

**CPC****COOPERATIVE PATENT CLASSIFICATION****C21C**

**PROCESSING OF PIG-IRON, e.g. REFINING, MANUFACTURE OF WROUGHT-IRON OR STEEL; TREATMENT IN MOLTEN STATE OF FERROUS ALLOYS** ([refining metals in general C22B 9/00](#))

**C21C 1/00**

**Refining of pig-iron; Cast iron**

C21C 1/02

- . Dephosphorising or desulfurising

C21C 1/025

- .. {[Agents used for dephosphorising or desulfurising](#)}

C21C 1/04

- . Removing impurities other than carbon, phosphorus or sulfur

C21C 1/06

- . Constructional features of mixers for pig-iron

C21C 1/08

- . Manufacture of cast-iron

C21C 1/10

- . Making spheroidal graphite cast-iron

C21C 1/105

- .. {[Nodularising additive agents](#)}

**C21C 3/00**

**Manufacture of wrought-iron or wrought-steel**

**C21C 5/00**

**Manufacture of carbon-steel, e.g. plain mild steel, medium carbon steel or cast steel** ([or stainless steel](#))

C21C 5/005

- . {[Manufacture of stainless steel](#)}

C21C 5/02

- . Crucible furnace process {([C21C 5/005 takes precedence](#))}

C21C 5/04

- . Manufacture of hearth-furnace steel, e.g. Siemens-Martin steel {([C21C 5/005 takes precedence](#))}

C21C 5/06

- .. Processes yielding slags of special composition

C21C 5/28

- . Manufacture of steel in the converter {([C21C 5/005 takes precedence](#))}

C21C 5/285

- .. {[Plants therefor](#)}

C21C 5/30

- .. Regulating or controlling the blowing

C21C 5/305

- ... {[Afterburning](#)}

C21C 5/32

- ... Blowing from above ([C21C 5/35 takes precedence](#))

C21C 5/34

- ... Blowing through the bath ([C21C 5/35 takes precedence](#))

C21C 5/35

- ... Blowing from above and through the bath

C21C 5/36

- .. Processes yielding slags of special composition

C21C 2005/363

- ... {[Slag cements](#)}

C21C 2005/366

- ... {[Foam slags](#)}

C21C 5/38

- .. Removal of waste gases or dust

C21C 5/40

- ... Offtakes or separating apparatus for converter waste gases or dust

C21C 5/42

- .. Constructional features of converters

C21C 5/44

- ... Refractory linings

C21C 5/441

- .... {[Equipment used for making or repairing linings](#)}

C21C 5/443

- ..... {[Hot fettling; Flame gunning](#)}

C21C 5/445

- .... {[Lining or repairing the taphole](#)}

C21C 2005/446

- ..... {[Dry linings](#)}

C21C 2005/448	....	{Lining wear indicators }
C21C 5/46	...	Details or accessories
C21C 5/4606	....	{Lances or injectors}
C21C 5/4613	.....	{Refractory coated lances; Immersion lances}
C21C 5/462	.....	{Means for handling, e.g. adjusting, changing, coupling}
C21C 2005/4626	.....	{Means for cooling, e.g. by gases, fluids or liquids }
C21C 5/4633	....	{Supporting means}
C21C 5/464	.....	{Trunnion bearings}
C21C 5/4646	....	{Cooling arrangements}
C21C 5/4653	....	{Tapholes; Opening or plugging thereof}
C21C 5/466	....	{Charging device for converters}
C21C 2005/4666	.....	{for charging with organic contaminated scrap }
C21C 5/4673	....	{Measuring and sampling devices}
C21C 2005/468	.....	{Means for determining the weight of the converter }
C21C 5/4686	....	{Vehicles for supporting and transporting a converter vessel}
C21C 5/4693	....	{Skull removal; Cleaning of the converter mouth}
C21C 5/48	....	Bottoms or tuyères of converters
C21C 5/50	....	Tilting mechanisms for converters
C21C 5/52	.	Manufacture of steel in electric furnaces ( <a href="#">C21C 5/005</a> takes precedence); electric heating per se <a href="#">H05B</a> )
C21C 5/5205	..	{in a plasma heated furnace}
C21C 5/5211	..	{in an alternating current (AC) electric arc furnace}
C21C 5/5217	...	{equipped with burners or devices for injecting gas, i.e. oxygen, or pulverulent materials into the furnace}
C21C 2005/5223	...	{with post-combustion }
C21C 5/5229	..	{in a direct current (DC) electric arc furnace}
C21C 2005/5235	...	{with bottom electrodes }
C21C 5/5241	..	{in an inductively heated furnace}
C21C 5/5247	...	{processing a moving metal stream while exposed to an electromagnetic field, e.g. in an electromagnetic counter current channel}
C21C 5/5252	..	{in an electrically heated multi-chamber furnace, a combination of electric furnaces or an electric furnace arranged for associated working with a non electric furnace}
C21C 2005/5258	..	{with crater formed by down-melting of scrap or charge through electrode or lance }
C21C 5/5264	..	{Manufacture of alloyed steels including ferro-alloys}
C21C 5/527	..	{Charging of the electric furnace}
C21C 2005/5276	...	{with liquid or solid rest, e.g. pool, "sumpf" }
C21C 2005/5282	...	{with organic contaminated scrap }
C21C 2005/5288	..	{Measuring or sampling devices }
C21C 5/5294	..	{General arrangement or layout of the electric melt shop}
C21C 5/54	..	Processes yielding slags of special composition

- C21C 5/56 . Manufacture of steel by other methods (making liquid steel by direct processes [C21B 13/00](#)){([C21C 5/005](#) takes precedence)}
- C21C 5/562 .. {starting from scrap}
- C21C 5/565 ... {Preheating of scrap (apparatus for preheating scrap in general [F27D 13/002](#))}
- C21C 5/567 .. {operating in a continuous way}

**C21C 7/00**

**Treating molten ferrous alloys, e.g. steel, not covered by groups [C21C 1/00](#) to [C21C 5/00](#) (treating molten metals during moulding [B22D 1/00](#), [B22D 27/00](#); remelting ferrous metals [C22B](#))**

- C21C 7/0006 . {Adding metallic additives}
- C21C 2007/0012 .. {Lead }
- C21C 2007/0018 .. {Boron }
- C21C 7/0025 . {Adding carbon material}
- C21C 2007/0031 .. {being plastics, organic compounds, polymers }
- C21C 7/0037 . {by injecting powdered material}
- C21C 7/0043 .. {into the falling stream of molten metal}
- C21C 7/005 . {using exothermic reaction compositions}
- C21C 7/0056 . {using cored wires}
- C21C 2007/0062 .. {with introduction of alloying or treating agents under a compacted form different from a wire, e.g. briquette, pellet }
- C21C 7/0068 . {by introducing material into a current of streaming metal}
- C21C 7/0075 . {Treating in a ladle furnace, e.g. up-/reheating of molten steel within the ladle}
- C21C 7/0081 . {Treating and handling under pressure}
- C21C 7/0087 . {Treatment of slags covering the steel bath, e.g. for separating slag from the molten metal}
- C21C 2007/0093 . {Duplex process; Two stage processes }
- C21C 7/04 . Removing impurities by adding a treating agent
- C21C 7/06 .. Deoxidising, e.g. killing
- C21C 7/064 .. Dephosphorising; Desulfurising
- C21C 7/0645 ... {Agents used for dephosphorising or desulfurising}
- C21C 7/068 .. Decarburising
- C21C 7/0685 ... {of stainless steel}
- C21C 7/072 .. Treatment with gases ([C21C 7/06](#), [C21C 7/064](#), [C21C 7/068](#) take precedence)
- C21C 7/076 .. Use of slags or fluxes as treating agents ([C21C 7/06](#), [C21C 7/064](#), [C21C 7/068](#) take precedence)
- C21C 7/10 . Handling in a vacuum

**C21C 2100/00****Exhaust gas**

- C21C 2100/02 . Treatment of the exhaust gas
- C21C 2100/04 . Recirculation of the exhaust gas
- C21C 2100/06 . Energy from waste gas used in other processes

**C21C 2200/00****Recycling of waste material**

**C21C 2250/00****Specific additives ; Means for adding material different from burners or lances**

C21C 2250/02

- . Hot oxygen

C21C 2250/04

- . Liquid gas

C21C 2250/042

- . . Liquid oxygen

C21C 2250/06

- . Hollow electrode

C21C 2250/08

- . Porous plug

**C21C 2300/00****Process aspects**

C21C 2300/02

- . Foam creation

C21C 2300/04

- . Avoiding foam formation

C21C 2300/06

- . Modeling of the process , e.g. for control purposes ; CII

C21C 2300/08

- . Particular sequence of the process steps