esencialmente de bainita reivindicaciones 5 y 6).

Reivindicaciones 8 y 9: la microestructura del tubo de acero comprende un tamaño de grano promedio que oscila entre aproximadamente 5µm y aproximadamente 15 µm (reivindicación 7).

Así mismo, el documento D2 divulga las características de las reivindicaciones dependientes así:

Reivindicaciones 2 y 3: en la tabla I y II, pruebas I y divulga una composición de: carbono (0,2448) manganeso (1,3626), silicio (0,1635), cromo (0,0104), molibdeno (0,0018), boro (0,0025), titanio (0,0222), cobre (0 hasta 0,25), níquel (0 hasta 0,2), niobio (0,0003), vanadio (0,0033), oxígeno (0), calcio (0 a 0,0024), azufre (0,0019) y fósforo (0,009).

Reivindicación 10: la formación de la losa en una tubería puede incluir una operación de soldadura (Párr.0011).

Niel Inventivo (Art18 D486)

La reivindicación 13 consiste en “*Un método de conformación de un tubo de acero bobinado...*” (Ver página 44 del radicado N° 14-052388-00000-0000).

Comparación de las características técnicas **esenciales**, con las del Estado de la Técnica:

Características Esenciales	D1	D3
Un método de conformación de un tubo de acero (...) caracterizado porque comprende:	Un tubo de acero, caracterizado porque comprende (reivindicación 1).	Banda de acero (...) comprende (reivindicación 1).
Proveer tiras que poseen una composición que comprende hierro y	El resto de la composición puede comprender hierro (Fe), (Pág.14, línea 15).	
0,17 – 0,35 en peso de carbono	De aproximadamente 0,25% en peso a aproximadamente 0,35% en peso de carbono (reivindicación 1).	0,23 a 0,28% en peso de carbono (Párr.0039).
0,30 – 2,00 en peso de manganeso	De aproximadamente 0,3% en peso a aproximadamente 0,70% en peso de manganeso (reivindicación 1).	1,2 a 1,6% en peso de manganeso (Párr.0039).
0,10 – 0,30 en peso de silicio	De aproximadamente 0,10% en peso a aproximadamente 0,30% en peso de silicio (reivindicación 1).	0,15 hasta 0,35% en peso de silicio (Párr.0039).
0,010 – 0,040 en peso de aluminio	De aproximadamente 0,01% en peso a aproximadamente 0,04% en peso de aluminio (reivindicación 1).	Menos de 0,02% en peso de aluminio (Párr.0039).
Hasta 0,010 en peso de azufre; y	En ciertas formas de realización, la concentración de impurezas se puede reducir a la menor cantidad posible (...) azufre (S), fósforo (P) (Pág.14, líneas 16 a 19). Tabla 1 S (0 a 0,003) y P (0 a 0,010).	Menos de menos de 0,005% en peso de azufre (Párr.0039).
Hasta 0,015 en peso de fósforo; y		Menos de 0,02% en peso de fósforo (Párr.0039).
Soldar las tiras entre si	No menciona	Las secciones de tubo pueden ser soldadas juntos en tiras planas para luego formar el tubo (Párr.0017)
Formar un tubo a partir de las tiras soldadas, en donde el tubo comprende regiones de metal base, uniones soldadas y sus zonas afectadas por calor:	No menciona	
Austenizar el tubo entre 900 – 1000°C;	Calentar el tubo de acero formado en una primera operación de calentamiento a una primera temperatura de aproximadamente 900°C a 950°C (Pág.6, líneas 21 a 23). El rango preferido de austenización es provisto en cada condición, depende del tamaño de carburo de hierro de la microestructura inicial (Pág.12	No menciona
Enfriar el tubo	La barra tubular se puede enfriar (Pág. 29	El método en que al menos la temperatura, tiempo de reposo, velocidad de calentamiento y la velocidad de enfriamiento es variada durante el tratamiento térmico del tubo (reivindicación 3).
Templar el tubo enfriado entre 550-720°C,	Templar el tubo de acero formado en una primera operación de temple a partir de la primera temperatura al calentar el tubo de acero a una temperatura de aproximadamente 550°C. (Pág.5	No menciona

El documento D1 se considera el estado de la técnica cercano a la invención definida en la reivindicación 13 porque divulgan un método de conformación de un tubo de acero (...) (resumen).

La diferencia entre la invención, definida en la reivindicación 13 y el método de D1 consiste en que este último no divulga específicamente el paso de soldar las tiras entre si y formar el tubo.

El efecto técnico que se logra al soldar las tiras entre si es lograr unir las tiras firmemente para así formar el tubo metálico.

Por lo tanto, el problema técnico objetivo que pretende resolver esta invención se puede formular así: “¿Cómo modificar el método divulgado en D1 de tal manera que las tiras queden unidas firmemente y formar el tubo metálico?”.

Sin embargo, ya era conocido en el estado de la técnica procesos de formación de tubos metálicos uniendo tiras metálicas y soldándolas, ya que el documento D3 divulga unas tiras metálicas planas que se sueldan a lo largo de las longitudes para producir una longitud continua de tubo que esta enrollado (Párr.006).

En consecuencia, la persona del oficio normalmente versada en la materia, enfrentada al problema objeto de como unir las tiras firmemente y formar el tubo metálico, estaría motivada a soldar las tiras conocido en D3, en el método divulgado en D1 para llegar a la materia reivindicada, por tanto, se considera que la solución de la reivindicación 1 carece de nivel inventivo.

Así mismo, el documento D1 divulga las características de las reivindicaciones dependientes así:

Reivindicación 17: la microestructura del tubo de acero comprende un tamaño de grano promedio que oscila entre aproximadamente 5µm y aproximadamente 15 µm (reivindicación 7).

Reivindicaciones 18 y 19: tabla 1 enseña valores de elementos dentro de la composición que están incluidos o solapan los reivindicados, así:

Elemento	Rango amplio de composición (% en peso)		Rango de composición preferente (% en peso)	
	Mínimo	Máximo	Mínimo	Máximo
C	0,25	0,35	0,26	0,29
Mn	0,30	0,70	0,45	0,55
Si	0,10	0,30	0,20	0,30
S	0	0,10	0	0,003
P	0	0,015	0	0,010
Cr	0,90	1,70	1,30	1,50
Mo	0,60	1,00	0,65	0,070
Ni	0	0,50	0	0,15
Nb	0	0,040	0	0,007
V	0,050	0,150	0,12	0,15
Ti	0	0,015	0	0,007
Cu	0	0,30	0	0,15
Al	0,01	0,04	0,020	0,035
O	0	0,005	0	0,0015
Ca	0	0,05	0	0,03
N	0	0,010	0	0,008

Reivindicaciones 20 y 21: Un límite elástico mayor a aproximadamente 175 ksi (reivindicación 1).

Reivindicación 22: en el caso particular, la composición corresponde en todos sus aspectos con la composición revelada en D1, por tanto, con toda probabilidad tendría el mismo valor para este parámetro, si se midiera.

Las reivindicaciones 14 a 16 son afectadas con el conocimiento del técnico, el cual se basó en su conocimiento general sobre el estado de la técnica y realizó las comparaciones con su apreciación en conjunto, determinando que con tales conocimientos existentes se llega a la invención reivindicada. Sobre el saber general el experto medio, el Tribunal Andino de Justicia ha dicho lo siguiente:

“El experto medio deberá poseer experiencia y contar con un saber general en la materia y con una serie de conocimientos en el campo específico de la invención. (Proceso 43-IP-2002, publicado en la G.O.A.C. Nº 870, de 9 de diciembre de 2002, caso: FORMULACIONES DE PEPTIDOS HIDROSOLUBLES DE LIBERACIÓN RETARDADA).

Es conocido que en proceso de soldadura y formación de tubos metálicos se utiliza soldadura oblicua⁴, formación de empalmes lineales⁵ y que el enfriamiento del tubo templado se realiza en una bobina, por tanto, dichas características no le brindan altura inventiva a la reivindicación 13.

⁴Soldadura oblicua http://www.glossary.oilfield.slb.com/es/Terms/b/bias_weld.aspx

⁵Diseño de Uniones. https://www.uclm.es/area/ing_rural/Acero/Textos/TOMO13.pdf

5. Conclusión

Los requisitos de Patentabilidad de la presente Solicitud están afectados así:

Ítem	Documento	Reivindicaciones afectadas	Requisito que afecta
D1	MX 2012002116	1, 4 a 9, 11 y 12	Novedad y Nivel Inventivo
		13 a 22	Nivel Inventivo
D2	US2010/0136363	2, 3 y 10	Novedad y Nivel Inventivo
D3	US2012/186686	13	Nivel Inventivo

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta (60) días contados a partir del día siguiente de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Si como respuesta a este requerimiento el solicitante llegara a modificar: i) el capítulo reivindicatorio, ii) la descripción de la invención a proteger, iii) o presente un nuevo capítulo reivindicatorio, no deberá pagar la tasa de modificación voluntaria pero sí la correspondiente a la tasa de examen de patentabilidad para que se estudie la materia modificada. En todo caso, el número de requerimientos por no patentabilidad estará supeditado a que el término del estudio de patentabilidad no sea superior a 18 meses, contados desde la publicación de la solicitud de patente de invención. Adicionalmente, se le recuerda al solicitante que si como respuesta a este requerimiento llegara a modificar el capítulo reivindicatorio y éste contenga más de diez (10) reivindicaciones deberá pagar la tasa por reivindicación adicional.

Se invita al solicitante se sirva indicar, si así lo considera, su renuncia al término faltante de sesenta (60) días para dar respuesta a este requerimiento y presentarla por escrito.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única No. 10 de 2001.



JOSÉ LUIS SALAZAR LÓPEZ
Director de Nuevas Creaciones (c)

El anterior requerimiento fue notificado por fijación en lista, de fecha 2016-03-22

Elaboró: Olga Ximena Benavides Salazar
Revisó: Rachid Ponce Vergel

PatBase - Search results 04 March 2016

Search query (2): [SP]: 1. a coiled steel tube formed from a plurality of welded strips, wherein the tube includes base metal regions, weld joints, and their heat affected zones, comprising: a yield strength greater than about 80 ksi a composition comprising iron and: 0.17-0.35 weight percent carbon 0.30-2.00 weight percent manganese 0.10-0.30 weight percent silicon 0.010-0.040 weight percent aluminum up to 0.010 weight percent sulfur and up to 0.015 weight percent phosphorus and a final microstructure comprising a mixture of tempered martensite and bainite wherein the final microstructure of the coiled tube comprises more than 90 volume percent tempered martensite in the base metal regions, the weld joints, and the heat affected zones wherein the final microstructure across all base metal regions, weld joints, and heat affected zones is homogeneous and wherein the final microstructure comprises a uniform distribution of fine carbides across the base metal regions, the weld joints, and the heat affected zones. 2. the coiled steel tube of claim 1, wherein the composition further comprises: up to 1.0 weight percent chromium up to 0.5 weight percent molybdenum up to 0.0030 weight percent boron up to 0.030 weight percent titanium up to 0.50 weight percent copper up to 0.50 weight percent nickel up to 0.1 weight percent niobium up to 0.15 weight percent vanadium up to 0.0050 weight percent oxygen and up to 0.05 weight percent calcium. 3. the coiled steel tube of claim 2, wherein the composition comprises: 0.17 to 0.30 weight percent carbon 0.30 to 1.60 weight percent manganese 0.10 to 0.20 weight percent silicon up to 0.7 weight percent chromium up to 0.5 weight percent molybdenum 0.0005 to 0.0025 weight percent boron 0.010 to 0.025 weight percent titanium 0.25 to 0.35 weight percent copper 0.20 to 0.35 weight percent nickel up to 0.04 weight percent niobium up to 0.10 weight percent vanadium up to 0.0015 weight percent oxygen up to 0.03 weight percent calcium up to 0.003 weight percent sulfur and up to 0.010 weight percent phosphorus. 4. the coiled steel tube of claim 1, wherein the tube has a minimum yield strength of 125 ksi. 5. the coiled steel tube of claim 1, wherein the tube has a minimum yield strength of 140 ksi. 6. the coiled steel tube of claim 1, wherein the tube has a minimum yield strength of between 125 ksi and 140 ksi. 7. the coiled steel tube of claim 1, wherein the final microstructure comprises at least 95 volume percent tempered martensite in the base metal regions, the weld joints, and the heat affected zones. 8. the coiled steel tube of claim 1, wherein the tube has a final grain size of below 20 micro m in the base metal regions, the weld joints, and the heat affected zones. 9. the coiled steel tube of claim 8, wherein the tube has a final grain size of below 15 micro m in the base metal regions, the weld joints, and the heat affected zones. 10. the coiled steel tube of claim 1, wherein the weld joints comprise bias welds. 11. the coiled steel tube of claim 10, wherein the fatigue life at the bias welds is at least about 80 percent of the base metal regions. 12. the coiled steel tube of claim 1, wherein a percent hardness of a weld joint, including its heat affected zone, is 110 percent or less than a hardness of the base metal. 13. a method of forming a coiled steel tube comprising: providing strips having a composition comprising iron and: 0.17-0.35 weight percent carbon 0.30-2.00 weight percent manganese 0.10-0.30 weight percent silicon 0.010-0.040 weight percent aluminum up to 0.010 weight percent sulfur up to 0.015 weight percent phosphorus and welding the strips together forming a tube from the welded strips, wherein the tube comprises base metal regions, joint welds, and their heat affected zones austenitizing the tube between 900-1000 degrees centigrade quenching the tube to form a final as quenched microstructure of martensite and bainite, wherein the as quenched microstructure comprises at least 90 percent martensite in the base metal regions, the weld joints, and the heat affected zones and tempering the quenched tube between 550-720 degrees centigrade, wherein tempering of the quenched tube results in a yield strength greater than about 80 ksi wherein the microstructure across all base metal regions, weld joints, and the heat affected zones is homogeneous and wherein the microstructure comprises a uniform distribution of fine carbides across the base metal regions, the weld joints, and the heat affected zones. 14. the method of claim 13, wherein welding the strips comprises bias welding. 15. the method of claim 13, wherein forming the tube comprises forming a line joint. 16. the method of claim 13, further comprising coiling the tempered tube on a spool. 17. the method of claim 13, wherein austenitizing forms a grain size below 20 micro m in the base metal regions, the weld joints, and the heat affected zones. 18. the method of claim 13, wherein the composition further comprises: up to 1.0 weight percent chromium up to 0.5 weight percent molybdenum up to 0.0030 weight percent boron up to 0.030 weight percent titanium up to 0.50 weight percent copper up to 0.50 weight percent nickel up to 0.1 weight percent niobium up to 0.15 weight percent vanadium up to 0.0050 weight percent oxygen and up to 0.05 weight percent calcium. 19. the method of claim 18, wherein the composition comprises: 0.17 to 0.30 weight percent carbon 0.30 to 1.60 weight percent manganese 0.10 to 0.20 weight percent silicon up to 0.7 weight percent chromium up to 0.5 weight percent molybdenum 0.0005 to 0.0025 weight percent boron 0.010 to 0.025 weight percent titanium 0.25 to 0.35 weight percent copper 0.20 to 0.35 weight percent nickel up to 0.04 weight percent niobium up to 0.10 weight percent vanadium up to 0.00015 weight percent oxygen up to 0.03 weight percent calcium up to 0.003 weight percent sulfur and up to 0.010 weight percent phosphorus. 20. the method of claim 13, wherein the tempered tube has a yield strength greater than or equal to 125 ksi. 21. the method of claim 13, wherein the tempered tube has a minimum yield strength of 140 ksi. 22. the method of claim 13, wherein the tempered tube has a minimum yield strength between 125 and 140 ksi.

Results: 13

Search history

Search PN=(EP2778239) (Results 1)
1:

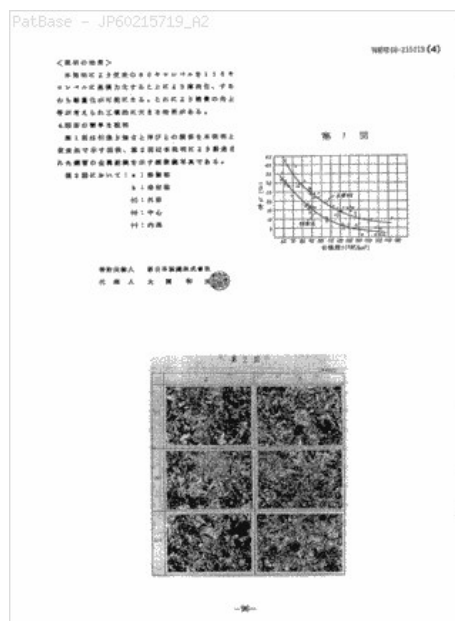
Search [SP]: 1. a coiled steel tube formed from a plurality of welded strips, wherein the tube includes base metal regions, weld joints, and their heat affected zones, comprising: a yield strength greater than about 80 ksi a composition comprising iron and: 0.17-0.35 weight percent carbon 0.30-2.00 weight percent manganese 0.10-0.30 weight percent silicon 0.010-0.040 weight percent aluminum up to 0.010 weight percent sulfur and up to 0.015 weight percent phosphorus and a final microstructure comprising a mixture of tempered martensite and bainite wherein the final microstructure of the coiled tube comprises more than 90 volume percent tempered martensite in the base metal regions, the weld joints, and the heat affected zones wherein the final microstructure across all base metal regions, weld joints, and heat affected zones is homogeneous and wherein the final microstructure comprises a uniform distribution of fine carbides across the base metal regions, the weld joints, and the heat affected zones. 2. the coiled steel tube of claim 1, wherein the composition further comprises: up to 1.0 weight percent chromium up to 0.5 weight percent molybdenum up to 0.0030 weight percent boron up to 0.030 weight percent titanium up to 0.50 weight percent copper up to 0.50 weight percent nickel up to 0.1 weight percent niobium up to 0.15 weight percent vanadium up to 0.0050 weight percent oxygen and up to 0.05 weight percent calcium. 3. the coiled steel tube of claim 2, wherein the composition comprises: 0.17 to 0.30 weight percent carbon 0.30 to 1.60 weight percent manganese 0.10 to 0.20 weight percent silicon up to 0.7 weight percent chromium up to 0.5 weight percent molybdenum 0.0005 to 0.0025 weight percent boron 0.010 to 0.025 weight percent titanium 0.25 to 0.35 weight percent copper 0.20 to 0.35 weight percent nickel up to 0.04 weight percent niobium up to 0.10 weight percent vanadium up to 0.0015 weight percent oxygen up to 0.03 weight percent calcium up to 0.003 weight percent sulfur and up to 0.010 weight percent phosphorus. 4. the coiled steel tube of claim 1, wherein the tube has a minimum yield strength of 125 ksi. 5. the coiled steel tube of claim 1, wherein the tube has a minimum yield strength of 140 ksi. 6. the coiled steel tube of claim 1, wherein the tube has a minimum yield strength of between 125 ksi and 140 ksi. 7. the coiled steel tube of claim 1, wherein the final microstructure comprises at least 95 volume percent tempered martensite in the base metal regions, the weld joints, and the heat affected zones. 8. the coiled steel tube of claim 1, wherein the tube has a final grain size of below 20 micro m in the base metal regions, the weld joints, and the heat affected zones. 9. the coiled steel tube of claim 8, wherein the tube has a final grain size of below 15 micro m in the base metal regions, the weld joints, and the heat affected zones. 10. the coiled steel tube of claim 1, wherein the weld joints comprise bias welds. 11. the coiled steel tube of claim 10, wherein the fatigue life at the bias welds is at least about 80 percent of the base metal regions. 12. the coiled steel tube of claim 1, wherein a percent hardness of a weld joint, including its heat affected zone, is 110 percent or less than a hardness of the base metal. 13. a method of forming a coiled steel tube comprising: providing strips having a composition comprising iron and: 0.17-0.35 weight percent carbon 0.30-2.00 weight percent manganese 0.10-0.30 weight percent silicon 0.010-0.040 weight percent aluminum up to 0.010 weight percent sulfur up to 0.015 weight percent phosphorus and welding the strips together forming a tube from the welded strips, wherein the tube comprises base metal regions, joint welds, and their heat affected zones austenitizing the tube between 900-1000 degrees centigrade quenching the tube to form a final as quenched microstructure of martensite and bainite, wherein the as quenched microstructure comprises at least 90 percent martensite in the base metal regions, the weld joints, and the heat affected zones and tempering the quenched tube between 550-720 degrees centigrade, wherein tempering of the quenched tube results in a yield strength greater than about 80 ksi wherein the microstructure across all base metal regions, weld joints, and the heat affected zones is homogeneous and wherein the microstructure comprises a uniform distribution of fine carbides across the base metal regions, the weld joints, and the heat affected zones. 14. the method of claim 13, wherein welding the strips comprises bias welding. 15. the method of claim 13, wherein forming the tube comprises forming a line joint. 16. the method of claim 13, further comprising coiling the tempered tube on a spool. 17. the method of claim 13, wherein austenitizing forms a grain size below 20 micro m in the base metal regions, the weld joints, and the heat affected zones. 18. the method of claim 13, wherein the composition further comprises: up to 1.0 weight percent chromium up to 0.5 weight percent molybdenum up to 0.0030 weight percent boron up to 0.030 weight percent titanium up to 0.50 weight percent copper up to 0.50 weight percent nickel up to 0.1 weight percent niobium up to 0.15 weight percent vanadium up to 0.0050 weight percent oxygen and up to 0.05 weight percent calcium. 19. the method of claim 18, wherein the composition comprises: 0.17 to 0.30 weight percent carbon 0.30 to 1.60 weight percent manganese 0.10 to 0.20 weight percent silicon up to 0.7 weight percent chromium up to 0.5 weight percent molybdenum 0.0005 to 0.0025 weight percent boron 0.010 to 0.025 weight percent titanium 0.25 to 0.35 weight percent copper 0.20 to 0.35 weight percent nickel up to 0.04 weight percent niobium up to 0.10 weight percent vanadium up to 0.00015 weight percent oxygen up to 0.03 weight percent calcium up to 0.003 weight percent sulfur and up to 0.010 weight percent phosphorus. 20. the method of claim 13, wherein the tempered tube has a yield strength greater than or equal to 125 ksi. 21. the method of claim 13, wherein the tempered tube has a minimum yield strength of 140 ksi. 22. the method of claim 13, wherein the tempered tube has a minimum yield strength between 125 and 140 ksi. (Results 13)

Abstract: Source: JP60215719A PURPOSE:To obtain the titled steel pipe having superior ductility and greater than or equal to15kgf/mm.<2> tensile strength by welding a steel sheet contg. prescribed percentages of C, Mn, Si, P, S, Ti, B, N and Al by electric welding to form an electric welded steel pipe and by heat treating the pipe. CONSTITUTION:A steel sheet contg. 0.15-0.3 percent C, less than or equal to 1.5 percent Mn, less than or equal to 0.5 percent Si, less than or equal to 0.03 percent P, less than or equal to 0.03 percent S, less than or equal to 0.03 percent Ti, 0.0003-0.0025 percent B, less than or equal to 0.006 percent N and less than or equal to 0.1 percent Al or further contg. one or more among less than or equal to 1 percent Cr, less than or equal to 0.5 percent Mo, less than or equal to 0.05 percent V, less than or equal to 0.05 percent Nb, less than or equal to 1 percent Ni and less than or equal to 1 percent Cu is rolled and welded by electric welding to form an electric welded steel pipe. This pipe is hardened and tempered. By this method the titled steel pipe having superior ductility and greater than or equal to15kgf/mm.<2> tensile strength is obtd.

International (IPC 8-9): C21D9/08 C22C38/00 (Advanced/Invention);
C21D9/08 C22C38/00 (Core/Invention)

CPC: C21D9/08

European: C21D9/08



Publication number	Publication date	Application number	Application date
JP60215719 A2	19851029	JP19840068376	19840407

JP19840068376 19840407

Probable Assignee: NIPPON STEEL CORP

Assignee(s): (std): NIPPON STEEL CORP

Assignee(s): SHIN NIPPON SEITETSU KK

Inventor(s): (std): CHIYANO ZENSAKU ; MURAYAMA HIROSHI ; WATANABE ATSUSHI

Inventor(s): CHANO ZENSAKU

Title: METHOD AND APPARATUS FOR PRODUCING CONTINUOUS LENGTHS OF COILABLE TUBING

Abstract: Source: US4863091A A system for making a long length of seam-welded tubing from shorter lengths of flat metal strip which are spliced end-to-end and formed into tubular form and seam-welded. Adjoining ends of two successive lengths of the strip are trimmed at supplementary angles, one of which is an acute angle. The trimmed ends are abutted and welded, preferably with weldment extending beyond each such end. All surfaces of the weld are finished to match the dimensions of the strip. The tubing, along with the welded joints, is heat treated as the tubing is formed to produce a product substantially free of internal surface roughness along the splice welds.

Classifications:**International (IPC 8-9):** B21C37/08 B21C37/083 B23K31/02

B23K37/00 (Advanced/Invention);

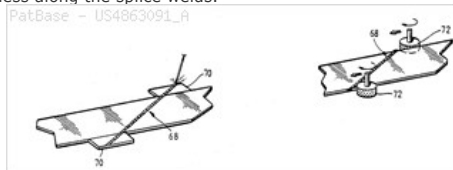
B21C37/08 B21C37/083 B23K31/02 (Core/Invention)

International (IPC 1-7): B21C37/08 B23K31/00 B23K31/02 B23K31/06 B23K37/00

F16L11/14 F16L9/16

CPC: Y10T29/5185 B23K31/027 B21C37/08 B21C37/0826 B21C37/083 Y10T137/6929**European:** B21C37/08 B21C37/083 B21C37/08N B23K31/02T**US:** 137/355.19 138/100 138/150 138/151 138/154 138/171 219/59.1 228/147 228/5.7 29/33D

PatBase - US4863091_A

**Family:**

Publication number	Publication date	Application number	Application date
CA1309237 A1	19921027	CA19880561647	19880316
DE3809224 A1	19881006	DE19883809224	19880318
GB2204820 A1	19881123	GB19880006086	19880315
GB2204820 B2	19900523	GB19880006086	19880315
GB8806086 A0	19880413	GB19880006086	19880315
IN170984 A	19920627	IN1988MA00170	19880316
JP2118464 C3	19961206	JP19880067058	19880318
JP63268513 A2	19881107	JP19880067058	19880318
JP8029340 B4	19960327	JP19880067058	19880318
US4863091 A	19890905	US19870029171	19870318
US5191911 A	19930309	US19920825838	19920128

Priority:

US19870029171 19870318	CA19880561647 19880316	US19900617429 19901119
US19880253662 19881005	US19920825838 19920128	US19880029171 19880318

Probable Assignee: QUALITY TUBING INC**Assignee(s):** (std): KUORITEII CHIYUUBINGU INC ; QUALITY TUBING INC**Assignee(s):** QUALITY TUBING INC HOUSTON TEX US ; DUBOIS JON D**Inventor(s):** (std): DUBOIS JON D ; JON D DUBOIS ; JIYON DEII DOBOWA**Inventor(s):** DUBOIS JON D HOUSTON TEX US**Agent(s):** CASSAN MACLEAN

Title: DUAL SEAM-WELDED AIR HARDENABLE STEEL TUBING AND STRUCTURAL MEMBERS

Abstract: Source: US2005257861A The present invention provides seam-welded, air hardenable steel tubes, methods of manufacturing seam-welded air hardenable steel tubes, tube mills for practicing such methods and applications for using seam-welded, air hardenable steel tubing of the present invention.

Classifications:

International (IPC 8-9): A47J36/02 B21C37/08 B21D39/02 B21D53/26 B21D53/88 B21D7/08 B23K20/22 B23K28/00 B23K31/00 B23K31/02 B23K35/24 B23K35/30 B23K9/02 B23K9/025 B23K9/167 C21D1/56 C21D6/00 C21D8/00 C21D9/08 C21D9/50 C21D9/52 C22C38/02 C22C38/52 F16L9/02 (Advanced/Invention); B23K101/04 B23K101/06 B23K103/04 B23K31/02 B23K9/23 C21D6/00 C21D8/10 C21D9/08 F16L9/02 (Advanced/Non-invention); A47J36/02 B21C37/08 B21D39/02 B21D53/00 B21D53/26 B21D7/00 B23K20/22 B23K28/00 B23K31/00 B23K31/02 B23K35/24 B23K35/30 B23K9/02 B23K9/025 B23K9/167 C21D1/56 C21D6/00 C21D8/00 C21D9/08 C21D9/50 C21D9/52 C22C38/02 C22C38/52 F16L9/00 (Core/Invention); B23K9/23 C21D6/00 C21D8/10 (Core/Non-invention); B21C B23K C21D F16L (Subclass/Invention)
International (IPC 1-7): B21C37/08 B23K31/02 B23K9/167 C21D9/08 C21D9/50 F16L9/02

CPC: B23K2201/04 B23K2201/10 B23K2201/34 B23K2203/02 B23K2203/16 C21D8/105 C23C26/02 F16L9/02 C22C38/40 C21D6/002 C22C38/02 C22C38/04 C21D1/25 B23K31/02 B23K5/12 B23K13/00 Y10T29/49622 Y10T29/49492 B23K26/32 B23K2203/50 B23K26/262 B23K9/167 B23K9/0253 B23K2201/006 B23K2201/06 B23K2201/28 B23K35/3053 B23K9/23 B23K11/16 B23K13/01 B23K15/0093 B23K20/12 B23K20/227 B23K203/04 Y02P10/253 C21D9/50 C21D1/42 C21D9/0068 C21D9/08 C21D9/46 C21D9/505 C21D2211/008

European: B23K11/16 B23K13/00 B23K13/01 B23K15/00W8 B23K20/12 B23K20/227 B23K26/26B B23K26/32D B23K31/02 B23K35/30H B23K5/12 B23K9/025B B23K9/167 B23K9/23 C21D1/42 C21D9/00P C21D9/08 C21D9/46 C21D9/50 C21D9/50K C23C26/02 F16L9/02 L23K201/00N L23K201/04 L23K201/06 L23K201/10 L23K201/28 L23K201/34 L23K203/02 L23K203/04 L23K203/16 M21D211/00M M21D6/00D M21D8/10A M21D9/50K

US: 148/521 148/529 148/529S 148/534 148/534S 148/590 148/592 148/593 148/594 148/597 148/605 148/606 148/607 148/608 148/609 148/639 148/663 219/612 228/101 228/101P 228/144 228/149 228/150 228/158 228/158P 228/199 228/200 228/227 228/227S 228/231 228/262.41 29/894.3 29/894.300P 29/897.2 420/38 72/51

Family:

Publication number	Publication date	Application number	Application date
AT512752 E	20110715	AT20020807571T	20020701
CA2711795 AA	20080717	CA20082711795	20080110
CN101622365 A	20100106	CN200880006715	20080117
CN101622365 B	20121114	CN200880006715	20080117
EP1551591 A1	20050713	EP20020807571	20020701
EP1551591 A4	20080312	EP20020807571	20020701
EP1551591 B1	20110615	EP20020807571	20020701
EP2126145 A1	20091202	EP20080724553	20080117
HK1080786 A1	20110930	HK20060100480	20060112
HK1080786 A3	20060504	HK20060100480	20060112
JP2005531414 T2	20051020	JP20040517485T	20020701
JP2010516471 T2	20100520	JP20090546418T	20080117
KR100821117 B1	20080411	KR20047021510	20041229
KR20050038595 A	20050427	KR20047021510	20041229
KR20090112705 A	20091028	KR20097017097	20080117
US2005257861 AA	20051124	US20050031328	20050107
US2007006461 AA	20070111	US20060519331	20060911
US2007012748 AA	20070118	US20060526258	20060922
US2007034673 AA	20070215	US20050143848	20050601
US2007045384 AA	20070301	US20060542970	20061004
US2008115863 AA	20080522	US20080009279	20080117
US2008203139 AA	20080828	US20080008367	20080110
US7232053 BB	20070619	US20050143848	20050601
US7475478 BB	20090113	US20060519331	20060911
US7540402 BB	20090602	US20080008367	20080110
US7618503 BB	20091117	US20080009279	20080117
US7926180 BB	20110419	US20060542970	20061004
WO04002673 A1	20040108	WO2002US20888	20020701
WO08086028 A1	20080717	WO2008US00359	20080110
WO08088834 A1	20080724	WO2008US00586	20080117

Priority:

US20010301970P	20010629	US20020301970P	20020629	US20020519910	20020701
US20060519910	20060911	US20050519910	20050601	WO2002US20888	20020701
US20050031328	20050107	US20050143848	20050601	US20040519910	20041230
US20060526258	20060922	US20080009279	20080117	US20070879861P	20070110
US20080008367	20080110	US20060519331	20060911	US20060542970	20061004
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Probable Assignee: KVA INC

Assignee(s): (std): CODD DANNY ; KVA INC ; KVA INC US ; MCCRINK EDWARD J ; RAOS DAVOR JACK ; RAOS DAVOR ; CODD DANIEL S

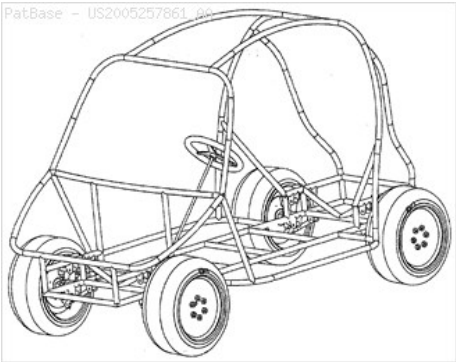
Assignee(s): CODD DANIEL SHAWN ; MCCRINK JOSEPH JOHN

Inventor(s): (std): RAOS DAVOR ; RAOS DAVOR JACK ; MCCRINK EDWARD J ; MC CRINK EDWARD J ; CODD DANNY ; CODD DANIEL S

Inventor(s): CODD DANIEL ; MCCRINK EDWARD

Agent(s): SCOTT FIONA PENELOPE ELAINE; PARRY CHRISTOPHER STEPHEN; DAVOR RAOS; DRUMMOND AND DUCKWORTH; RUSSO AND DUCKWORTH LLP 2ND FLOOR; RUSSO AND DUCKWORTH LLP; DAVID G; DUCKWORTH DAVID G

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

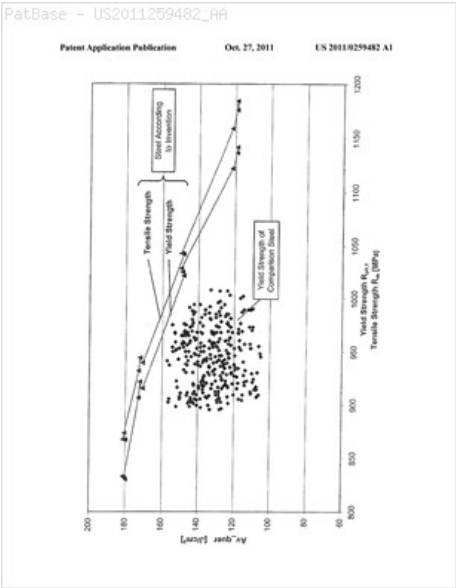


Title: USE OF A STEEL ALLOY FOR WELL PIPES FOR PERFORATION OF BOREHOLE CASINGS, AND WELL PIPE

Abstract: Source: US2011259482A Use of a steel alloy for well pipes of perforating units for perforation of borehole casings, with the steel alloy comprised, in mass- percent, of Carbon (C) 0.12-0.25, Manganese (Mn) 0.5-2.0, Silicon (Si) 0.1-0.5, Nitrogen (N) 0.006-0.015, Sulfur (S) <0.005, Chromium (Cr) 0.1-1.5, Molybdenum (Mo), <0.3, Nickel (Ni) <1.0, Vanadium (V) <0.25, Niobium (Nb) 0.010-0.15, Titanium (Ti) 0.02-0.06, Boron (B) 0.001-0.006, Calcium (Ca) <0.0025, and iron as well as impurities resulting from smelting as remainder, wherein the steel alloy is heated at a heating rate of 1-100 K/s to an austenitizing temperature between 10 to 50 degrees centigrade above its transformation temperature Ac3, and held at this austenitizing temperature between 0.1 and 10 minutes and austenitized, subsequently quenched at a quenching rate of >50K/s, so as to adjust a martensite content of >95 percent, wherein the remainder is formed of lower bainite, wherein the structure is then tempered starting from room temperature between 1 and 25 minutes at temperatures between 280 degrees centigrade and 700 degrees centigrade, and finally cooled in air or quenched in water to room temperature, wherein the steel has a tensile strength Rm ranging from 600 MPa to 1,350 MPa at transverse notch impact toughnesses in a range between 210 and 70 J/cm² at room temperature, wherein the product of tensile strength and transverse notch impact toughness lies in the strength range between 750 MPa and 1,200 MPa in a range of 141,000 to 165,000 MPassJ/cm².

Classifications:

International (IPC 8-9): C21D1/25 C21D6/00 C21D9/08 C21D9/14 C22C38/02 C22C38/04 C22C38/14 C22C38/22 C22C38/24 C22C38/26 C22C38/28 C22C38/32 C22C38/38 C22C38/44 C22C38/46 C22C38/48 C22C38/50 C22C38/54 C22C38/58 E21B17/00 F16L9/02 (Advanced/Invention);
International (IPC 1-7): C22C38/04 C22C38/26 C22C38/28 C22C38/32 E21B17/00 (Core/Invention)
CPC: C21D1/25 C21D6/002 C21D9/085 C21D9/14 C21D2211/008 C22C38/04 C22C38/14
European: C21D1/25 C21D6/00D C21D9/08K C21D9/14 C22C38/04 C22C38/14 M21D211/00M
US: 138/177 138/177S 148/330 148/330S 148/590



Family:

Publication number	Publication date	Application number	Application date
AR066600 AA	20090902	AR2008P102081	20080516
CA2685001 AA	20081120	CA20082685001	20080516
DE102007023306 A1	20081120	DE200710023306	20070516
EP2152919 A1	20100217	EP20080758587	20080516
EP2152919 B1	20150930	EP20080758587	20080516
US2011259482 AA	20111027	US20080600126	20080516
WO08138642 A1	20081120	WO2008EP03961	20080516

Priority:

DE200710023306 20070516 WO2008EP03961 20080516

Probable Assignee: BENTELER DEUTSCHLAND GMBH

Assignee(s): (std): BENTELER STAHL ROHR GMBH ; HALFPAP CHRISTOPHER ; PETERS ANDREAS ; TRITTEL ROLF ; BENTELER DEUTSCHLAND GMBH

Assignee(s): BENTELER AG

Inventor(s): (std): HALFPAP CHRISTOPHER ; PETERS ANDREAS ; TRITTEL ROLF

Agent(s): KSOLL PETER; BOCKERMANN KSOLL GRIEPENSTROH

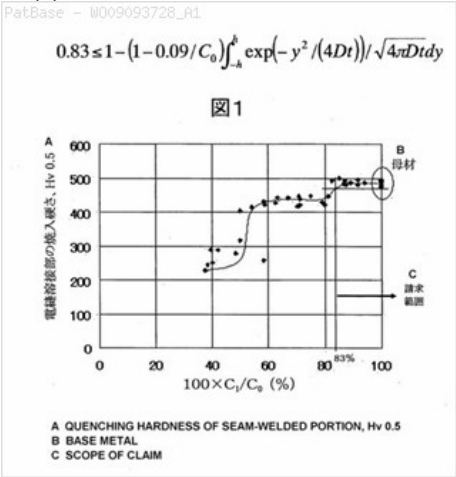
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: HOLLOW MEMBER AND METHOD FOR MANUFACTURING SAME

Abstract: A method for manufacturing a hollow member excellent in durability is provided. Specifically, a seam-welded steel pipe made of a steel sheet and having a low-carbon layer width 2h is subjected to quenching in a way that the pipe is heated to a heating temperature T(K) over the Ac3 transformation point at a heating rate Vh(K/s), in no time cooled to a quenching start temperature Tq(K) at a primary cooling rate Vc (K/s), and secondarily cooled (quenched). The heating rate Vh, the highest heating temperature T, and the primary cooling rate Vc are regulated so that formula (1) below may be satisfied (in the formula, Co (mass percent): the content (mass percent) of C in the steel sheet), t: the diffusion time (s), t=50/Vh+50/Vc+k, Vh: heating rate (K/s), Vc: the primary cooling rate (K/s), k: the soaking time (s), D: the diffusion coefficient (m2/s), D=Doexp(-Q/RT), Do: 4.70E0-5 (m2/s), Q=155 (kJ/mol K), R=8.31 (J/mol K), T: the highest heating temperature (K)). The quenching start temperature Tq is over the Ar3 transformation point. The lowering of the quenching hardness of the seam-welded portion is reduced, and the durability of the member after the heat treatment is significantly improved. (1)

Classifications:

International (IPC 8-9): C21D9/08 C21D9/50 C22C38/00 C22C38/14 C22C38/58 (Advanced/Invention); B21C37/08 C21D9/08 C21D9/50 C22C38/00 C22C38/14 (Advanced/Non-invention); C21D9/08 C22C38/00 (Core/Invention); B21C37/08 (Core/Non-invention)
CPC: C21D1/25 C21D9/08 C21D9/50 C21D2211/008 C22C1/002 C22C38/001 C22C38/02 C22C38/04 C22C38/06 C22C38/14 C22C38/002
European: C21D1/25 C21D9/08 C21D9/50 C22C1/00B C22C38/00B C22C38/02 C22C38/04 C22C38/06 C22C38/14 M21D211/00M



Family:

Publication number	Publication date	Application number	Application date
CN101925678 A	20101222	CN200980102749	20090120
CN101925678 B	20120620	CN200980102749	20090120
EP2239343 A1	20101013	EP20090703762	20090120
JP2009197327 A2	20090903	JP20090007203	20090116
JP5353256 B2	20131127	JP20090007203	20090116
KR101321681 B1	20131023	KR20107017004	20090120
KR20100112601 A	20101019	KR20107017004	20090120
WO09093728 A1	20090730	WO2009JP51148	20090120

Priority:

JP20080010018 20080121 JP20090007203 20090116 WO2009JP51148 20090120

Probable Assignee: JFE STEEL CORP

Assignee(s): (std): JFE STEEL CORP ; KAWABATA YOSHIKAZU ; KAWASAKI STEEL CO ; SAKAGUCHI MASAYUKI ; SAKATA KEI

Inventor(s): (std): KAWABATA YOSHIKAZU ; KEI SAKATA ; MASAYUKI SAKAGUCHI ; SAKAGUCHI MASAYUKI ; SAKATA KEI ; SAKATA TAKASHI ; YOSHIKAZU KAWABATA

Agent(s): GRUENECKER KINKELDEY STOCKMAIR AND SCHWANHAEUSSER ANWALTSSOZIETAET; OCHIAI KENICHIRO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: COMPACT STRIP OR THIN SLAB PROCESSING OF BORON/TITANIUM STEELS

Abstract: Source: US2010136363A A method for casting medium carbon, B/Ti steel product using compact strip processing or thin slab casting. The method can include providing a steel composition including boron and titanium and casting the steel composition into a slab having a thickness between about 25 and 150 mm. The slab can have a cast composition including about 0.23 to 0.30 weight percent carbon, about 0.0010 to 0.0050 weight percent boron, about 0.010 to 0.050 weight percent titanium, about 1.15 to 1.50 weight percent manganese, less than 0.35 weight percent silicon and a Ti/N ratio greater than 2.9. The amount of each element is provided based upon the total weight of the steel composition. The steel slab can be free from cracks and significant defects. Furthermore, the steel slab can be used for electric resistance welded (ERW) products.

Classifications:

International (IPC 8-9): B22D15/00 B22D23/00 B22D27/00 B32B1/08 C21D8/10 C22C30/02 C22C30/04 C22C38/00 C22C38/04 C22C38/14

C22C38/28 (Advanced/Invention);

C21D8/10 C21D9/08 (Advanced/Non-invention);

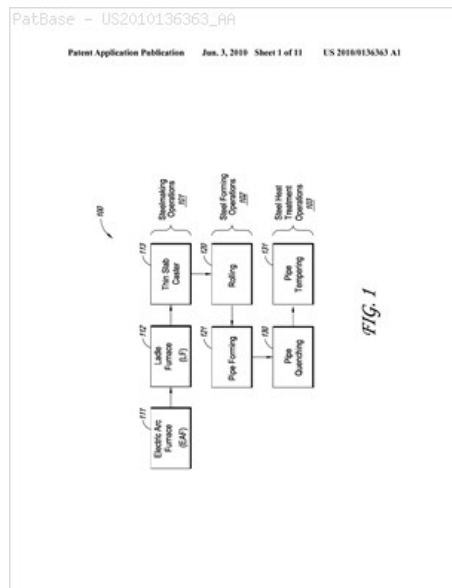
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C21D8/10 C21D9/08 (Core/Non-invention)

CPC: Y10T428/12292 B22D11/111 C22C38/04 C22C38/14

European: B22D11/111 C22C38/04 C22C38/14

US: 148/519 148/540 148/541 148/590 164/459 164/476 164/475 164/55.1 164/55.100S 164/76.1 164/76.100S 420/120 420/120S 420/121 420/121S 428/586 428/586P

**Family:**

Publication number	Publication date	Application number	Application date
BRPI0904814 A2	20150106	BR2009PI04814	20091125
CA2686301 AA	20100525	CA20092686301	20091125
MX2009012811 A1	20100526	MX20090012811	20091125
US2010136363 AA	20100603	US20090626547	20091125
US8221562 BB	20120717	US20090626547	20091125

Priority:

US20080117929P 20081125 US20080118402P 20081126 US20080118396P 20081126
US20080118392P 20081126 US20090626547 20091125

Probable Assignee: MAVERICK TUBE LLC

Assignee(s): (std): ACTIS FERNANDO AUGUSTO ; GARCIA MARCO ANTONIO HERRERA ; MAVERICK TUBE LLC ; TERNIUM MEXICO S A DE C V ; SIRENO GERARDO PUENTE ; VALDEZ MARTIN EMILIANO

Assignee(s): PUENTE SIRENO GERARDO ; TERNIUM MEXICO DE CV SA

Inventor(s): (std): GARCIA MARCO ANTONIO HERRERA ; ACTIS FERNANDO AUGUSTO ; PUENTE SIRENO GERARDO ; SIRENO GERARDO PUENTE ; VALDEZ MARTIN EMILIANO

Inventor(s): FERNANDO AUGUSTO ACTIS ; GERARDO PUENTE SIRENO ; MARCO ANTONIO HERRERA GARCIA ; MARTIN EMILIANO VALDEZ

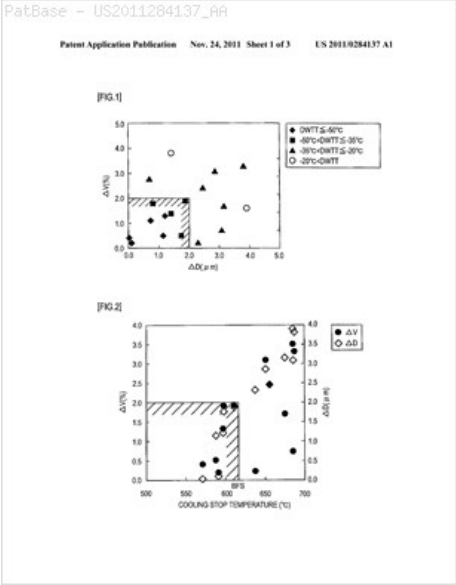
Agent(s): BERESKIN AND PARR LLP SENCRL SRL; KNOBBE MARTENS OLSON AND BEAR LLP

Title: THICK HIGH-TENSILE-STRENGTH HOT-ROLLED STEEL SHEET HAVING EXCELLENT LOW-TEMPERATURE TOUGHNESS AND MANUFACTURING METHOD THEREOF

Abstract: Source: US2011284137A A high-tensile-strength hot-rolled steel sheet is provided having a composition which contains 0.02 to 0.08 percent C, 0.01 to 0.10 percent Nb, 0.001 to 0.05 percent Ti and Fe and unavoidable impurities as a balance, wherein the steel sheet contains C, Ti and Nb in such a manner that $(Ti+(Nb/2))/C < 4$ is satisfied, and the steel sheet has a structure where a primary phase of the structure at a position 1 mm away from a surface in a sheet thickness direction is one selected from a group consisting of a ferrite phase, tempered martensite and a mixture structure of a ferrite phase and tempered martensite, a primary phase of the structure at a sheet thickness center position is formed of a ferrite phase, and a difference DELTAV between a structural fraction (volume percent) of a secondary phase at the position 1 mm away from the surface in the sheet thickness direction and a structural fraction (volume percent) of a secondary phase at the sheet thickness center position is 2 percent or less.

Classifications:

International (IPC 8-9): B21B1/26 B21B3/00 C21D11/00 C21D8/02 C22C38/00 C22C38/02 C22C38/04 C22C38/06 C22C38/08 C22C38/12 C22C38/14 C22C38/16 C22C38/18 C22C38/26 C22C38/28 C22C38/38 C22C38/42 C22C38/44 C22C38/46 C22C38/48 C22C38/50 C22C38/54 C22C38/58 (Advanced/Invention); B21B1/26 B21B3/00 C21D8/02 C22C38/00 (Advanced/Non-invention); B21B1/26 B21B3/00 C21D8/02 C22C38/00 C22C38/14 C22C38/58 (Core/Invention)
CPC: C22C38/58 C22C38/38 C22C38/28 C22C38/26 C22C38/16 C22C38/08 C22C38/001 C22C38/50 C22C38/48 C22C38/46 C22C38/44 C22C38/42 B21B3/00 C21D8/0205 C21D8/0263 C21D8/105 C21D9/46 C21D2211/005 C21D2211/008 C22C38/002 C22C38/02 C22C38/04 C22C38/06 C22C38/12 C22C38/14
European: C21D8/02A C21D8/02F6 C21D8/10A C21D9/46 C22C38/00C C22C38/02 C22C38/04 C22C38/06 C22C38/12 C22C38/14 L21B3/00 M21D211/00F M21D211/00M
US: 148/320 148/332 148/332S 148/333 148/333S 148/334 148/335 148/335 148/336 148/337 148/337S 148/504 148/602 148/654 148/664



Family:

Publication number	Publication date	Application number	Application date
CA2749409 AA	20100805	CA20102749409	20100129
CA2749409 AA	20110712	CA20102749409	20100129
CA2749409 C	20150811	CA20102749409	20100129
CA2844718 AA	20100805	CA20102844718	20100129
CN102301026 A	20111228	CN201080006247	20100129
CN102301026 B	20141105	CN201080006247	20100129
EP2392682 A1	20111207	EP20100735966	20100129
EP2392682 A4	20150225	EP20100735966	20100129
IN02934KN2011 A	20120203	IN2011KN02934	20110713
JP2010196163 A2	20100909	JP20100016823	20100128
JP2010196164 A2	20100909	JP20100016827	20100128
JP2010196165 A2	20100909	JP20100016828	20100128
JP5499733 B2	20140521	JP20100016827	20100128
JP5499734 B2	20140521	JP20100016828	20100128
JP5630026 B2	20141126	JP20100016823	20100128
KR101333854 B1	20131127	KR20117017884	20100129
KR20110102483 A	20110916	KR20117017884	20100129
RU2478124 C1	20130327	RU20110135946	20100129
US2011284137 AA	20111124	US20100146747	20100129
US2014144552 AA	20140529	US20140169985	20140131
US8784577 BB	20140722	US20100146747	20100129
WO10087511 A1	20100805	WO2010JP51646	20100129

Priority:

JP20090019353	20090130	JP20090019356	20090130	JP20090019357	20090130
JP20100016823	20100128	JP20100016827	20100128	JP20100016828	20100128
WO2010JP51646	20100129	CA20142749409	20140324	CA20102749409	20100129
US20110146747	20110728	US20140169985	20140131		

Probable Assignee: JFE STEEL CORP

Assignee(s): (std): KAMI CHIKARA ; NAKATA HIROSHI ; NAKAGAWA KINYA ; KAWASAKI STEEL CO ; JFE STEEL CORP

Assignee(s): JFE STEEL CORP2-3, UCHISAIWAI-CHO 2-CHOMECHUYODA-KU100-0011TOKYOJP ; DZHF STIL KORPOREJSHN

Inventor(s): (std): KAMI CHIKARA ; KAMI TIKARA ; KAMI TSUTOMU ; NAKADA HIROSHI ; NAKAGAWA KIN JA ; NAKAGAWA KINYA ; NAKATA HIROSHI ; NAKATA KHIROSI

Inventor(s): NAKATA HIROSHIJP ; NAKAGAWA KINYAJP ; NAKAGAWA KIN'JA ; KINYA NAKAGAWA ; KAMI CHIKARAJP ; CHIKARA KAMI ; HIROSHI NAKATA

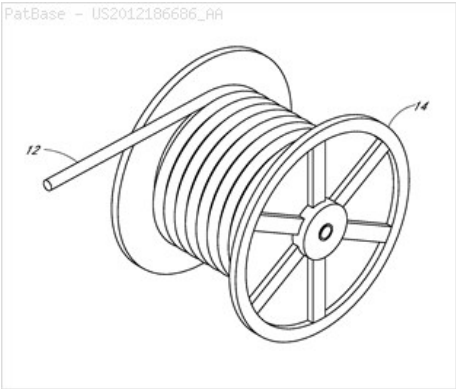
Agent(s): MOFFAT AND CO; GRUENECKER KINKELDEY STOCKMAIR AND SCHWANHAUESSER; RATNERPRESTIA; OCHIAI KENICHIRO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: COILED TUBE WITH VARYING MECHANICAL PROPERTIES FOR SUPERIOR PERFORMANCE AND METHODS TO PRODUCE THE SAME BY A CONTINUOUS HEAT TREATMENT

Abstract: Source: US2012186686A Described herein are coiled tubes with improved and varying properties along the length that are produced by using a continuous and dynamic heat treatment process (CDHT). Coiled tubes can be uncoiled from a spool, subjected to a CDHT process, and coiled onto a spool. A CDHT process can produce a "composite" tube such that properties of the tube along the length of the tube are selectively varied. For example, the properties of the tube can be selectively tailored along the length of the tube for particular application for which the tube will be used.

Classifications:
International (IPC 8-9): B21C37/06 C21D6/00 C21D8/10 C21D9/08 C21D9/14 C21D9/50 C22C38/02 C22C38/04 C22C38/06 C22C38/26 C22C38/28 C22C38/32 C22C38/38 E21B17/20 F16L11/14 F16L33/00 F16L9/00 F16L9/02 (Advanced/Invention); C22C38/00 C22C38/06 C22C38/26 C22C38/38 (Advanced/Non-invention)
CPC: C21D8/105 E21B17/20 C22C38/38 C21D9/08 C21D9/085 C21D6/002 C21D6/005 C21D6/008 C22C38/32 C22C38/28 C22C38/26 C22C38/06 C22C38/04 C22C38/02 C21D9/14
European: C21D8/10A C21D9/14 E21B17/20
US: 138/177 72/342.1 72/342.100S



Family:

Publication number	Publication date	Application number	Application date
CA2765294 AA	20120725	CA20122765294	20120124
CN102618709 A	20120801	CN201210020833	20120130
EP2479294 A1	20120725	EP20120152516	20120125
JP2012214875 A2	20121108	JP20120012293	20120124
RU2012102444 A	20130727	RU20120102444	20120125
US2012186686 AA	20120726	US20110229517	20110909
US2016024625 AA	20160128	US20150872490	20151001
US9163296 BB	20151020	US20110229517	20110909

Priority:
US20110436156P 20110125 US20110229517 20110909 CA20122765294 20120124
US20150872490 20151001

Probable Assignee: TENARIS COILED TUBES LLC

Assignee(s): (std): MITRE JORGE ; REICHERT BRUCE A ; TENARIS COILED TUBES LLC ; VALDEZ MARTIN

Inventor(s): (std): JORGE MITRE ; MARTIN VALDEZ ; MITRE JORGE ; REICHERT BRUCE A ; VALDEZ MARTIN

Agent(s): BORDEN LADNER GERVAIS LLP; PONS ARINO ANGEL; KNOBBE MARTENS OLSON AND BEAR LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Title: HIGH STRENGTH STEEL HAVING GOOD TOUGHNESS

Abstract: Source: US2012211131A Embodiments of the present disclosure comprise carbon steels and methods of manufacture. In one embodiment, quenching and tempering procedure is performed in which a selected steel composition is formed and heat treated to yield a slightly tempered microstructure having a fine carbide distribution. In another embodiment, a double austenizing procedure is disclosed in which a selected steel composition is formed and subjected to heat treatment to refine the steel microstructure. In one embodiment, the heat treatment may comprise austenizing and quenching the formed steel composition a selected number of times (e.g., 2) prior to tempering. In another embodiment, the heat treatment may comprise subjecting the formed steel composition to austenizing, quenching, and tempering a selected number of times (e.g., 2). Steel products formed from embodiments of the steel composition in this manner (e.g., seamless tubular bars and pipes) will possess high yield strength, e.g., at least about 165 ksi, while maintaining good toughness.

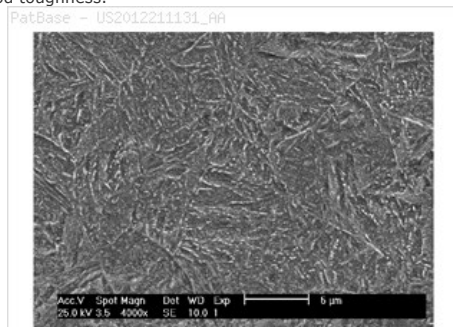
Classifications:

International (IPC 8-9): C21D1/18 C21D1/25 C21D8/10 C21D9/08 C21D9/14 C22C38/00 C22C38/02 C22C38/04 C22C38/06 C22C38/22 C22C38/26 C22C38/28 C22C38/44 C22C38/46 C22C38/48 C22C38/50 (Advanced/Invention); C22C38/00 (Core/Invention)

CPC: C22C38/50 C22C38/04 C22C38/02 C22C38/06 C22C38/46 C22C38/44 C22C38/48 C22C38/002 C22C38/22 C22C38/26 C21D1/25 C21D8/105 C21D9/08 C21D2211/008 Y10T428/12

European: C21D1/25 C21D8/10A C21D9/08 M21D211/00M

US: 148/334 148/334S 148/335 148/335S 148/519 148/590 148/593 148/654 148/663 428/544

**Family:**

Publication number	Publication date	Application number	Application date
AR085298 AA	20130918	AR2012P100567	20120217
CN102644028 A	20120822	CN201210040192	20120220
EP2495341 A1	20120905	EP20120155931	20120217
MX2012002120 A1	20120905	MX20120002120	20120217
US2012211131 AA	20120823	US20110031131	20110218
US2014057121 AA	20140227	US20130068868	20131031
US8636856 BB	20140128	US20110031131	20110218
US9222156 BB	20151229	US20130068868	20131031

Priority:

US20110031131 20110218 US20130068868 20131031

Probable Assignee: SIDERCA IND AND COM SA

Assignee(s): (std): ALTSCHULER EDUARDO ; ESPINOSA CONSTANTINO ; GOMEZ GONZALO ; LOPEZ EDGARDO ; PEREZ TERESA ; SIDERCA SA IND AND COM ; SIDERCA IND AND COM SA

Assignee(s): SIDERCA SAIC ; SIDERCA S A I C

Inventor(s): (std): ALTSCHULER EDUARDO ; CONSTANTINO ESPINOSA ; EDGARDO LOPEZ ; EDUARDO ALTSCHULER ; ESPINOSA CONSTANTINO ; GOMEZ GONZALO ; GOMEZ GONZALO ROBERTO ; GONZALO GOMEZ ; LOPEZ EDGARDO ; LOPEZ EDGARDO OSCAR ; PEREZ TERESA ; PEREZ TERESA ESTELA ; TERESA PEREZ

Agent(s): CINQUANTINI BRUNO; KNOBBE MARTENS OLSON AND BEAR LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Title: ULTRA HIGH STRENGTH STEEL HAVING GOOD TOUGHNESS

Abstract: Source: US2012211132A Embodiments of the present disclosure comprise carbon steels and methods of manufacture. In one embodiment, a double austenizing procedure is disclosed in which a selected steel composition is formed and subjected to heat treatment to refine the steel microstructure. In one embodiment, the heat treatment may comprise austenizing and quenching the formed steel composition a selected number of times (e.g., 2) prior to tempering. In another embodiment, the heat treatment may comprise subjecting the formed steel composition to austenizing, quenching, and tempering a selected number of times (e.g., 2). Steel products formed from embodiments of the steel composition in this manner (e.g., seamless tubular bars and pipes) will possess high yield strength, at least about 175 ksi (about 1200 MPa) while maintaining good toughness.

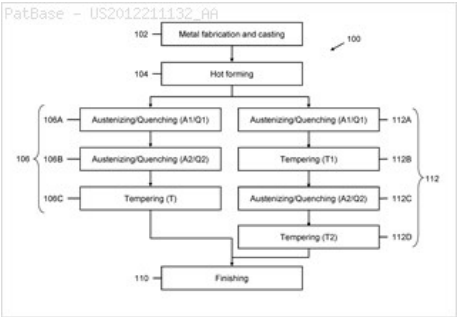
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CPC: C21D1/25 C21D8/10 C21D8/105 C21D9/08 C21D9/085 C21D9/14 C22C38/001 C22C38/02 C22C38/04 C22C38/06 C22C38/22 C22C38/24 C22C38/42 C22C38/44 C22C38/46 F16L9/02

European: C22C38/24

US: 148/328 148/334 148/334S 148/335 148/335S 148/337 148/519 148/590 148/593 148/654 148/663 148/664 148/909



Family:

Publication number	Publication date	Application number	Application date
AR085299 AA	20130918	AR2012P100568	20120217
BR102012003528 A2	20131112	BR20121003528	20120216
CN102676930 A	20120919	CN201210040478	20120220
EP2495342 A1	20120905	EP20120155936	20120217
MX2012002116 A1	20120905	MX20120002116	20120217
US2012211132 AA	20120823	US20110031133	20110218
US2013199674 AA	20130808	US20130787452	20130306
US8414715 BB	20130409	US20110031133	20110218
US9188252 BB	20151117	US20130787452	20130306

Priority:

US20110031133 20110218 US20130787452 20130306

Probable Assignee: SIDERCA IND AND COM SA

Assignee(s): (std): ALTSCHULER EDUARDO ; ESPINOSA CONSTANTINO ; GOMEZ GONZALO ; LOPEZ EDGARDO ; PEREZ TERESA ; SIDERCA SA IND AND COM ; SIDERCA IND AND COM SA

Assignee(s): SIDERCA SAIC ; SIDERCA S A I C

Inventor(s): (std): ALTSCHULER EDGARDO ; ALTSCHULER EDUARDO ; CONSTANTINO ESPINOSA ; EDUARDO ALTSCHULER ; ESPINOSA CONSTANTINO ; ESTELA PEREZ TERESA ; GOMEZ GONZALO ; GOMEZ GONZALO ROBERTO ; LOPEZ EDGARDO ; LOPEZ EDGARDO OSCAR ; OSCAR LOPEZ EDGARDO ; PEREZ TERESA ; PEREZ TERESA ESTELA ; ROBERTO GOMEZ GONZALO

Inventor(s): TERESA PEREZ ; GONZALO GOMEZ ; EDGARDO ALTSCHULER ; EDGARDO LOPEZ

Agent(s): CINQUANTINI BRUNO ; KNOBBE MARTENS OLSON AND BEAR LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

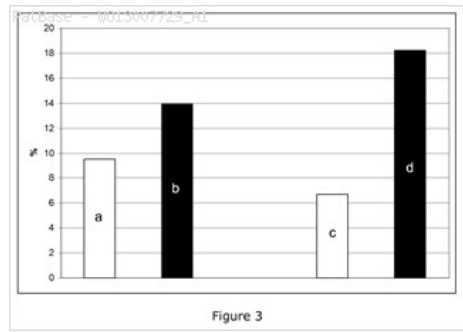
Title: HOT-ROLLED HIGH-STRENGTH STEEL STRIP WITH IMPROVED HAZ-SOFTENING RESISTANCE AND METHOD OF PRODUCING SAID STEEL

Abstract: Hot-rolled high-strength micro-alloyed steel strip with improved HAZ-softening resistance having a microstructure comprising martensite, tempered martensite and/or bainite.

Classifications:

International (IPC 8-9): C21D8/02 C22C38/04 C22C38/06 C22C38/12 (Advanced/Invention)

CPC: C21D8/0205 C21D8/0226 C21D2211/002 C21D2211/008 C22C38/04 C22C38/06 C22C38/12



Family:

Publication number	Publication date	Application number	Application date
CN103649355 A	20140319	CN201280034223	20120710
EP2729590 A1	20140514	EP20120735134	20120710
EP2729590 B1	20151028	EP20120735134	20120710
IN00839CN2014 A	20141010	IN2014CN00839	20140203
WO13007729 A1	20130117	WO2012EP63515	20120710

Priority:

EP20110173383 20110710 WO2012EP63515 20120710 EP20120735134 20120710

Probable Assignee: TATA STEEL IJMUIDEN BV

Assignee(s): (std): CROWTHER DAVID ; TATA STEEL IJMUIDEN BV ; VAN HAAFTEN WILLEM MAARTEN

Inventor(s): (std): VAN HAAFTEN WILLEM MAARTEN ; CROWTHER DAVID

Agent(s): BODIN ANDRE

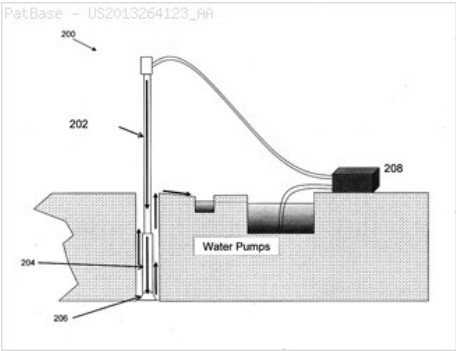
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Title: METHODS OF MANUFACTURING STEEL TUBES FOR DRILLING RODS WITH IMPROVED MECHANICAL PROPERTIES, AND RODS MADE BY THE SAME

Abstract: Source: US2013264123A Embodiments of the present disclosure are directed to methods of manufacturing steel tubes that can be used for mining exploration, and rods made by the same. Embodiments of the methods include a quenching of steel tubes from an austenitic temperature prior to a cold drawing, thereby increasing mechanical properties within the steel tube, such as yield strength, impact toughness, hardness, and abrasion resistance. Embodiments of the methods reduce the manufacturing step of quenching and tempering ends of a steel tube to compensate for wall thinning during threading operations. Embodiments of the methods also tighten dimensional tolerances and reduce residual stresses within steel tubes.

Classifications:

International (IPC 8-9): B21C1/00 B21C37/06 C21D1/00 C21D1/02 C21D1/18 C21D1/26 C21D1/30 C21D8/02 C21D8/10 C21D9/00 C21D9/08 C21D9/14 C22C38/22 C22C38/26 C22C38/28 C22C38/32 E21B17/00 E21B23/02 (Advanced/Invention); C21D9/00 (Core/Invention)
CPC: C21D8/0236 B21B23/00 C21D1/18 C21D1/30 C21D8/0268 C21D8/105 C21D9/08 C21D9/085 C21D2211/002 C21D2211/008 C22C38/001 C22C38/002 C22C38/008 C22C38/02 C22C38/04 C22C38/06 C22C38/42 C22C38/44 C22C38/46 C22C38/48 C22C38/50 C22C38/54 C22C38/60
US: 148/330 148/519 148/547 175/325.2



Family:

Publication number	Publication date	Application number	Application date
AR090645 AA	20141126	AR2013P101159	20130410
AU2013202710 AA	20131024	AU20130202710	20130405
AU2013202710 BB	20151217	AU20130202710	20130405
BR102013008724 A2	20150623	BR20131008724	20130410
CA2811764 AA	20131010	CA20132811764	20130405
CL2013000954 A1	20140725	CL20130000954	20130409
EP2650389 A2	20131016	EP20130163234	20130410
MX2013004025 A1	20131106	MX20130004025	20130410
PE14182014 A1	20141109	PE20130000827	20130410
US2013264123 AA	20131010	US20120443669	20120410

Priority:

US20120443669 20120410 CA20132811764 20130405

Probable Assignee: TENARIS CONNECTION LTD

Assignee(s): (std): ALTSCHULER EDUARDO ; EGGER PABLO ; TENARIS CONNECTIONS LTD

Assignee(s): TENARIS CONNECTION LTD

Inventor(s): (std): ALTSCHULER EDUARDO ; EGGER PABLO

Inventor(s): PABLO EGGER ; EDUARDO ALTSCHULER

Agent(s): KING AND WOOD MALLESONS; MINTER ELLISON; BERESKIN AND PARR LLP SENCRL SRL; CINQUANTINI BRUNO

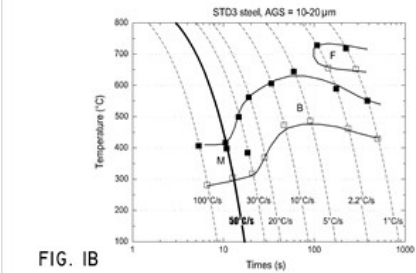
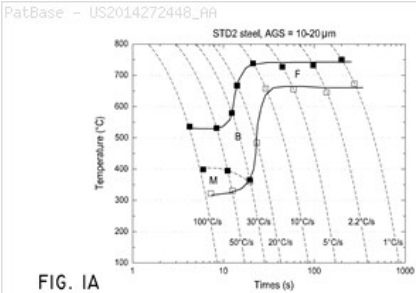
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Title: HIGH PERFORMANCE MATERIAL FOR COILED TUBING APPLICATIONS AND THE METHOD OF PRODUCING THE SAME

Abstract: Source: US2014272448A Embodiments of the present disclosure are directed to coiled steel tubes and methods of manufacturing coiled steel tubes. In some embodiments, the final microstructures of the coiled steel tubes across all base metal regions, weld joints, and heat affected zones can be homogeneous. Further, the final microstructure of the coiled steel tube can be a mixture of tempered martensite and bainite.

Classifications:

International (IPC 8-9): B21C37/06 B21C37/08 B23K31/00 B23K31/02 C21D1/22 C21D8/10 C21D9/00 C21D9/08 C21D9/14 C21D9/50 C22C38/00 C22C38/02 C22C38/04 C22C38/06 C22C38/08 C22C38/12 C22C38/14 C22C38/16 C22C38/18 C22C38/40 C22C38/54 C22C38/58 E21B19/00 (Advanced/Invention)
CPC: C21D8/10 C21D9/085 C21D9/14 C21D9/50 C21D9/505 C21D2211/008 C21D8/105 C21D1/22 B21C37/08 C21D9/08 Y10T428/12333 C22C38/04 C22C38/002 C22C38/02 C22C38/06 C22C38/08 C22C38/12 C22C38/14 C22C38/16 C22C38/18 C22C38/40
US: 148/521 428/592



Family:

Publication number	Publication date	Application number	Application date
BR102014006157 A2	20160126	BR20141006157	20140314
CA2845471 AA	20140914	CA20142845471	20140311
CN104046918 A	20140917	CN201410096621	20140314
CO7390223 A1	20150921	CO20140052388	20140312
EP2778239 A1	20140917	EP20140159174	20140312
JP2014208888 A2	20141106	JP20140050371	20140313
MX2014003224 A1	20141209	MX20140003224	20140314
RU2014109873 A	20150920	RU20140109873	20140314
US2014272448 AA	20140918	US20140190886	20140226

Priority:
US20130783701P 20130314 WO2013IB52830 20130409 US20140190886 20140226

Probable Assignee: TENARIS COILED TUBES LLC
Assignee(s): (std): TENARIS COILED TUBES LLC
Assignee(s): VALDEZ MARTIN ; TENARIS COILED TUBES LLC8615 EAST SAM HOUSTON PARKWAY NORTHHOUSTONTX77044US ; GOMEZ GONZALO R ; MITRE JORGE ; REICHERT BRUCE A
Inventor(s): (std): GONZALO GOMEZ ; JORGE MITRE ; MARTIN VALDEZ ; MITRE JORGE ; GOMEZ GONZALO ; GOMEZ GONZALO R ; REICHERT BRUCE A ; VALDEZ MARTIN
Inventor(s): VALDEZ MARTINUS ; BRUCE A REICHERT ; REICHERT BRUCE AUS ; GOMEZ GONZALO RAR ; MITRE JORGEUS
Agent(s): BERESKIN AND PARR LLP SENCRL SRL; MARGARITA CASTELLANOS ABONDANO; HIRSCH AND ASSOCIES
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR