

Metal Bulletin Glossary

METAL COMMODITY MARKET AND INDUSTRY TERMS



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الإمارات للألمنيوم
Emirates Aluminium

ملتزمون بالتميز
DEDICATED TO EXCELLENCE



Emirates Aluminium

A new Industrial Flagship

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EMAL is constructing and operating what will become the world's largest single site aluminium smelter complex. Phase One of the project commenced operations on 2 December 2009 with a production capacity of 750,000 tonnes of aluminium per annum and eventually 1.5 million tonnes annually at the end of Phase Two. It produces primary aluminium with a product mix of sow, standard ingot, tee ingot, extrusion billet and sheet ingot. The smelter complex operates to the highest environmental and social standards and is encouraging economic diversification and downstream opportunities in the United Arab Emirates.

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Crédit Agricole Corporate and Investment Bank

An expanding commodity business

In February 2010 Crédit Agricole Corporate and Investment Bank became the new name for Calyon, affirming its place within the Crédit Agricole Group, one of the world's largest and most stable banks. This change also illustrates Crédit Agricole CIB's ambition to commit as partners to our clients - large companies and financial institutions - and to contribute to the achievement of their projects worldwide.

Crédit Agricole owes its existence to commodities. The Group was founded in 1894, originally to provide loans to French farmers who became shareholders in the new bank. In recent years, the bank's commodity risk management team has pioneered the provision of over-the-counter agricultural risk management products to these same shareholders.

In July 2010, "The Banker" magazine ranked the group number 7 in Europe by tier 1 capital and number 3 in the world by total assets. Its credit rating (AA- S&P and Fitch, Aa1 Moody's) has remained stable despite recent turmoil in the financial markets. This is due to the Group's very strong and

resilient financial position, its solid and diversified range of activities and a broad retail customer base.

The Crédit Agricole Group has 20 million retail customers in France, where it is ranked number 1 with 28% of market share, 6 million across the rest of the world and operates in 70 countries. As well as retail banking, the bank is involved in asset management, insurance, consumer finance, international retail banking, securities & issuer services, private equity, leasing & factoring, private banking, and corporate and investment banking.

Crédit Agricole CIB's activities are organised around four major divisions: Coverage and Investment Banking, Equity Brokerage and Derivatives, Structured Finance and Fixed Income Markets. Its fixed income commodity business has expanded both in scale and scope over the past two years. It is a world leader in commodity finance and offers risk management services to its customers across a broad range of commodities.

COMMODITIES MISSION STATEMENT

- › We deliver a comprehensive range of value-added products and tailor-made risk management services and investment opportunities to our global customer base.
- › With a strong focus, traders, sales and structurers provide Crédit Agricole CIB's clients with hedging and trading opportunities covering various sets of underlyings: energy, precious metals, base metals, agricultural commodities among the main lines.
- › The team operates globally to ensure the seamless delivery of liquidity, dealing efficiency, structuring expertise and product innovation to its clients.

METALS

In metals, Crédit Agricole CIB is a Category 2 member of the London Metal Exchange (LME) and a full member of the London Bullion Market Association (LBMA). The metals team offers a wide range of products to suit client needs in both base and precious metals: over the counter (OTC) futures, swaps, European and Asian options, barriers, digitals and exotic options in all major currencies.

Crédit Agricole CIB has a long history in base metals. The bank (and its predecessors) has been a member of the LME since the mid 1980s and offers LME registered contracts as well as LME registered steel billet forward contracts and OTC swaps in molybdenum based on the Platts published MW Dealer Oxide price. It provides clients with an electronic trading platform on the LME through its Metal-Online service. Full online capabilities for trading outright and spreads are available on all LME contracts. Customers can also receive 24-hour global support on the platform. The capabilities of the Metal-Online service include:

- › Single click order submission,
- › Real-time position view,

- › Ladder based market view,
- › Order types include Limit, Market, MOO, OTC, GTD, Icebergs and Stops, and
- › LME non-standard prompt dates for outright and carries.

Crédit Agricole CIB has sponsored the first GFMS annual Copper Survey, which is set to become the global benchmark on the analysis of the copper market.

The bank is a major provider of finance to the global metals industry and has an enviable track record in metals and mining. Recent high-profile transactions have included the financing of the Esperanza copper mine in Chile, the Ambatovy nickel mine in Madagascar, financing of aluminium smelters in Brazil, Russia, Qatar, UAE and Mozambique, and the Geita gold mine in Tanzania.

CORPORATE COMMODITY RISK MANAGEMENT

The commodities group has a global team that provides corporate customers with trade execution services and risk management products in energy products, base metals (including steel), precious metals, emissions and agricultural commodities. The bank's customers include many of the world's largest producers and consumers of metals and energy.

The commodities team is fully integrated into Crédit Agricole CIB. With over 70 professionals, it is organised around the trading, sales, structuring, and quantitative activities. The team operates out of London, Paris, Milan, New York, Houston, Geneva, Beijing and Hong Kong and has additional client coverage in other major centres across the globe. Its primary objective is to provide customers with a total package that satisfies their financing and hedging needs. To this end, traders and structurers work closely with the Project and Trade Finance teams to provide new projects with the most efficient and effective structures to manage their commodity exposures.

The commodities team has accelerated its global development, offering:

- › A wide portfolio of products,
- › A wealth of experience,
- › Excellent research capabilities in metals and energy markets, and
- › A committed service to its clients.

The past year has seen an impressive expansion in the established businesses of metals and energy. In addition, the emissions business has grown rapidly and services, corporate, sovereign and investor customers of the bank, trading both EUA and CER contracts with options to follow in late 2010. Traders work with the Structured Finance team to provide customers with CER financing facilities.

The bank is also a major market maker for a wide range of soft and agricultural assets.

NATURAL RESOURCES AND COMMODITY FINANCE

In 2009 Crédit Agricole CIB won the PFI "Project Finance Global Bank of the Year" award, recognition of the prominence in physical commodity-based lending of its Project Finance, Commodity Finance and Reserve Based Lending teams. These provide funding across the full spectrum of commodities, from oil and gas, refining and petrochemicals to power, mining and metals, carbon emissions and soft commodities.

In 2009 the natural resources teams executed a number of large, high profile transactions. Crédit Agricole CIB was the sole underwriter and book runner of the \$1.5 billion financing of Sonangol, a large oil project in Angola. Crédit Agricole CIB also played leading roles in the CIS market (Lukoil, TNK-BP), Asia (Sinochem, Risun) and Latin America (Pluspetrol, Pemex). The bank's project financing of Nordstream won the PFI European Gas Deal of the Year award, and the Enel Rete project in Italy won European Oil and Gas Deal of the Year. Other 'deal of the

year' awards included Middle Eastern Power (Rabigh), Middle Eastern Oil and Gas (Dolphin Energy) and European Portfolio (Boreas power plant). The team's financing of Tullow Oil was Corporate Deal of the Year.

On the consumer side, Crédit Agricole CIB has leadership positions in Aircraft Finance and Shipping Finance, where it is ranked number 1 worldwide by leading trade publications.

ENERGY

The commodities business is a major market maker and is at the forefront of global energy markets as a major player in the oil and refined products sectors. It offers a full range of products across the energy sector: crude oil, fuel oil, gasoil, diesel, jet fuel, gasoline, cracks, US natural gas and energy emissions.

POWER, GAS AND COAL

In 2009 Crédit Agricole CIB and EDF Trading established a joint venture to combine the bank's commodity risk management capabilities with EDFT's expertise and systems in managing energy. This new partnership, which provides commodity customers with physical and financial products in power and gas, also offers financial coal contracts. The joint venture was one of Energy Risk's Deals of the Year for 2009.

Trading is conducted in Crédit Agricole CIB's name, from its offices and on its balance sheet. Initially operating in power in the UK, France and Germany and financially settled gas in the UK, Belgium and the Netherlands as well as financial coal globally, it will move into other countries over time.

CARBON EMISSIONS

Crédit Agricole CIB has had a carbon emissions business, since 2005. It has full access to the European Carbon Markets and trades both EUA and CER carbon certificates.

COMMODITY INVESTMENT PRODUCTS

A dedicated team provides Crédit Agricole CIB's institutional and private banking customers with commodity-linked investment products. The past year has seen significant rises in most commodity markets, and investors are increasingly taking advantage of the impressive returns as well as the diversification benefits of commodity investments. The team's expertise is in defining investor needs and customising products to meet specific risk/return requirements. These range from generic structures with linear pay offs in a single commodity to more complex, possibly multi-asset investments designed to take advantage of specific market opportunities. The team provides fundamental as well as technical analysis to assist the decision process. A wide range of products tailored to suit investor needs as well as market conditions, and under various formats:

- › Listed products,
- › OTC derivatives on the available underlyings: forwards, swaps, options,
- › Simple exotic products,
- › Hedging products along with portfolio and risk analysis, optimisation strategies, and
- › Investment products on single or multiple underlyings, using innovative yet simple payoffs tailor made to the risk profile of the client, under OTC, EMTNs, MTNs, certificates, warrants or deposit formats.

As a fully integrated product line, it also provides:

- › Consistent delivery of liquidity,
- › Timely execution and efficient operations,
- › Structuring expertise, and
- › Innovation in both hedging and investment products.

In 2009 the team structured a number of investment notes linked to emissions contracts.

These have the dual benefits of relatively high returns and low risk and have proved attractive in the wake of the recent uncertainty in financial markets.

There were other initiatives during 2009 and 2010 to broaden the product range for investor clients. The team further developed its offering in commodity indices and participated in the launch of four new Exchange Traded Funds, listed since January 2010 on Euronext. These funds, structured and managed by the Crédit Agricole Asset Management arm Amundi AM, replicate the performance of four S&P GSCI sub indices: Light Energy, Non Energy, Capped Metals and Capped Agriculture.

COMMITMENT TO COMMODITIES

The Crédit Agricole Group has been continuously involved in commodity derivatives for over 20 years and pioneered the development of the oil derivatives market. In turbulent times, Crédit Agricole CIB continues to increase its presence and capabilities across commodities. It now offers its customers physical as well as financial trading of power and gas and financially settled coal.

EXPANDING OUR PRESENCE IN METALS MARKETS

Crédit Agricole CIB has a fully experienced sales and trading team that provides a professional execution and hedging service in base and precious metals. The bank recognises the increasing importance of commodities and this expansion demonstrates its long-term commitment to those markets. Crédit Agricole CIB is confident that its combination of market expertise, broad product range and integrated approach to customer needs will continue to provide an excellent service to its global clients.

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A

Abandon: If an *option* is not *declared* and *exercised*, it is abandoned.

ABCM: Associate Broker Clearing Member of the *LME*.

ABMS: American Bureau of Metal Statistics. Issues non-ferrous metal statistics.

ABARE: Australian Bureau of Agricultural and Resource Economics. Issues statistics and reports.

Acid lining: In steelmaking the type of refractory furnace lining influences the type of steel produced. Type of acid refractory lining (e.g. silica) for a steel *blast furnace* or melting furnace. See also *Basic*.

ACSR: Acronym for aluminium conductor steel reinforced. The standard material for stringing high-voltage overhead power lines.

Actuals: US term for *physical*.

Adit: Horizontal access shaft to a deposit inside a mountain.

Ad Valorem: Latin. According to the value. Basis for many customs tariffs

A/F: Across the flats. A measure of hexagonal bar.

AGC: Automated gauge control. Computerised control of the gap between the rolls of a *rolling mill* to keep metal thickness consistent.

Age hardening: A process of allowing certain alloys, notably of aluminium and some steels, that exhibit this characteristic to return to a hardened state after annealing by leaving them for a few hours or days at room temperature. See also *Maraging* and *Air Hardening*.

Air hardening steel: Heat treatable steel which does not require *quenching* after heating. See *age hardening*.

Air tabling: A process for sorting scrap from waste. Air is blown through holes in a horizontal surface to lift a lighter fraction (e.g. plastic) from metal. See also *Chopping*. Also used occasionally for ore beneficiation.

AIME: American Institute of Mining and Metallurgical Engineers. Influential trade body.

AISI: American Iron and Steel Institute. Issues iron and steel statistics and reports.

Alclad: A sandwich of high-strength aluminium alloy *sheet* between two sheets of commercially pure metal for a combination of strength and corrosion resistance. Produced by rolling.

Algorithm: A strategy for short-term trading on *volatile* markets, notably *futures* and *options*, which can be automatically executed by computer. Programmes are often very complex.

Algo trading: See *algorithm*.

Alkaline earth metals: Group of metals in the periodic table: beryllium, calcium, strontium, barium and radium.

Alloy: A combination of two or more metals with its own distinct properties.

Alluvial deposit: Earth, sand or gravel, sometimes bearing metallic minerals, which has been washed down from the original source by water action. (See also *Eluvial*).

Alnico: An *alloy* containing aluminium nickel and cobalt. The original high-strength permanent-magnet alloy.

Alumina: Oxide of aluminium. Usually produced from *bauxite* as a first stage in the manufacture of aluminium. About two tons of alumina make one ton of metal. Also a *refractory* and an abrasive.

Aluminothermy: A process which exploits the exothermic characteristics of finely-divided aluminium and/or ferro-silicon to generate high temperatures on combustion. Used in the production of some *refractory* metals and *ferro-alloys*, also for welding. See also *Thermit*.

Aluminising: Coating steel with aluminium. Has similar results to *galvanizing* with the added advantage of heat resistance, e.g. on exhaust systems.

Aluminum: American spelling of aluminium.

Aluminum Association: US industry association. Issues standard specifications used worldwide.

Aluminium bronze: An alloy of 89-95% copper and 5-11% aluminium with good bearing properties. Used for bushes and moving parts.

Amalgam: A combination of mercury with another metal without the application of heat.

American option: An *option*, normally an *OTC* option on *physical*, which can be *declared* at any time prior to *expiration*.

AMV: Ammonium metavanadate. One of the forms in which vanadium is traded internationally.

Angles: Standard long product in steel, aluminium and other metals. The arms of the angle may be equal or unequal.

Annealing: A process of *heat treatment* for restoring the ductility of metals *work-hardened* by *semi-fabrication*.

Anode: A cast, flat fire-refined shape used as the raw material in electrolytic refining. Alternatively the inert positive terminal in *electrolysis*.

Anodising: A process of improving the corrosion resistance of aluminium by thickening the natural oxide film on the surface. The coating may be coloured with dyes or integrally in a few colours by tailoring the composition of the *alloy* treated.

Anomaly: Geologists study magnetic or geophysical surveys for anomalies as the first indication of a possible ore deposit.

Anti-dumping: Special tariff or other constraint on imports deemed by the importing country to be guilty of *dumping*.

AOD: Argon oxygen decarburisation. A special steelmaking process used in stainless and high-alloy steel production.

API: American Petroleum Institute. Sets some standards for oil pipe.

APT: Ammonium paratungstate – principal form in which tungsten is traded internationally.

Arbitrage: An operation to lock in a temporary price advantage which involves a purchase of metal in one market with the simultaneous sale of an equivalent quantity of the same metal in another market, (eg copper on the *LME* and Comex). If two currencies are involved, a foreign exchange hedge is also needed to protect against any change in the parities.

Arbitration: A formal dispute resolution mechanism, usually provided by a body such as a Chamber of Commerce or the *LME*. Provision for arbitration is usually written into the contract to avoid the necessity for litigation.

Asian option: A cash-settled option on the average price of a given metal in a given averaging period, usually a month. Automatically exercised if *in the money*. See also *Tapo*.

Assay: The independent evaluation of the physicochemical composition of a metal or *alloy* to determine its degree of purity. Also to establish the metal content of ore or *scrap*. Also international standards, and some standards peculiar to futures market contracts, specify metal contents and maximum levels of impurity. Metals and ores are assayed to establish if they meet these.

Assignment: On the *LME*, a notification from the *clearing house* that an *option grantor* must fulfil the terms of an *option*.

Associate Broker Clearing Member: (ABCM for short). A clearing *broker* member of the *LME* without *Ring* dealing privileges.

Associate Trade Clearing Member: A member of the *LME* entitled to clear its own business, but not to write client contracts or trade in the *Ring*.

Associate broker: Non-clearing, non-*Ring*-dealing members of the *LME* authorised to issue *LME* contracts.

Associate Trade Members: Members of the *LME* who are purely clients of *broking* members.

ASTM: American Society for Testing and Materials. US standards organisation.

At arm's length: A transaction between two unrelated parties. A transaction between financially-linked companies cannot be at arm's length.

At-the-money: An *option* whose *strike price* is the same as the current market price of the underlying metal.

Audit trail: A regulatory requirement for records to track the progress of a futures market order. Also a similar provision in many branches of accounting.

Austenitic: A major class of alloy steel, especially stainless. Classically 18%Cr 8%Ni, the latter is ductile, easily welded and work hardens. May contain molybdenum. See also *Ferritic*.

Authorised dealer: An individual authorised to deal on the *floor* of the *LME* for a *Ring dealing broker*. See also *Clerk*.

Autogenous grinding: A *ball mill* without the balls, where the ore is ground by impact on itself.

Automatic exercise: See *Asian Option*.

B

Back office: The department in a brokerage or trading house where financial transactions such as *futures* deals are processed to ensure their fulfilment. See *Matching* and *Clearing*.

Backwardation: The situation when the cash or spot price of a metal is greater than its forward price. A backwardation occurs when a tight nearby situation exists in a metal. The size of the backwardation is determined by differences between supply/demand factors in the nearby positions compared with the same factors on the forward position. There is no inherent limit to a backwardation. The backwardation is also referred to as the 'back'. A large and widening backwardation can reflect a *squeeze* and ultimately a *corner* – situations which the *LME* has powers to combat. See also *contango*.

Baghouse: Part of the environmental controls at a *smelter* or furnace. Cooled flue gases are passed through the baghouse to capture particulates, which may then be recycled.

Ball mill: A rotating cylinder loaded with balls of iron or other material used to fine-grind ore in a *concentrator* prior to *flotation*. See also *rod mill* and *autogenous grinding*.

Bandwidth: The measure of a futures market's ability to process deals executed over an *electronic platform*.

Bar: A long product in a non-ferrous or ferrous metal of rectangular, or sometimes circular, cross-section, normally over 10mm thick and up to 300mm wide. Not to be confused with *Rebar*.

Base metals: Major industrial *non-ferrous* metals other than *precious metals* and *minor metals*. See also *Noble metals*.

Basic lining: In steelmaking the type of refractory furnace lining influences the type of steel produced. Basic refractory is magnesite or dolomite, the opposite of *acid lining*.

Basis: (i) Jargon term for the difference between a futures price and the price of the underlying asset. Also used for the difference between any pair of financial indicators. (ii) Mostly in zinc concentrates contracts, a metal price to which the *Treatment Charge* is understood to be linked. If *LME* prices move too far from the basis, a *scale* of variation is applied to the Treatment Charge. See also *escalator*. (iii) In some *ores* and *ferro-alloys* the nominal content of the valuable metal. Variations from this nominal level in actual delivery are reflected in the price on an agreed *scale*.

Basis point: A measure of tiny movements in *futures* and other *volatile* prices and yields equal to 0.01% of the going price.

Basis price: (i) The price agreed between the seller and the buyer of an *option* at which the option can be exercised. This price is also called the *strike price*. (ii) See also under *Basis* the pricing system in some ores and ferro-alloys called *basis* and *scale*.

Bauxite: Aluminium trihydrate, the most common raw material for the production of *alumina*. Roughly two tons of bauxite make one ton of alumina.

BBTS: Consortium of seven Indonesian tin smelters.

Beam: (i) The width of a vessel; may govern which harbours (or canals) it can enter. (ii) A steel or sometimes aluminium *structural*.

Bear: One who believes prices will move lower.

Bear covering: The closing of a *short position*.

Bear market: A market in which prices are declining.

Bear position: One where the trader has sold metal for forward delivery (i.e. going *short*) with the view to buying back at a lower price, his profit being the difference between the sale and repurchase price.

Bear spread: An *option spread* of either *puts* or *calls* whereby the holder of the position benefits when prices fall.

Benchmark: A pricing mechanism used predominantly in ores and alloys markets. Many markets hitherto using benchmarks now use quarterly contract negotiations. A benchmark price is agreed by a major organisation or group of organisations on the supply and consumption side. This price is then used by market participants in the rest of the relevant industry as a reference for their own pricing negotiations. There may be local premiums or discounts applied to the benchmark to reflect quality or freight differentials. Benchmark prices were usually agreed on an annual basis, but sometimes are negotiated on a quarterly basis now.

Beryllium copper: Copper with a small addition of beryllium used for springs and non-sparking tools.

Bessemer steel. The original 19th century steel produced by blowing air through molten steel in a *converter*.

Best orders: Orders to buy or sell which the *LME Ring-dealing broker* executes on the market at what the dealer judges to be the best available price. It is also termed buying (or selling) 'at best'. Becoming less common.

Beta: A measurement useful in *option* pricing of the difference in *volatility* between an individual commodity and the market in general.

Bid: The price the buyer is prepared to pay. (Also see *Offer*).

Bill of Lading: Legal document issued by shipowner covering receipt of cargo and shipment conditions.

Billet: (i) In steel, a long product of square cross-section used for rolling into finished shape as a rebar or light long product; the form in which steel is traded on the *LME*. (ii) In non-ferrous (mostly aluminium and brass) a cylindrical shape for use in an *extrusion* press; or in a piercing machine as the start of *solid-drawn tube* production.

Bi-metal: The result of the fusion – usually under pressure and heat – of *strips* of two different metals or *alloys*. The resulting strip bends in response to temperature change; the heart of a thermostat.

Binary alloy: An *alloy* of two metals.

BIR: Bureau of International Recycling. International scrap metal trade association.

B/L: Abbreviation of *Bill of Lading*.

Black copper: A very impure (85-90%) first smelting of copper prior to *fire refining*.

Black Jack: A mining term for zinc *blende* (zinc sulphide).

Black ore: Colloquial term for wolframite (tungsten ore). Scheelite (a calcium tungstate mineral) is white.

Blackplate: Cold rolled, light-gauge steel commonly used as the base (substrate) for *tinplate* and other tin *mill* products.

Black-Scholes: A formula (named after its two inventors) which relates the *premium* value of an *option* to a combination of the value of the underlying metal, the time to *expiry*, the *volatility* of the metal's price and the prevailing interest rate.

Black tin: Mining term for cassiterite (tin ore).

Blast furnace: A furnace in which a mixture of ore and coke is raised to a high temperature by blowing air in at the bottom. Metal and *slag* are continuously tapped from the bottom and fresh charge is added at the top. Mainly used for *iron*, mostly then used to make steel, and lead.

Blende: An old-fashioned word for ore, usually used with zinc or lead.

Blister copper: Crude copper assaying 96-99% Copper prior to final *fire refining*.

Block trade: A large transaction in one metal on one *futures* market.

Bloom: Steel *semi* for rolling into other semi-finished and finished products. Generally considered an antiquated method of casting crude steel.

BOF: Basic oxygen furnace. Oxygen-blown steelmaking furnace with *basic* refractory lining.

Borrowing: Term mostly used on the *LME*. Derived from 'borrowing metal from the market', which is achieved by buying a nearby date and simultaneously selling a date further forward. See also *Cash and Carry* and *Lending*.

Brand: A mark or name identifying the *smelter, refiner, semifabricator* or *steelworks* who has produced the metal. In primary metals often associated with a declared full chemical analysis. The deliverability of metals on the *LME* is mostly controlled by brand.

Brass: A family of copper-zinc alloys, classically 60/40. Variations in composition give different colours and physical characteristics.

Brazing brass: An alloy of 50% copper, 50% zinc used for joining iron and steel at a lower temperature than welding.

BRIC: Acronym for Brazil, Russia, India and China.

Break-even: (i) For a trader, a transaction that produces neither profit nor loss. (ii) For a producer a level of price which clears his operating costs. (iii) For a *semifabricator* or *ingot maker*, a difference between his raw material cost and product selling price that exactly covers his operating costs.

Bright drawn steel: *Long products* such as bar are sometimes drawn after rolling to achieve greater dimensional accuracy and a bright finish.

Brinell: The standard test for hardness of metal. The higher the Brinell number, the harder the metal.

Briquette: (i) In *ferro-alloys* a briquette is a granular form of the alloy held together with a binder and contains an exact amount of the alloying metal. (ii) In scrap processing, particulate material (e.g. *chopped cable, swarf*) is briquetted under pressure to reduce surface area and increase density for charging to the furnace. Briquettes are colloquially known as bricks. See also *pellets*.

Broker: One who puts buyer and seller in touch with one another for a fee. In a broader sense the term is used for an organisation which is a member of an exchange and which acts as the means through which clients have access to the market. In these circumstances the broker acts as principal to his client but does not share in the risk as each deal is implemented by trading with other brokers in the market through *clearing*.

Brokerage: (i) Commission charged by a broker for completing a transaction on an exchange. (ii) Less commonly a similar fee for facilitating a *physical* transaction. See also *Commission House*.

Bronze: An alloy of 90% copper 10% tin. Variants are *aluminium bronze* and *manganese bronze*; the latter is better known as *High Tensile Brass*.

B.S.: British Standard. Standards may cover purity, composition, physical properties, dimensions or all of the foregoing.

BSI: British Standards Institution. Issues British Standards.

Bulk ores: Ores shipped in very large volume without packing – mainly iron and manganese.

Bull: One who believes prices will rise.

Bull market: A market in which prices are rising.

Bull position: One where the trader has bought metal with a view to selling it later after prices have risen to higher levels (i.e. going *long*), his profit being the difference between the purchase and sale prices.

Bull spread: An *option spread* of either *puts* or *calls* whereby the holder of the position benefits when prices rise.

Bullion: (i) *Precious metals* such as gold and silver, in unwrought form. (ii) Lead bullion is smelted, unrefined lead which still contains silver.

Busbar: A rigid or flexible electrical connection for conveying heavy current to a furnace, aluminium smelting cell or electro refinery. Usually made of copper or aluminium.

Business day: Any day except holy or weekend days, a public/bank holiday or, on the *LME*, a day designated not to be by the LME directors. See also *she* and *shinc*.

Butterfly spread: An option strategy combining two *option spreads* whereby two options are bought (or sold) at the same *strike price* and one option is sold (or bought) at each of an equidistant higher and lower strike price, all for the same *expiration*. It is a limited-profit, limited-risk options strategy.

Buyers over: If a bidder remains unsatisfied at the end of any *ring* on the *LME*, or trading *session* on other futures markets, there are said to be buyers over. If this is so in cash or three months at the end of the second LME *morning ring*, the bid price will be the official *buyer's price* for that position.

Buyer's price: See *seller's price* and *buyers over*.

Buying hedge: A hedge transaction involving the purchase of a *futures* contract to offset a *short physical* position and the risk of a rise in the metal price. See *hedging*.

By-product: A metal or other valuable element recovered in relatively small quantities from the production of another metal, e.g. cadmium from zinc, platinum from nickel or molybdenum from copper.

C

Cadmium copper: Copper with a small addition of cadmium for greater strength. Standard metal for overhead conductor on electric railways.

Cakes: Usually refers to copper. Rectangular shapes suitable for rolling into *plate*, *sheet* etc.

Calendar spread: An *option spread* whereby a pair of *calls* or *puts* for the same *strike price* but different *expiration* is traded simultaneously, one bought and one sold.

Call option: See *option*.

Calot: A calot (in zinc) or *slug* (in aluminium) is a thick disc of soft metal which is the raw material for an impact extrusion (e.g. collapsible (aluminium) tube for toothpaste).

Cancelled warrant: Cancelled *warrants* are important in that they represent the change in stockpiles of metal that may no longer be available at *LME* warehouses and is booked for removal or onward shipment. This information is an indicator of physical demand.

Cap: A derivative position that protects the holder from any cost of a rise in the price of the underlying above an agreed level. See also *Floor*.

Capsize: A large cargo vessel of typically 150,000 tonnes deadweight originally too large to go through the Suez Canal.

Carat: The measure of purity of gold. 24 carat is 100% Au.

Carbon steel: Ordinary unalloyed steel.

Carrying: (i) Carrying is the general term used for both *borrowing* and *lending* on the *LME*. (ii) It is also used to describe a borrowing operation which results in physical metal being held in an *LME* warehouse by the borrower. (iii) Beyond metals, carry trades are made in other financial instruments.

Carrying costs: The costs associated with a carry such as insurance, rent and opportunity cost.

Case hardening: Hardening the surface of steel without affecting the core metal.

Cash: (i) On the *LME*, the *spot* position for trading (with *settlement* on the second following day). (ii) On other *futures* markets, cash usually refers to *physical*. See also *Cash settlement*.

Cash settlement: Some futures contracts can only be settled in cash and not by delivery of a *warrant* or *lot*.

Cash and carry: When a *contango* exists, the premium of the forward position over the *prompt* generally reflects costs of storage, insurance and finance for that period. When metal is in surplus the contango may widen to the point where an effective interest at more than money market rates can be locked in. (See also *Borrowing*).

Cash today: See *Tom-Next*.

Cassiterite: The principal commercial ore of tin.

Casthouse: See *Foundry*.

CASTING: (i) The product of a *foundry*. Molten metal is poured into a mould to produce the desired finished shape, often complex. Castings are mostly made of iron, steel, aluminium, copper alloys and zinc, but most metals can be cast. They may be sand-cast, gravity *die cast*, pressure die cast or, more rarely, cast by the *lost wax* process. The structure of cast metal is different from that of *wrought* metal. (ii) The process of casting steel in a continuous process.

Catalyst: An element or compound which facilitates a chemical reaction without itself being consumed or altered. Classic examples are platinum in an oil "cat cracker" or Rainey nickel in edible oils manufacture. Automotive catalysts are an important application of precious metals to reduce exhaust gas emissions.

Category: LME members are divided into five categories – *Ring Dealing*, *ABCM*, *Associate Trade Clearing*, *Associate Broker* and *Associate Trade*.

Cathode: A flat rectangular piece of metal which has been refined by *electrolysis* or *electrowinning*. Copper and nickel are commonly traded and delivered in this form. Copper is always traded as whole plates. Nickel may be whole plates or cut into squares of various sizes down to 1in.x1in. Cobalt cathode is traded as chips.

Cathodic protection: Where two metals of different electro potential are in contact in moisture, the (sacrificial) one with higher potential corrodes faster and in so doing protects the other. *Galvanizing* works this way.

CCP: Central counterparty, i.e. a *clearing house*. See also *Novation*.

CCR: Continuous cast rod. See *Properzi*.

Cement copper: An impure form of copper recovered by acid precipitation from low grade ore or residues on to steel scrap. This is then smelted. See also *heap leaching*.

Cerium Mischmetal: See *rare earths*

Certificate of Origin: A consular document certifying the origin of a material. Important where some origins are embargoed or subject to *anti-dumping* duty.

cfr.: Short for cost and freight. Material sold cfr is delivered free to port of destination, but not insured. Sometimes expressed as *c&f*. See *cif*.

Charcoal iron: Iron smelted with charcoal rather than coke where the former is available and the latter is not economic. May yield a purer iron.

Charge chrome: The largest-tonnage form of ferro-chrome with slightly lower chromium and carbon contents than high carbon (which has 60%Cr and 6-8%C).

Chartist: Market analyst who uses charts of price behaviour to predict price movements. Also called *technical analysis*. The opposite of a study of *fundamentals* such as production, consumption and macroeconomic data.

Chemical lead: High-purity lead suitable to resist corrosion in, for example, sulphuric acid. Confusingly called *corroding lead* in the USA.

Chopping: Cable chopping or granulation is a process of preparing scrap cable without burning. Wire and insulation in small pieces are then separated, usually by *air tabling*.

Cire perdu: See *lost wax*.

cif: cost insurance and freight. Material sold cif is free of all charges to the buyer up to the vessel being alongside at the port of importation.

CIS: Commonwealth of Independent States.

Clad metals: These are metals whose surface characteristics have been changed by bonding a thin sheet of another metal to one or both sides by rolling pressure or even explosion. See also *Alclad* and *Sheffield plate*. Not to be confused with surface treatment processes like *galvanizing*, *anodising* or *electroplating*.

Clearing: (i) Generally, the process of transferring *futures* and *options* contracts to a *clearing house* and holding them there. In full *CCP* clearing, the *clearing house*, through the process of *novation*, protects both participants to the trade from *counterparty risk*. This is usually done soon

after a trade is executed and certainly every day. (ii) On the *LME* the daily process of settling all the *differences* between Ring members' positions and *settlement* at the end of the day's trading. It is implemented through the *clearing house* and closes all the previous day's contracts.

Clearing house: An independent body appointed or owned by an exchange to clear and guarantee business transacted between member brokers. The *LME's* clearing house is *LCHClearnet*.

Clerk: An assistant to an *LME Ring* dealer. He or she may be 'authorised' (empowered to deal in the absence of the dealer) or 'unauthorised' (empowered only to record and check transactions).

CFTC: Commodity Futures Trading Commission. US body responsible for regulatory oversight of all *futures* and commodity *options* trading.

Closing price: (i) On the *LME* a price set by the Quotations Committee at the close of business for the purpose of assessing *margin payments* due. Not to be confused with *settlement*. (ii) On other futures exchanges the value prevailing at the end of the day's trading which becomes the official price for that exchange for that day.

Close out: See *liquidate*.

CME Group: The world's largest futures markets operator, formed from the merger of the Chicago Mercantile Exchange (CME), Chicago Board of Trade (CBOT) and New York Mercantile Exchange (*Nymex*).

Cobbed ore: Ore which has been hand-sorted lump by lump.

Coil: Sheet metal is coiled up as it emerges from the *rolling mill* and is then normally strapped and sold in this form. In steel, hot rolled coil (*HRC*) is sold to independent cold rollers who sell *CRC*, or cold rolled in-house by vertically *integrated* mills. Vertical integration of hot and cold rolling is more normal in *non-ferrous* metals, as is *continuous casting* at the start of the process.

Coinage bronze: An alloy classically of 95% copper, 4% tin and 1% zinc.

Coking plant: A plant for converting metallurgical grade coal to coke for use in *blast furnaces*.

Comex: The New York Commodity Exchange, on which copper, aluminium, gold and silver are traded. Comex is often referred to as meaning the prices of these metals in New York, e.g. 'Comex is \$3.50', meaning the Comex copper price is \$3.50 a lb. *Nymex* – the New York Mercantile Exchange, which owned Comex when it was absorbed into CME Group – trades platinum futures.

Commercially flat: The degree of flatness of plate or sheet which is commercially accepted.

Commission: The fee paid by a client to a *broker* for executing a *futures* transaction.

Commission house: A term referring to *brokerage* houses, usually American, which execute general commissionable business on behalf of clients in securities and *futures*.

Concentrates: The first-processed product from a mine. Processes such as *flotation*, *magnetic separation* or *spirals* raise the metal content from as-mined levels to as much as 60-80 times richer. Loosely referred to as ore.

Contango: The situation when the price of a metal for forward or future delivery is greater than the *cash* or *spot* price of the metal. Contangos occur when the metal is in plentiful supply. The size of the contango does not normally exceed the cost of financing, insuring and storing the metal over the future delivery period. See also *Cash and Carry* and *Backwardation*.

Continuous casting: A process of casting a product, such as a rolling *slab* or *extrusion billet*, through an open-ended die in which it is rapidly frozen. Strictly speaking this is *semi-continuous casting*. See also *Hazelett* and *Properzi*.

Contract: A legal document setting out the respective responsibilities of buyer and seller or client and broker in relation to a transaction or series of transactions. On many futures markets the standard trading unit is called a contract, but also *lot* or *warrant*.

Contract month: On *futures* exchanges other than the *LME* a month in which the material is deliverable. There is not necessarily a delivery month every month. The nearest month is known as the *spot* month.

Converter: A furnace for refining steel, copper etc. by blowing air through the molten metal.

Convertor: Generic term for companies converting steel alloying ores into intermediates such as *ferro-alloys*, molybdenum oxide or ammonium paratungstate (*APT*).

Co-product: Usually two metals recovered from the same ore and near enough to each other in value that neither can be called a *by-product* of the other.

Corner: A position where one operator owns all or virtually all the market stocks of a commodity. His object is to control the supply of the metal, and thus cause an exceptional rise in price. The *LME* has rules to avert the worst effects of a corner. (See also *Squeeze*).

Cor-Ten: A corrosion-resistant weathering steel.

Counterparty risk: The risk that a counterparty to a trade will fail to fulfil its obligations.

Cover: The balancing of an open position by buying (if the original position was *short*) or selling (if the original position was *long*) on the market.

CR: Cold rolled. A process used to fine-tune the surface finish and dimensional tolerance of hot rolled steel. Also to change cross-sectional shape.

CRC: See *coil*.

Credit: (i) The tolerance extended by a seller to the buyer for the time he takes to settle invoices. (ii) On the *LME* brokers extend credit to the client from which they then draw *variation margin*, thus avoiding frequent *margin calls*.

Credit limit: The maximum amount of credit an *LME* broker will extend to a client to meet margin calls. See also *credit*.

Creep: A metal which slowly deforms under pressure or tension is said to creep. Lead creeps at room temperature, mild steel creeps at elevated temperature.

Cross: (i) A *cleared* transaction where the buyer and seller are the same *broker*. On the *LME* the normal means of creating the *futures* contract to settle an *in-the-money Tapo*. (ii) On other markets the expression is sometimes used to cover a situation where bid and offer prices temporarily become inverted.

Crude steel: The first solid steel product upon solidification of liquid steel. It includes *ingots* and *semis*. Crude steel also includes liquid steel which goes into production of steel *castings*.

Crucible: Refractory pot in which smaller quantities of metals and *alloys* are melted prior to final adjustment of the composition and pouring. Traditionally used to make tool steel, now mostly used for preparing metal for casting in the *foundry*.

Crusher: As-mined rock is crushed to progressively smaller sizes on its way to *milling* and *flotation*. The first and most powerful crushers are jaw crushers, followed by the gyratory or roll type.

Cryogenics: The science of extreme cold. Used to process extreme oversize or plastic-covered *scrap* by embrittling it.

CTA: Commodity Trading Advisor – a firm or more likely an individual who uses charts and system trading to trade on futures markets on behalf of managed investment funds. See also *Algorithm*.

Cupellation: Separation of *base metals* from *precious metals* by oxidation of the former. The oxides are absorbed by a cupel (a dish of bone ash); the precious metal remains as a bead on the cupel. A technique used in *assaying*.

Cupola: A smaller melting furnace, typically used by a *foundry* to melt iron or scrap.

Custom smelter: In non-ferrous, a *smelter* which depends for its intake mostly on *concentrate* purchased from independent mines and on *scrap* metal, rather than its own captive mine sources. See also *Toll*.

Cupro-nickel: Copper with about 30% nickel. Used for coinage.

D

daf: delivered at frontier.

Day order (GFD): An order placed with an *LME* broker which is valid throughout the *rings* and *kerbs* during the day on which it was placed. If not executed that day, it is automatically cancelled. If valid for all markets (i.e. premarket, lunchtime and evenings as well as the rings and kerbs), any instruction should clearly state 'all markets'. The order can then be executed at any time of the day by telephone or electronically.

Day trader: A trader, usually an independent individual, who buys and sells a futures contract on the same day for a small profit. Often encountered on US futures markets, where they are known as *locals*. See also *Intraday*.

Debar: Short for deformed bar. A *rebar* that has been deformed to grip better in concrete.

DGCX: Dubai Gold and Commodities Exchange.

d/d: Abbreviation for delivered.

ddp: Delivered duty paid.

ddu: Delivered duty unpaid.

Declaration: The act of an *option* buyer informing an option *grantor* that he is taking up his right to buy (or sell) metal under the option contract.

Declaration date: The date on which the buyer's right to *exercise* his *option* expires if not *declared*. On the *LME* this is the first Wednesday in the month or, if a holiday, the next business day. There is no declaration date for a *Tapo*.

Deduction: In a *concentrates* purchase or *toll-smelting* contract, provision is made for a *smelter* to make a deduction for unavoidable metallurgical losses before accounting to the seller for the metal recovered.

Delivered: A delivered price includes free delivery to the buyer's works or warehouse, including, unless otherwise specified, any import duty. See also *ddp/ddu*.

Delivery: Supply of material in accordance with the terms of a contract. On the *LME* this may be effected through supplying a *warrant* or on other futures markets a similar document of title. In the USA often referred to as shipment.

Delivery date or Prompt date: the date on which a metal has to be delivered to fulfil the contract terms.

Delta: A measure of the rate of change in an *option premium* against changes in the price of the underlying commodity. Often used as shorthand for price exposure in an option dealer's position.

Demurrage: Penalties payable to a shipowner for delays if loading or unloading does not proceed at the rate laid down in the contract. May arise from landside transport problems, port congestion or weather.

Dendritic: (i) Dendrites are whiskery growths on *anodes* which can short out the electrolytic process. (ii) Also used to characterise geological formations.

Deposit: See *Initial Margin*.

Derivatives: Generic term originating from the financial sector for all contracts related to an underlying security or commodity, whether or not they are traded on a *futures* exchange.

Difference: In *LME clearing*, contracts are concluded at maturity by the payment into *settlement* by the *broker*, or from settlement to the broker, on behalf of his client, of the difference between his closed contract price and the corresponding *settlement price*.

Die casting: Casting a non-ferrous metal (usually zinc or aluminium) into a closed steel die either by gravity pouring (gravity die casting) or injection under pressure (pressure die casting). More accurate and faster than sand casting.

DIN: Deutsche Industrie Norm – German standards

Direct strip casting: Casting steel *strip* very close to final dimensions to minimise the need for subsequent hot rolling to size (from conventional slab).

Discretionary account: An account which gives the broker the right to initiate trades that he believes will meet the client's objectives. More common in equities than *futures*.

DNSC: Defense National Stockpile Center. US Government agency responsible for selling metals and ores from US stockpile surpluses.

DOM: Short for drawn over mandrel. Steel industry term for *solid drawn* tube.

Double option: An *option* – sometimes known as a *straddle* – which gives the buyer or taker of the option the right either to buy from or sell to the seller (or *grantor*) of the option at the *basis price*.

Draught: The depth of water necessary for a vessel to float without fouling the bottom.

Drawback: The refund of customs import duty on the re-export of the goods or export of products made from them.

Drawing: The process of drawing metal through a die to accurately produce long lengths of wire, tube or strip sections.

Dredge: *Alluvial* deposits, notably of tin, are often mined by dredges which float on artificial or natural shallow waters (pond), dredge up the mineral and concentrate it on board with spirals, shaking tables etc. Dredging in front of the dredge and depositing *tailings* behind it moves the pond across the deposit.

DRI: Direct reduced iron. An alternative to the *blast furnace* in which iron ore or *pellets* are heated by a *reducing* gas. The product contains up to 90% Fe. Subsequently charged to an EAF to make steel.

Dross: Partly oxidised scum floating on the top of molten metal. After skimming off may be processed to recover its metal value.

Dry metric ton: In some contracts covering *concentrates* or *bulk ores*, the relevant tonnage is specified as dry – i.e. after deducting the moisture content.

Dumping: Exporting goods to another country at lower prices than on the home market or in third markets. See also *anti-dumping*.

Dual phase steels: *Carbon* or *stainless steel* designed to be ductile enough for deep drawing but having superior strength thereafter.

Ductile iron: See *SG iron*.

Duplex stainless steel: A fast-growing class of *stainless steels*. So-called because it is a combination of *austenitic* and *ferritic* types, with intermediate nickel content. Good for high strength applications.

DWT: Deadweight tons. The tonnage capacity of a vessel.

E

EAF: Electric arc furnace. Mostly used for melting steel *scrap* or *iron*. See also *Electric resistance furnace*.

EFF: Exchange for futures – a transaction whereby an off-exchange contract is exchanged for an on-exchange one.

EFPP: Exchange for physical – a term originating on American futures exchanges, but now increasingly in common use on the *LME*, whereby two *physical* counterparties swap a physical parcel and a *futures* position at mutually agreed prices to avoid each of them having to hedge the transaction separately.

Electric resistance furnace: Electric furnace for smelting *ferro-alloys* where heating is achieved through resistance to the passage of the current from carbon *electrodes* through the charge, as well as from arcing. May be slowly rotated. See also *EAF*.

Electrical steel: Steel for use in laminations in electric motors, transformers etc. See also *Grain oriented*.

Electrode: See *electrolysis* and *electric resistance furnace*.

Electrolysis: (i) A process by which direct current passes from one *electrode* (the *anode*) through a liquid electrolyte to another electrode (the *cathode*) in a cell. The passage of ions from the anode causes the pure metal only to be electrodeposited on the cathode. Because of the purity of the deposited metal, electrolysis is often used in refining. Impurities fall to the bottom of the cell as a slime and may contain valuable by-products, such as precious metals. (ii) Also used for electroplating corrosion-resistant metals such as silver, nickel and chromium on tarnishable metals such as steel or brass. See also *electrowinning*.

Electrolyte: See *electrolysis*.

Electronic trading: Mostly refers to trading on a futures market on an electronic *platform* such as the *LME's Select* or a proprietary system. Also some *physical* trading is done electronically.

Electroplating: See *electrolysis*.

Electrowinning: An electrolytic refining process in which the metal is recovered from the *electrolyte* rather than from an *anode*. See *electrolysis* and *SX/EW*.

Eluvial: A geological term referring to a deposit created by the action of water, but without movement from its original position (e.g. the bed of an ancient lake). See *Alluvial deposit*.

EMEA: Acronym for Europe, Middle East and Africa.

EN: Series of European standards.

End consumer or End user: A company in whose hands the identity of the fabricated metal is finally lost in a more complex product, e.g. a ship, refrigerator, motor car or transformer. Some of these companies also have fabricating subsidiaries. See also *Fabricator*.

EPNS: Abbreviation for Electro Plated Nickel Silver. *Nickel silver* plated with silver. Used for cutlery and decorative items.

ERW tube: Steel tube formed from *skelp* and longitudinally electric resistance welded. See also *welded tube*.

Escalator: See *Basis*. Sometimes a *concentrates* contract provides only for *LME* prices to rise above the *basis price*, in which case the *scale* is known as an escalator.

ESR: Short for electro slag refined. Refers to a process for making highly refined steel by using an ingot as a consumable *electrode* in an *EAF* where the arc is submerged in the slag and the pool of molten steel forms below its surface.

ETF: Short for exchange traded fund, i.e. a fund whose shares are traded on an exchange like ordinary shares. ETFs may invest in a wide variety of securities and *derivatives*, including those related to commodities.

Euroalliages: Association of European *ferro-alloy* producers.

Eurofer: European Confederation of Iron and Steel Industries.

Eurometal: Organisation representing European steel, tube and metal distributors.

Eurometaux: European Association of Metals. Umbrella organisation for non-ferrous metal industry in Europe.

European option: An *option* which in practice is only declared on the *expiration* date because the underlying metal can only be acquired at that time. The *LME* option contract, which in theory can be declared at any time prior to expiration, is effectively a European option because there is no economic benefit to early declaration.

Eutectic: An *alloy* of two (occasionally more) metals that melts at the lowest temperature of any combination of those metals.

Exchange contract: A contract registered and cleared on a *futures exchange*.

Exercise: The implementation of an *option* following *declaration*.

Exotic metals: An imprecise term generally covering very small volume *minor metals* with very special characteristics, some degree of rarity and often a discontinuous market.

Expiration date: The date at which the buyer's rights under an *option* contract expire unless declared. See *Declaration Date*.

Ex ship: Seller's responsibility ends when the goods leave the slings alongside the vessel. Buyer must provide barge or vehicle in which to receive them.

ex-stock: Available from manufacturer's or trader's stock; immediately available.

Extras: Additional charges for specified sizes, gauges, tolerances.

Extrusion: A process of heating a *billet* of metal to a plastic state and forcing it through a die. This enables the quick and economical production of long lengths of complicated sections. Lead was the first metal to be extruded, but today aluminium, brass, magnesium and even stainless steel are extruded.

exw: See *ex-warehouse*.

Ex-warehouse: Goods sold ex-warehouse are usually placed on the truck, wagon or barge of the buyer. See also *In-warehouse*.

EZ: Electro zinc. Refers to *galvanized sheet* or *coil* where the zinc has been deposited electrolytically, not *hot-dipped*.

F

Fabricator: A company which transforms refined metal (and sometimes *scrap* as well) into semi-fabricated products (e.g. wire, cable, *tubes, strip, rods*) for sale to an *end-consumer*. More correctly referred to as a *semi-fabricator*.

Fair value: (i) A loose term referring to the level at which the commentator believes the market should be trading. (ii) In setting import duties, a comparison with the cost price of the goods in the country of origin or the level at which they are sold in other markets.

fas: Stands for free alongside. Material is delivered to the quay or lighter alongside buyer's vessel, but does not cover the cost of slinging it on board.

Fatigue: A form of failure of metals after being subject to vibration, repetitive strain or temperature cycles.

FCM: Futures Commission Merchant. US expression. Has same meaning as *Commission House*.

Ferritic: A class of *stainless steels* with no nickel content, so lower-cost. Good for high-temperature applications (e.g. motor car exhausts), but less good for aggressively corrosive conditions. See also *austenitic* and *duplex*.

Ferro-alloy: An alloy with iron of a metal used to make steel alloys. The ferro-alloy is more easily produced from the ore than the pure metal and may also be easier to add to the melt. Most ferro-alloys are used to add alloying elements and to treat or modify iron or steel. See also *Master alloy*.

Ferrous: Materials mainly containing the element *iron*, i.e. iron and *steel*.

FIA: Futures Industry Association (USA).

Fines: Ore or *ferro-alloy* which is in too small a particle size to make a good charge to the furnace and is therefore *pelletised* or *briquetted*.

Fire refining: The refining of crude metal by pyrometallurgy, e.g. in a *reverberatory* furnace or *converter*.

Flake: A small flat particle of metal. Cobalt and electrolytic manganese *cathode* metal, after separation from the mother sheet, are in flake form. Also the raw material for aluminium paint, produced by *ball-milling* aluminium foil scrap.

Flange: In an *I-beam* the flanges are the horizontal lines at the top and bottom of the capital I cross-section. In an *H-beam* they are the verticals in the H. See also *Web*.

Flash: The metal which exudes at the joint line of a *casting* mould or die or closed die for *forging*. Usually removed at source and recycled.

Flask: A steel container to hold 34.5 kg of mercury, the standard unit. Colloquially called a bottle.

Flash furnace: A smelting furnace in which the *concentrate* and fuel are blown into a closed chamber in finely-divided form. A much faster reduction than in a *reverberatory furnace*.

Flat products: Expression mostly used in steel, covering *plate, coil* and *sheet*.

Floor: (i) That part of a futures exchange where *open outcry* trading takes place. See also *Ring* and *Pit*. (ii) A derivative position that protects the holder from any cost of a fall in price of the underlying below an agreed level. See also *Cap*.

Flotation: The process used at a mine to separate fine particles of valuable metal from *gangue*. Finely-ground ore is slurried and passed through cells where agitators and chemicals cause the metal to rise to the surface, where it is recovered from the overflow, dried and sent to the *smelter*. Gangue in the underflow is sent to *tailings* ponds to settle out, sometimes for stowing back underground. See also *concentration*.

Flow moisture point: A measure of a danger point at which combined moisture in a cargo, typically *concentrates*, becomes free moisture under the effect of vibration or movement. See also *thixotropic*.

Flux skimmings: A type of zinc scrap arising from skimming oxidised metal from the surface of a hot dip *galvanizing* bath. With some 50% Zn content, it is recycled.

Flying shear: An oscillating cut-to-length shear that cuts *sheet* from *coil* while the band is moving.

FOA: Futures and Options Association (European association based in the UK).

fob: Free on board. Seller bears all costs up to the material being placed on board buyer's vessel.

Foil: The thinnest form of rolled metal, less than 0.15 mm thick, most commonly aluminium, but also other metals and steel. Thicker aluminium, e.g. for pie dishes, is also known as foil. See also *shim*.

Force majeure: The clause in an *ore*, metal, *alloy* or *scrap* supply contract which allows the seller not to deliver or the buyer not to take delivery of the contracted material because of events beyond his control. There is no force majeure clause in an *LME* contract. Customers affected by a declaration of force majeure on an LME-deliverable metal by a producer or refiner can always turn to the LME as a source of metal, and suppliers can deliver their metal to the LME if their customers declare force majeure.

Forging: Shaping steel and some non-ferrous metals while hot by repeated hammer blows. Forces of up to several tons may be used. Often results in the strongest form of the metal in the *alloy* used.

Forward: The purchase or sale of metal for delivery at a specified future date. Hence Forward Price, Forward Contract. As distinct from *futures*, a forward contract is not tradable.

fort: Free on truck or train. Material at seller's plant or in warehouse is placed on buyer's truck or train wagon at seller's expense.

Foundry: (i) Place where *castings* are made. (ii) The last department in a *smelter* where the metal is cast into standard *shapes* (*semis* in steel). In copper (casting *anodes*) and aluminium (casting *slab* and *billets*) the department is usually known as the *Casthouse*

Fragmentiser: See *shredder*.

Franco: French for *delivered*.

Free machining: Metal such as steel or *brass* which has been alloyed with small amounts of lead, bismuth or other soft metal to optimise machinability. Free machining brass is a notably easy material to machine. See also *leaded*.

FSA: Financial Services Authority. UK regulatory body.

Fundamentals: Physical production, consumption and macroeconomic data are studied to establish market fundamentals. Also see *chartist*.

Fusible alloy: Very low melting point alloy, e.g. for sprinkler systems.

Futures: Generic term for exchange-traded contracts creating an irrevocable obligation to buy or sell an underlying asset at a defined price and date in the future.

Futures exchange: A formal exchange on which certain *futures* are traded.

G

Galena: Lead ore.

Galvalume: A proprietary corrosion-resistant rolled steel coated with an alloy of 55% aluminium 45% zinc for advantages of both *galvanizing* and *aluminising*.

Galvanizing: The process of protecting steel against corrosion by coating it with zinc. *Sheet* is usually continuously galvanized in *coil*, either by immersing in molten zinc (hot dipping) or electrodeposition. After galvanizing it may be corrugated and cut to length. Other products such as tube, angle and post-fabrication structures such as roof trusses and gates are hot-dipped. See also *metal spraying*.

Gamma: A measure of the rate of change of an *option's delta* in response to changes in the price of the underlying.

Gangue: The worthless part of as-mined ore.

German silver: See *nickel silver*.

Give-ups: A give-up occurs when a client instructs an executing *LME broker* to give up an uncleared contract to another of his *LME brokers* for the purpose of being entered into the clearing and eventually settled. See also *Transfer*.

g.o.b.: Good ordinary brand. A grade of zinc of 98% minimum purity.

Good Till Cancelled Order (GTC): An order on the *LME* to buy or sell which is valid every market day during *rings* and *kerbs* (or during the entire day if specified), until cancelled by execution or client's instructions.

GOS: Russian standard specifications.

Grade A: Designation of a good quality of tin in international commerce. The standard material in the New York *OTC tin* market. See also *Straits tin*.

Grain (of metal): Metalworking, e.g. rolling, imparts a grain along the direction of rolling; forgings are stronger because the grain of the metal follows the shape of the forging.

Grain oriented: In steel, *sheet* for electrical laminations for transformers is sold as grain oriented. See *Grain* and *electrical steel*.

Grantor (of an option): The person or firm that sells an *option*.

GTC: *Good Till Cancelled*.

Gunmetal: A strong alloy of 85% copper, 5% tin, 5% lead and 5% zinc, or near variant of this mix.

H

Haematite: A major type of iron ore. See also *magnetite* and *limonite*.

Haircut: Expression covering the reduction in valuation of an asset (e.g. a *warrant*) offered in lieu of cash to cover a *variation margin* call.

Hammer mill: see *Shredder*.

Hazelett process: A method of continuously casting and rolling pure aluminium to produce *sheet*. See also *Hunter Douglas* and *Direct chill rolling mill*.

Hard zinc: A form of scrap zinc that accumulates at the bottom of a *galvanizing* bath.

H-beam: A *long product* with a cross-section of the letter H.

HBIA: Hot Briquetted Iron Association. Trade association covering *direct-reduced* iron.

HC FeCr: High carbon ferro-chrome. See *Charge chrome*.

HDG: Hot Dip *Galvanized*. Refers to *coil* or *sheet*.

Heap leaching: A process for recovering metal, most commonly copper, from oxide or low grade ore or *residues*. Material is heaped up on an impermeable surface and sprayed with acid which picks up metal and is collected and sent for refining. The process may be bacterially assisted. See also *Cement copper* and *SX/EW*.

Heat treatment: Process for increasing the mechanical properties (strength, hardness) of steel and some non-ferrous metals. See also *annealing*.

Heavy media: A slurry in which some ores or scrap metal of differing densities can be sorted by *flotation*.

Hedge fund: An organisation trading in volatile markets which will go either *long* or *short* according to its view of the market. Does not necessarily engage in *hedging*.

Hedging: The establishment of an opposite position on a *futures* market or by means of *options* from that held and priced in the *physical* commodity. Without hedging, the physical position would be at risk of price fluctuations.

Herreshoff: A bottom-fired multiple-hearth *reverberatory furnace* used to convert molybdenum sulphide to oxide. Material is fed in at the top and moved by *rabbles* and gravity to successively hotter hearths.

hg: High grade zinc. 99.5%. See also *g.o.b.* and *shg*.

High speed steel: High-alloy, high melting point, high hardness alloy steels for machine tools (drill bits, lathe tools, milling cutters etc.). Contain cobalt, molybdenum, tungsten etc.

High Tensile Brass: See *Bronze*.

Historic price carry: See *NMPT*.

HMS: Heavy Mild Steel. Premium grade of steel *scrap*.

House account: A proprietary trade by a futures *broker* (i.e. on its own account)

HR: Hot rolled. See also *coil*.

HSLA: High strength low alloy. Refers to steels used in pipelines, engineering and construction of higher strength and corrosion resistance than *carbon steel*. Their properties are obtained by small additions of alloying elements such as manganese, molybdenum and vanadium.

Hunter Douglas process: A process comparable to *Hazelett*. It handles stronger aluminium alloy but is limited to narrow *strip*.



IAI: International Aluminium Association. Organisation representing primary aluminium producers globally which issues authoritative statistics on primary aluminium production.

I-beam: See *flange*.

i/d: Inside diameter (of tube etc.).

ILAFA: Latin American steel industry association.

Inco terms: A suite of legally-precise terms covering the international shipment of material, e.g. *fob, cif*.

Indent: Old term for an order to a shipper or agent to buy and ship a material. A “specific” indent will call for particular brands, qualities or sizes. An “open” indent gives the shipper latitude on these aspects.

Ingot: Form of cast refined metal used for convenience of shipment and handling. The form approved for delivery in *LME* aluminium, aluminium alloy, lead, tin and zinc contracts. Also see *ingot maker*.

Ingot maker: Firm producing specification alloy *ingots*, mainly aluminium or copper, from scrap for sale to *foundries*. See also *Molten metal*.

Initial margin: The initial outlay of money required to open a futures position. The size of this deposit varies from metal to metal, but is usually a fixed amount, set by the *Clearing House*, representing a small percentage (5% or 10%) of the value of the contract. See also *Variation Margin*.

Integrated producer: (i) In steel, a company which may or may not be an iron ore mine owner, but is a producer of both iron and steel, usually down to a finished product like rails or sheet. (ii) In non-ferrous, a producer of metal who owns mines, smelters and refineries, and sometimes also fabricating plants.

Inter-Market: Dealings in a metal between *LME brokers*, over the telephone or on screen, which take place before the morning *session*, in the period between the close of the morning *kerb* and the first afternoon *Ring*, or after the afternoon *kerb*.

Inter-Office: Deals concluded between *LME* members as official *LME* business at any time outside *Ring* trading hours.

In-the-money: An option whose *strike price* is above the current market price if a *put* or below it if a *call*.

Intra-day: A trade or pricing relating to a *futures* market price ruling during the day, i.e. without waiting for the close. See also *local*.

Intrinsic value: The value of an *in-the-money option* after taking account of the *premium* cost.

Introducing broker: Sometimes called a half-commission man; an individual who introduces a client to a *clearing member* of the *LME* and usually initiates his trades. See also *Give-ups*.

In warehouse: Buyer of metal in warehouse is responsible for all costs of removing the metal to his own transport. The basis of delivery under *MMTA* contracts. Title to metal sold under *LME* contracts passes with delivery of the warehouse *warrant*. *LME* prices therefore refer to metal lying in *LME* warehouse.

Iron: The product of the smelting of iron ore and the raw material for steel.

Ironworks: Plant smelting or direct-reducing iron ore to produce *pig iron*. If integrated forward to steelmaking, may deliver the iron as hot (liquid) metal.

ISDA: International Swaps and Derivatives Association. Mainly concerned with *OTC* markets.

ISRI: Institute of Scrap Recycling Industries. US-based trade association covering scrap recycling. Issues *non-ferrous* scrap specifications widely used in international trade.

ITC: International Tariff Commission: US body which sets tariffs, including *anti-dumping* duties.

Izod: A test for the notch-sensitivity (effectively brittleness) of metals and alloys.

J-L

J

JES: Japanese Engineering Specification. Japanese standards.

Just in time: A cost-conscious management approach to procurement which pares down to a minimum the delay between receipt of material and actual consumption of it.

juv: Short for joint venture. Most obviously between two miners with contiguous deposits. May also be arranged between a smelter and miner to develop a deposit, or between parties elsewhere in the production chain. May even be arranged between two merchants for a specific transaction or series of transactions.

K

Kerb trading: This is a period at the end of each *LME session* (am and pm). In the morning all metals are rapidly traded around the ring from after the reading of Official Prices until 14.45. In the afternoon specific times are allocated to the different metals. Kerb trading is often expressed simply as 'on the kerb' or 'kerb'. The facility is not common on other metal futures markets. The term comes from the early history of commodity futures markets when trading after hours was literally conducted on the kerb of the street.

L

Lance: A steel tube for introducing a gas, e.g. oxygen, into a bath of molten metal, mostly steel. See *BOF*.

Last trading day: On *futures* markets which trade in monthly positions, the last trading day before a particular month's contract is delivered.

L/C: Letter of Credit. A bank instrument normally used to settle international trades.

LCFeCr: Low carbon ferro-chrome, 0.3-0.6% C. See *HCFeCr* and *charge chrome*.

LCHClearnet: The organisation that clears *LME* trades. See also *Clearing house*.

Lead time: (i) The interval between placing an order and material being delivered. (ii) The interval between the decision to commission a new mine or plant and its coming on stream.

Leaded: See *free machining*.

Lemel: A precious metal trade term for *scrap* turnings and filings.

Lending: Derived from lending metal to the market. Selling metal on a nearby date and simultaneously buying it back on a forward date, thereby extending a *long position*. See also *Borrowing*.

Limit: In some futures markets (e.g. *Comex*, *SHFE*) there is a limit to the rise or fall in the price of a commodity during a given period of time, usually a day. Once this limit is reached, trading is suspended until a prescribed period of time expires, when trading can resume. The suspension relates only to forward positions, the *spot month* continuing to trade.

Limit order: A *futures* order placed by a client to buy at up to, or sell at down to, his least acceptable price.

Limonite: A major type of iron ore. See also *haematite* and *magnetite*.

Liquidation: Closing out of a long position. It is also sometimes used to denote closing out of a short position, but this is more correctly referred to as *covering* or covering in.

Liquidity: (i) The ability of a *futures exchange* to handle large volumes of business in a limited time. Influenced by the volume of stocks available for trading and the number of traders active. (ii) The availability of stocks for trading and active traders. See also *squeeze*.

LME: London Metal Exchange. For fuller information on the exchange see *Metal Bulletin's Guide to the London Metal Exchange* or the exchange's own Rule Book.

LOA: Length overall – gives the length of a vessel and governs the quays at which it can berth.

Local: See *day trader*.

Loco: German trade term equivalent to spot.

Long: (i) An open purchased *futures* position. Thus 'to go long' means starting a transaction by the purchase of a futures contract. (ii) Equally a producer or a processor may be long of *physical* metal if his supply of metal exceeds his sales orders.

Long products: Self-explanatory term mostly used in steel to refer to products such as *rod*, *rebars*, rails and *structurals*.

Long ton: The old avoirdupois ton of 2240 lb. Still used in some iron ore trade. See also *metric ton* and *short ton*.

Look back: A fairly rare facility in a period pricing contract, allowing the buyer to refer to a price of a day or week earlier than that when the next delivery is to be made. Valuable in a rising market.

Lost wax: A method of casting very accurate shapes. A wax model is coated in a *refractory (i)*, the wax melted out and metal poured into the cavity. Traditionally used for sculptures, it is also used to make parts in *refractory (ii)* metals such as turbine blades.

Lot: The minimum amount of a commodity in which one may deal on a futures market. On the LME a lot is often called a *warrant* or contract.

Low alloy steel: See *HSLA*.

Lumpy ore: Iron ore that is lumpy as-mined and ready to charge to the *blast furnace* (unless the iron content needs upgrading). See also *Fines*.

M

Magnetic: Most non-ferrous metals are non-magnetic, except nickel and cobalt, which are strongly magnetic. Most ferrous metals are magnetic except some grades of *stainless steel*.

Magnetic separation: (i) Where ores contain magnetically attractive metals, *concentration* may be effected dry with magnets and conveyor belts. (ii) Also used to recover *ferrous* materials from streams of mixed domestic waste.

Magnetite: A major form of iron ore. See also *Haematite* and *Limonite*.

Malleable iron: Iron castings which have been made less brittle by heat treatment. There are two types, known as blackheart and whiteheart. See also *SG iron*.

Manifest: Ship's document listing the packages in the vessel's cargo. It must be lodged with local Customs before unloading can begin.

Maraging steels: Nickel-containing steels which attain their highest strength by heat treatment followed by ageing for several hours at lower temperature. See also *Age hardening*.

Margin: See *Initial Margin* and *Variation Margin*.

Marine store dealer: The first operator on the scrap collection chain who has premises.

Mark to market: Revaluing an open position on the basis of current market price, usually to assess the need for a *variation margin*.

Market: (i) The location of trading. (ii) The current price of a commodity. (iii) The community of companies and individuals concerned with producing, trading and consuming a metal.

Market order: An order to buy or sell a *futures contract* at the first obtainable price or prices on the market for the tonnage involved. If the order is given "with discretion" the broker may execute it over time as he sees fit; if "without discretion" he must hit every bid or offer as it appears until the order is filled.

Market maker: On some *futures* or *terminal* markets, but not the *LME*, one firm or a few may be designated market makers and are obliged to be buyers and sellers at all times, sometimes in exchange for certain market benefits.

Martensitic: A heat treatable type of stainless steel with some of the characteristics of *austenitic*.

MASP: Monthly Average *Settlement Price*. The value for settling *Tapo exercise* on the *LME*.

Master alloy: An alloy, usually non-ferrous, with a high content of an alloying metal. The master alloy is more easily added to a specification alloy mix than the metal itself. See also *ferro-alloy*.

Matching system: The system operated by the *Clearing House* for the matching and confirmation of *futures* exchange contracts between *clearing members*.

Matte: A first fusion product suitable only for further refining.

Maturity: A forward or *futures* contract reaches maturity when its delivery date arrives.

Mean of four: An expression in base metal *period pricing* contracts where the *reference price* is the average of *LME* buyer's and seller's prices in both the cash and three months positions.

Merchant: A metal merchant, as distinct from a producer's agent or broker, often acts as a principal, buying steel, metal, *concentrate* or *scrap* from producers and others and selling it on to others. He will often hold metal on his own account while waiting for a buyer or go *short*.

Merchant (adjective): "Merchant" means the normal commercial quality. Mostly used in steel, e.g. merchant *bar*, merchant *pig iron*.

Mesh: The sizing of a *powder metal* is determined by the size of mesh in a screen or sieve that it will pass through.

Metal Service Center Institute: North American association of steel and metal *stockists*. Issues statistics and reports.

Metal spraying. Applying one metal in powder form to the surface of another, e.g. zinc or aluminium to steel for corrosion resistance, or *tungsten carbide* to a knife edge. A process sometimes suitable for use *in situ*, on bridges for example.

Metric ton: Also called tonne. 1,000 kg or 2204.6 lb. See also *long ton* and *short ton*.

Micro alloys: A generic name for the alloying elements used in *HSLA steels*.

MiFID: Markets in Financial Instruments Directive. An EU directive covering the conduct of business on financial markets and by *brokers*, banks and others in those markets.

Mild steel: Unalloyed ductile steel.

Mill: (i) The complex of *crushers*, *ball mills* and *flotation* cells that comprise a *concentrator*. (ii) A *rolling mill*. (iii) A metal-cutting machine that complements a lathe by producing flat surfaces, keyways etc.

Millscale: Heavy oxidation on the surface of e.g. hot rolled steel coil. Can be recycled for the metal content after removal by abrading or pickling.

Mineral sands: Coastal alluvial deposits of heavy minerals containing titanium, zirconium, *rare earths* etc.

Mini-mill: A steel production plant using *ferrous* scrap as its primary raw material. Usually this type of plant produces crude steel from an *electric arc furnace* (EAF) which is normally used to roll *long products*, although some EAF-based flat products mills also exist. Mini-mills can also use pig iron and DRI for their raw material feed.

Minimum fluctuation: See *Tick*.

Minis: Contracts on the *LME* and other futures markets with a smaller than standard *lot* size. May also be only *cash-settled*.

Min-max: (i) An option strategy involving selling an *option* (e.g. a put option) to fund the purchase of an opposite option (i.e. a call option). (ii) The expression may also be used in *physical* period pricing contracts, where limits are laid down to movement in the *reference price*. Beyond the limits, renegotiation is usually called for.

Minor metals: *Non-ferrous* metals of smaller volume of international trade and frequently higher value than *base metals*. Often *by-products*. See also *exotic metals* and *MMTA*.

Mischmetal: see *Rare Earths*.

MIT: Market if touched. A term commonly used by *chartists*. It is an instruction to buy or sell at market if a certain level above or below the current price is reached.

MMTA: Minor Metals Trade Association. UK-based international association for producers, traders and consumers of *minor metals*.

Molten aluminium: Some aluminium secondary *ingot makers* supply metal to nearby *foundries* in the molten state in insulated ladles on special trucks.

Monel: A proprietary alloy of 70% nickel 30% copper with exceptional resistance to seawater.

MTU: Short for metric ton unit. See *Unit*.

Multiple lengths: Where *long products* such as *rod*, *tube* or *angle* are ordered at exact lengths, the mill may have the option to supply longer lengths that are exact multiples of the specified length.

N

NAFTA: North American Free Trade Area. Customs union of USA, Canada and Mexico.

Naked option: A speculative *option* which the buyer or *grantor* does not have the resource in metal to cover.

NAP: Notional Average Price on the *LME*. A daily average figure which rolls forward through the month to end up as the *MASP*.

NAPMI: National Association of Purchasing Managers Index. Important US measure of economic health.

Native metal: Actual nuggets of metal occurring rarely in rich ores.

Nearby: A date/contract that is relatively close to the *cash/spot/expiry* date.

Net position: (i) An operator's position after offsetting all his long positions in a metal against all his short ones. (ii) May also be calculated on all his *open positions* in futures regardless of commodity.

Nickel silver: A copper-based alloy with zinc and nickel, used for example in cutlery.

Nimonic: A group of nickel-based alloys used in jet engines.

Nitriding: A process of *case-hardening* steels of appropriate composition with nitrogen to give superior results to case hardening with heat alone.

NMPT: Non Market Price Transaction. A deal at a price agreed between broker and client that is not the current *LME* price for the relevant position, usually a *historic price*. Special rules apply to managing and *clearing* such a transaction.

Noble metals: Old-fashioned designation of *precious metals*. Opposite of *Base metals*. German – Edelmetall/Unedelmetall.

Nominal price: (i) On the *LME*, an estimate of the price for a future month date which is used to designate a closing price when no trading has taken place in that date. (ii) Also used for current price indications in a source like *Metal Bulletin* in similar circumstances in *physical* trading.

Non-ferrous metals: All metals except *ferrous* metals.

Non-magnetic: Most non-ferrous metals are non-magnetic, except nickel and cobalt, which are strongly magnetic. Most ferrous metals are magnetic except some grades of *stainless steel*.

Notched bar: An *ingot* which has several deep notches along its length to enable it to be broken and allow precise amounts of metal or alloy to be added to the melt.

Novation: The technical term for the process whereby trades on a *futures* exchange between *clearing* members are taken over by the *clearing house*.

Nymex: New York Mercantile Exchange. (See also *Comex*).

0

OBO: Ore/bulk/oil – the largest type of cargo vessel. See also *Capesize*.

OCTG: Oil Country Tubular Goods. Refers to a category of larger diameter steel pipe.

o/d: Outside diameter (of tube etc.).

Offer: The price the seller asks for the commodity on offer. See also *Bid*.

Off-exchange: A contract or trading activity which takes place outside any exchange, so is, by definition, *OTC*.

Official prices: Prices established by the *LME* as the closing prices at the end of the morning *session*.

One Cancels Other (OCO): On *futures* markets, a trading instruction incorporating two orders with a built-in further instruction to cancel one if the other is executed. The order can indicate two different price levels or a combination of price and time limits.

Open hearth: An obsolescent steelmaking technique, at one time the mainstay of world production. Mainly superseded by the BOF.

Open interest: Futures positions on an exchange that have not yet been closed out, i.e remain to be fulfilled. Published by some *futures exchanges* as an important statistic for relevant contracts.

Open outcry: The method of face-to-face dealing employed on the *LME Ring* and on some other futures markets in the *pit*. A broker announces to the other brokers present his interest to buy or sell the commodity, and the required *delivery* date and price. When another broker responds to accept the *bid* or *offer* and proposes a quantity, a deal is struck and that price becomes the latest traded price for that delivery date.

Open pit: Mining technique for large disseminated deposits near the surface.

Open position: A forward market position which has not been closed out. See also *Open interest*.

Option: An option is a contract which gives the buyer the right but not the obligation for a specified period of time to buy from (*call*) or sell to (*put*) the *grantor* or seller a specified quantity of metal at a specified *strike price* on a specified *delivery date* in return for payment of a negotiated *premium*. The option must be declared by the buyer on or before its *expiration date*, otherwise it is *abandoned*. If it is an *Asian option* or *LME Tapo*, declaration is automatic if the option is *in the money*. See *Assignment*.

Option spread: The simultaneous purchase and sale of a pair of *calls* (or *puts*) in the same metal but at different *strike* prices or different *expiration* dates, or both. The *option* equivalent of a *carry*.

Organic coating: Application of a polymer coating (paint) on a continuous processing line or through a batch process.

Ore: Strictly speaking, metalliferous material in the ground, or at minehead. Regularly used also to refer to *concentrates*.

OTC: Over The Counter. Signifies a bilateral deal, usually between a *broker* or bank and his client, which does not take place on an exchange. It may have some of the characteristics of a *futures* contract, but if so is usually called a forward contract because it is not exchange-traded. Increasingly exchanges and *clearing houses* offer to clear OTC contracts, affording users protection from *counterparty risk*, while allowing them to keep the flexibility of OTC trading. Such trades may be subject to financial regulation in the country of the seller and/or buyer.

Out-of-the-money: An *option* whose *strike price* is above the current market price if a *call* and below it if a *put*.

Overbought/oversold: A market analyst's opinion that the market has moved further or faster than justified by all the known factors.

Oxidising: An oxidising atmosphere in a furnace drives out carbon. See also *Reducing*.

P

Pack rolling: A technique of rolling two thicknesses of thin sheet or foil together and then separating them.

Panamax: The largest size of vessel that can pass through the Panama Canal. See also *Capesize*.

Participating call: A strategy for using *futures* and *options* with many of the characteristics of a *synthetic call*.

Peeling: A cutting process to produce a bright surface on, and remove surface defects from, round steel *bar*.

Peening: A technique of blasting the surface of metal with shot. Improves appearance and hardens the surface.

Pellet: (i) In iron ore, *finer* are blended with clay and rolled into pellets of 6 – 10mm diameter and sintered to make a suitable charge to the *blast furnace* or for *direct reduction*. (ii) In some metals, notably nickel, the metal in powder form is compacted into pillow-shaped pieces about 3cm square also known as pellets. Nickel produced by the Inco process from nickel carbonyl is also in spherical pellet form. See also *briquettes*.

Period pricing: A contract for *physical* metal supply over a period (usually a year or a quarter) in which all elements except price are settled in advance. Invoices are then structured on, for example the average of the *LME* price or *Metal Bulletin* quotation for that metal for the month of delivery. See also *Reference price* and *Benchmark*.

Petroleum coke: Or Pet Coke for short. The raw material for making *anodes* for aluminium smelting. See also *potline*.

PGM: Platinum group metals – platinum, palladium, rhodium, iridium and osmium.

Physical: Trade in the commodity itself, as distinct from trading it on a *futures* market.

Pickling: Immersing hot rolled steel, for example, in acid to remove *millscale*.

Pig: (i) A rough cast shape from the *blast furnace*, e.g. pig iron. (ii) Also the standard form in which lead is traded internationally and delivered on the LME. See also *sow*.

Pit: The trading floor on some futures markets. Unlike the *LME Ring*, dealers are not organised, but jostle. Several markets have abandoned pit trading in favour of electronic trading.

Plasma ironmaking: A high speed, low-energy ironmaking process.

Plate: Thick rolled metal. May be sold as such, especially in steel and aluminium, or rolled further to *sheet*.

Platform: Jargon word for the type of *futures* trading in question – *open outcry*, *electronic* or telephone, but mostly refers to the particular system used for *electronic trading*, including proprietary systems.

Poling: A *reducing* operation in refining, especially of copper. Originally performed by introducing greenwood poles into the melt, it may now be done by bubbling gas.

Position limit: A value limit on the *futures* trades a *broker* will perform for a client. On the *LME* this is often with particular reference to the credit extended by the broker to the client. Control on an individual broker's or client's positions is one of the instruments the LME uses to prevent abnormal trading developing, such as a *squeeze*.

Potline: A row of large cells for the electrolytic reduction of aluminium from *alumina*. A potline may have an annual capacity of 100,000 tons or more and a *smelter* may have up to ten lines.

Powder metals: A distinct branch of metallurgy. Powder metals may be compacted and *sintered* to form finished components with particular characteristics, used in surface coating techniques or even burned in pyrotechnics.

Precious metals: Gold, silver and *PGMs*. See also *Noble metals*.

Premarket: At the *LME*, trading electronically or over the telephone among *brokers* before the market opens for *ring*-dealing. Premarket trading can be very active, influenced by the *hedging* operations of producers and consumers.

Premium: (i) The cost of buying an *option*. (ii) The amount by which the price for one delivery date is greater than that for another date. (iii) The difference in price between different refined products, e.g. between non-ferrous *ingot* and *billet*. (iv) The addition in price over a *reference price* negotiated between *physical* trading partners for a specific product, delivery location or date.

Price (used as a transitive verb): To fix the price of a purchase or sale on one or more *LME* quotations, usually the official *settlement* price for the metal concerned. Alternatively on a *Metal Bulletin* quotation.

Price-fix hedge: A *hedge* designed to lock in for a future date, up to several years ahead, a price that the hedger (typically a miner or end-user) will find acceptable.

Price-making: As a result of the price discovery that results from its trading, a *futures* market is price-making. So also is a trade newspaper like *Metal Bulletin* when it evaluates quotations. See also *Reference price*, *period pricing*, *price-taking*.

Price-taking: Parties to a *period pricing* contract are price-taking when they import a *reference price* into the operation of their contract. See also *price-making*.

Pricing-in (out): When a merchant agrees to buy a quantity of metal from, for example, an overbought consumer, both parties will agree in advance that the price basis will be the closing price of a specific *ring* or rings on the *LME*. The buyer will therefore be pricing-in on the close of that ring, and will probably *hedge* his purchase by selling during the closing stages of that ring. The consumer will be pricing-out and may hedge by buying at the close. Pricing on the basis of non-futures market *reference prices* cannot normally be hedged.

Primary metals: Metal which has been produced from *ore* as distinct from that produced from *scrap*.

Prime Western: US zinc grade min. 98%.

Principal: A person or organisation able to make, and obliged to fulfil, all the conditions of a contract.

Prompt: For immediate delivery. On the *LME* this is in two days' time (but see *Tom-Next*)

Prompt date: See *delivery date*.

Properzi: Proprietary process. A Properzi *continuous casting* and *rolling* plant produces long lengths of aluminium wire rod direct from molten metal.

Pro rata: In direct proportion. (i) Term used in Customs tariffs. (ii) In *basis and scale* pricing, when the *unit* value of the scale is the same as in the basis, it is said to be *pro rata*.

Put: See *Option*.

Pyrites: A copper-iron sulphide mineral.

Q-R

Q

Q-BOP: Quick Basic Oxygen Process. A bottom-blown type of *BOF*.

Quaternary alloy: An alloy of four metals.

Quenching: Immersing steel in oil or water after heat treatment to control the rate of cooling and degree of hardening.

Quintal: 100 kg. Quantity sometimes quoted in Customs tariffs.

Quotas: (i) Tonnage limits on the amount of a particular *ore*, metal or *alloy* that can be imported into a country in a month, quarter or year either absolutely or at a more favourable rate of import duty. (ii) Limitation of the tonnage of a particular material that can be exported from a particular country in a given period. (iii) A rationing limit per customer applied by a seller of a material in short supply.

Quotation: (i) The price at which the seller or buyer is willing to trade. (ii) An independent evaluation, for example by *Metal Bulletin*, of the going market price of a metal, *ore*, *alloy* or *scrap* in which there is no formal market.

R

Rabble: A kind of rake for stirring solid material in a furnace. See, for example, *Herreshoff*.

Raise: A *shaft* between two levels in a mine which has been dug from the bottom up.

Ramp up: In commissioning a new mine or plant, operations begin slowly and cautiously and are then ramped up to, or above, design capacity.

Random lengths: Long products (bar, tube) supplied in lengths as they come off the mill. See also *Exact Lengths*.

Rare earths: A group of metallic elements: lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, yttrium, erbium, thulium, ytterbium, lutetium. Clustering together in the periodic table, they are often extracted from *cerium mischmetal* (German for mixed metals). Their unique characteristics mean a new application can propel one or other of them from laboratory curiosity to *exotic metal* very quickly. Many notable for their uses in electromagnetic devices.

Raw metal: *Unwrought* primary metal.

R/C: Refining charge made by a copper refiner for refining anode copper. Usually expressed in cents per lb. See also *T/C*.

REACH: Acronym for Registration, Evaluation and Authorisation of Chemicals. EU legislation designed to protect the environment and human health by imposing stringent bureaucratic controls on all parties in the EU producing, trading or processing industrial raw materials. Registration is in process and Authorisation begins rolling during 2011.

Rebar: Short for reinforcing bar. Steel rod intended for incorporation in concrete to reinforce it. See also *Debar*.

Reducing: A reducing atmosphere in a furnace drives out oxygen. See also *Oxidising*. In aluminium production *alumina* is reduced to the metal in the electrolytic cell.

Reference price: The price written into a *period pricing* or *benchmark* contract.

Refinery: A processing plant which produces high purity metal either by *electrolysis*, *electrowinning* or *fire-refining*. In copper and lead production, refining is preceded by smelting, but for tin, zinc and nickel, smelting and refining blend into one process of recovering marketable quality metal from concentrates. Refiners (and smelters) may also treat scrap materials. For aluminium, a refinery produces *alumina*, which is then fed into a smelter to produce the metal.

Refractory: (i) Heat-resisting material used, for example, to line *blast* and other *furnaces* and make *crucibles*. (ii) Describes metals that are extremely difficult to recover from their ores.

Regulus: Old-fashioned word for a *primary* refined metal, now only used with antimony.

Renegé: Arbitrarily failing to perform a contract requirement such as delivery or payment.

Residues: Secondary metal-containing materials that require *smelting* to recover the metal, as distinct from *scrap* which may only require melting and blending.

Resistance: (i) *Chartist's* term for when prices appear reluctant to move beyond a certain level. (ii) A type of wire used in electrical heating.

Reverberatory furnace: The simplest kind of smelting furnace in the form of a refractory-lined box up to about 40 ft (12.5 metres) long in which metal is kept molten in the bottom of the furnace by flame (oil, gas or coal-fired) reverberating around the upper part of the furnace.

RIE: Stands for Recognised Investment Exchange within the UK's Financial Services Act. The *LME* is such an exchange.

Ring: (i) A five-minute *open outcry* trading period in a single metal on the *LME*. (ii) The circle of seats where such trading takes place. See also *Pit*.

Ring dealing broker: An organisation which is a *Category 1* full clearing member of the *LME* and entitled to deal in the *Ring*.

Risk management: The management of metal price risk on an ongoing basis by the use of *futures* and *options* with a view to containing the impact of adverse price movements and enhancing profitability. The concept is an extension of the more simple type of *hedging* whereby the pricing of specific *transactions* or production streams is offset or fixed. More broadly, the management of price risk in any active portfolio of trading positions.

Roasting: Controlled heating of sulphide *concentrates* to convert them to the oxide by driving off and capturing the sulphur.

Rod: (i) Non-ferrous; a round, square or polygonal solid section supplied in straight lengths. Usually produced by extrusion. See also *Wire rod*. (ii) Ferrous. As for non-ferrous, except usually produced by rolling. Used to make mesh for concrete reinforcement or as a semi-finished product for wire drawing.

Rod mill: (i) A rotating cylinder like a *ball mill*, but loaded with steel rods. (ii) A mill for producing steel or non-ferrous *rod*.

Rondelle: A cylindrical shaped *pellet*. A standard form of nickel.

Roll: (i) To transfer a market position in *futures* or *options* from one date (forward or backward) or one strike price (up or down) to another by a simultaneous purchase and sale. (ii) The heart of a *sheet* or *coil* rolling mill, which may have from two up to ten or more rolls in one or a series of rolling stands. Also see: *CR* and *HR*.

Rollover: Extending a *futures* position at maturity by re-opening the same position for a later date. See also *Carrying*.

Room and pillar: Mine development technique employed in good bearing ground.

Roughing stand: The first millstand in a hot rolling *mill* train (a series of stands).

Round turn: Expression covering the purchase and sale of a *warrant* by a broker for a client; the basis for charging *commission*.

RSJ: Rolled steel joist. A common structural steel component, usually an *I-beam*.

Run of mine: Ore (e.g. iron ore) which does not require concentration and can be used as-mined.

S

SAE: Society of Automotive Engineers (USA). Issues specifications for metals used in car manufacture.

Sampling: Where a large tonnage of *ore*, metal or *scrap* requires *assaying*, perhaps at the port, representative samples must first be taken from the bulk. This is a skilled operation for which standard procedures are laid down. An assay of this type of material is only as good as the sample that has been taken.

SBQ: Special Bar Quality. Steel bar products beyond the commodity grades of merchant bar (such as rebar or construction bar), but below the specialist products such as *stainless steels* and nickel alloys. SBQ is generally used in the USA, while in Europe the term 'engineering steels' is more common. Both terms refer to steel types as well as to bar products, so also refer to qualities of *billet* and slab as well as bar.

Scale: (i) See *basis*. (ii) Heavy oxidation on the surface of, for example, hot rolled steel coil. Can be recycled for the metal content after removal by abrading or *pickling*.

Scrap: (i) Production (or 'prompt') scrap; metal arising from fabricating processes such as edge trimmings from *rolling*, billet discards from *extrusion* or *flash* from *castings*. This is often recycled in-house. (ii) Process scrap; material such as steel *turnings* or brass *swarf* arising from manufacturing processes. (iii) Old scrap; material arising from artefacts at the end of their useful lives such as buildings, motor cars, domestic equipment, ships, cables and machinery. Metal scrap always has value unless it is in tiny amounts and difficult to collect.

s/d: *Solid drawn*. Refers to tube that is not welded.

Secondary metal dealer: A firm which specialises in buying and selling *scrap* metal in bulk. They then sort it and sell parcels of specification scrap to iron and *steelworks*, *refiners*, *ingot makers* and *foundries*. The largest firms operate internationally. Nowadays often called recyclers.

Sections: Extruded or rolled *long products* of relatively complex cross-section. Sometimes also drawn.

Select: The LME's *electronic* trading system.

Sellers over: The opposite of *buyers over*.

Seller's price: The higher price in the ranges of *cash* and *three months* prices announced at the end of each LME *session*. See also *settlement price*. Other futures markets may quote a single *closing price*, so do not have a seller's price.

Semi-continuous casting: See *Continuous casting*.

Semi-fabricator: See *Fabricator*.

Semis: (i) *Non-ferrous*; usual trade term for semi-fabricated products (*sheet*, wire, tube etc.). (ii) *Ferrous*; refers to shapes from which sheet, tube etc. are produced – *billet*, *slab* etc.

Sendzimir: A special type of rolling mill with multiple rolls in a cluster formation to apply very high pressure to the work rolls in contact with the coil passing through the mill. Cold rolls faster and more accurately than conventional types of mill. Often used for stainless steel production. (Also see *AGC*).

Sentiment: The collective mood of a market. Sometimes influenced by *fundamental* factors and news, sometimes *technical* factors, and sometimes neither.

Service centre: A *stockist* who adds value to some, or all, of his stock by processing it in some way (e.g. cutting, bending, drilling) before onward sale.

Session: The period each day during which an exchange permits trading. There are two sessions on the *LME* each day, one in the morning and one in the afternoon. Each session comprises essentially two five-minute '*rings*' for each commodity, followed by a '*kerb*' period. On other *futures markets* a session usually equals the working day.

Settlement price: On the *LME*, the last unfulfilled offer to sell *cash* at the close of the second morning *ring* in each metal – i.e. the cash *seller's price* at that close. This price, which is officially announced on the *LME floor*, prevails as the accepted cash *reference price* for the metal for the succeeding twenty four hours. On other exchanges, it is more usual to take the closing price at the end of the day as the settlement price.

SG iron: Spheroidal Graphite cast iron. Cast iron which has been made malleable by the addition of ferro-silicon to change the form of the graphite to spheroidal. Also called *ductile iron*.

Shaft: Vertical or inclined passage in mining for access and ventilation.

Shaft furnace: A melting furnace classically used (i) for continuous melting of copper *cathode* as the first stage in the continuous casting and rolling of *wire rod*; (ii) for *direct reduction* of iron; (iii) sometimes used for other metals.

Shaking table: A simple method of *concentrating* some ores. The heavy mineral gravitates to one end of the table, the lighter *gangue* to the other.

Shape: *Non-ferrous*; a loose term for unwrought metal forms designed for semi-fabrication such as *billet* and *rolling slab*. Comparable to steel *semis*.

Sheet: A thin flat rectangular piece of rolled metal. May be hot rolled or cold rolled. Nowadays almost always cut from *coil*.

Sheet piling: Long narrow steel plates, profiled to interlock and provide a barrier to support excavations etc.

Sheffield plate: An old method of cladding copper artefacts with a thin sheet of silver. Superseded by *electroplating*.

shex: Shipping term relating to loading – Sundays and holidays excepted.

SHFE: Shanghai Futures Exchange. Biggest metal futures exchange in China.

shg: Special High Grade. The highest commercial grade of zinc produced electrolytically and sold as *slab*. 99.99%, but *LME*-deliverable brands must assay 99.995%.

Shim: Steel or brass strip rolled to a precise thickness, usually below 0.5 mm.

shinc: The opposite of *shex*.

Short: (i) A *futures* market commitment to sell material at a future date for which the holder does not have the underlying metal. To go short is to sell forward with the expectation of buying back at maturity at a lower price. See also *Bear*. (ii) A short *physical* position is where the producer or fabricator has a forward delivery commitment for which he does not have the metal in hand. See also *long*.

Short ton: A ton of 2,000 lb, mostly used in the USA. See also *long ton* and *metric ton*.

Shredder: A powerful machine used in the scrap industry to batter large items of *scrap* such as cars and domestic equipment into fragments which are then sorted as between steel, non-ferrous and waste (also called fluff). See also *chopping*.

Silver solder: A silver-based alloy for joining copper and its alloys more strongly than with soft (lead-tin) *solder*.

Sintering: (i) Converting soft, loose ores or concentrates to a clinker-like consistency by roasting.
(ii) Compacting particulate *powder metals* etc. by pressure and heat.

Skelp: Heavy-gauge steel strip for forming into tube for longitudinal welding. See *ERW tube*.

Skimmings: The oxidised surface of molten metal which is removed from the furnace or *crucible*. Subsequently recycled to recover the metal value.

Slab: The *semi* (in steel) or non-ferrous equivalent intended for rolling into *coil* or *sheet*.

Slag: Metal smelting waste. Has non-metallic uses such as road fill, abrasive and building blocks.

Slitting: A process of converting *sheet* in coils into *strip* by passing the metal through a machine with multiple rotary knives.

Slug: See *calot*

Smelter: A processing plant which produces crude *non-ferrous* metal by treating mine feed (*concentrate*) or *residues*. In the case of aluminium a smelter produces refined metal from *alumina*.

Solder: A low melting point *alloy* for joining copper and its alloys (e.g. plumbing fittings, wiring). Traditionally *eutectic* lead-tin, the lead is now being legislated out of the alloy.

Solid drawn: Tube drawn down from a *tube shell* into straight lengths or in coils without a welded joint.

Sow: Trade term for a large lump of unwrought primary aluminium, usually about 750 kg. Derived from early iron technology, when metal was cast into a large puddle from which smaller puddles flowed, thought to resemble a sow and her piglets. See also *pig*.

Spark testing: A process for sorting *scrap* metal, especially *high speed steel*. The metal is held against a grinding wheel and the colour and length of the spark assessed

Specialty steel: Expression mainly used in USA to refer to higher-specification *alloy* steels.

Spectrometer: An instrument used to analyse the content of metals by vaporising a small part of a metal sample with an electric arc and checking the pattern of a spectrum of light passing through the gas against standards. The most common method of production *analysis*.

Spelter: Obsolete trade name for zinc. Antique trade name for a zinc-lead alloy used for small statues etc.

Spiegeleisen: An obsolescent low-manganese form of ferro-manganese.

Spirals: Sandy minerals such as mineral sands can be concentrated by slurring and passing down a spiral channel to separate the heavy component.

Spiral welded tube: Large-diameter steel tube produced by winding *coil* on a mandrel at 45 degrees and welding the resulting seam.

Splitting limits: Where a contract specifies content of metal or impurities, ore or scrap is likely to be *assayed* both before shipment and on arrival. If the results do not differ by too much, a figure which is the mean of the two figures will be accepted. Splitting limits define what is considered not too much. Where the difference is outside these limits, an *umpire* analysis will be called and discounts or premia applied, or the parcel may be rejected.

Sponge: The form in which certain primary metals are recovered, namely platinum, palladium and titanium. Also iron obtained by *direct reduction* from ore.

Spot: (i) *Physical*; immediately available at a named location. (ii) *Futures*; see *spot month*.

Spot month: The first deliverable month for which a quotation is available on a futures market. For example, 'March is now the spot month on *Comex*'. As the *LME* trades in daily dates, it does not have a spot month. See *Cash*.

Spot testing: A method of identifying *scrap* metal by adding drops of one or more acids to the sample and studying the colour change, reaction etc.

Spread: The distance between two prices – e.g. buyer and seller or spot and forward. Also a trade in which two or more instruments such as *derivative* contracts are engaged in simultaneously with the aim of profiting from a favourable change in the relative value of the two instruments, while being protected against overall market movements. See also *Arbitrage*.

Squeeze: Pressure on a particular delivery date which makes the price of that date higher in relation to other dates. See *Corner*.

Stainless steel: Rust-resistant steels containing chromium; also, according to alloy, nickel, molybdenum and other metals. A fast-growing segment of the steel market. See also *Austenitic*, *Ferritic* and *Duplex*.

Standard deviation: A statistical measure of the recent range of prices of a metal which serves as a basis for assessing its current level of *volatility*.

Steel: The principal structural metal, made from *iron*. Less expensive than other metals and stronger than most, but heavy and prone to corrode unless protected.

Steelworks: A plant melting *iron* and/or *scrap* to make steel. May be integrated backwards to iron smelting, and/or forward to making *semis* and finished product.

Stockist: A stockist holds supplies of *non-ferrous semis* and steel products ready for sale to users. Stockists usually specialise either in steel/stainless steel/aluminium or in copper/brass/high-value metals. Known in the USA as Service Centers. See also *Metal Service Center Institute*. A stockist function is also fulfilled by, for example, a builders' merchant holding large stocks of copper tubing or plumbing fittings. See *Fabricator*.

Stop-loss order: A futures market order which becomes a market order to buy only if the market advances to a specified level or to sell only if the market declines to a specified level. As soon as this specified level is touched or breached the order is executed for the client at the next obtainable price or prices. There is no guarantee the order will be executed at the price specified. A stop-loss order is, as its name implies, instituted to prevent or minimise losses from either a *short* or *long* position. See also *MIT*.

Straddle: The simultaneous purchase (or sometimes sale) of put and call *options* at the same *strike price*. Normally used when an increase in *volatility* is expected.

Straits tin: Tin from Malaysia. The classic Grade A tin.

Strangle: The simultaneous sale (or purchase) of *out of the money calls* and *out of the money puts* for the same date.

Strike price: See *Basis price*.

Strip: Long lengths of narrow rolled material, usually sold coiled. Often produced by *slitting coil*. See also *Hunter Douglas*.

Structurals: Steel girders and heavy angles used in construction. See *I-beam*, *H-beam* and *RSJ*.

Sublime: A material which readily passes from the solid to the gaseous state without going through the liquid phase is said to sublime.

Surveillance: (i) General term for independent services such as *sampling* and *assay*. (ii) Also relates to a *futures market's* supervision of its trading.

Sur Wagon depart: French for *fat*.

Swap: (i) A very broad category of derivative contract in which two counterparties exchange one cash flow or exposure for another. Swaps are *OTC*, though increasingly some are also cleared. (ii) Specifically, an agreement between a metal hedger and a *broker* or bank to swap a series of forward cash flows based on selling and buying at an agreed pair of prices. These may be fixed (a known *LME* price) or floating (a yet-to-be-determined *LME* average price). The instrument originated in the banking business, but is similar to an *LME* averaging agreement whereby a broker agrees to guarantee a hedger an average price for opening or liquidating a *hedge*.

Swarf: Small particles of production *scrap* arising from turning, milling and boring. Often contaminated with cutting oil. May be baled or *briquetted* for transport and melting. See also *turnings*.

SWORD: The name of the *LME's* system for electronic storage and management of *warrants*.

Switching: (i) On the *LME*, the exchange of metal in one warehouse for that in another, e.g. Rotterdam for London. (ii) The movement out of one *futures* contract into another, usually further forward. (iii) In *physical* trade the exchange between producers or traders of two identical delivery commitments to different destinations which can thus be implemented with more cost-effective freight.

SX/EW: Stands for solvent extraction/*electrowinning*. For solvent extraction see *Heap leaching*.

Synapse: A new system for managing settlement being introduced on the *LME*.

Synthetic put (or call): A combination of a short (or long) *futures* position and a long *out of the money* call (or put) *option*. This protects the hedger against prices moving in the direction he fears, but also allows him to participate in part of a favourable move.

T

T-bar: A form of *unwrought* aluminium with a T-shaped cross section to facilitate handling by fork lift truck. Normally of 675 kg pieceweight.

Taconite: Type of iron ore principally from the US Midwest.

Tailings: The slurred waste from a *concentrator*. See also *flotation*.

Tankhouse: The place where *electrolytic refining* or *electrowinning* takes place. Comprises a series of electrolytic cells with DC power, craneage, *electrolyte* circulation etc.

Tapos: Short for Traded Average Price Options. An *LME* instrument basically structured like an *Asian option* where the *strike price* is an *LME* monthly average. This matches *period pricing* contracts where the *reference price* is the monthly average. Tapos are *automatically exercised* if *in the money* by the issue of a corresponding *LME futures* contract. See also *MASP*, *NAP* and *Cross*.

T/C: Treatment Charge. The charge made by a smelter for smelting *concentrates* or *residues*. When the smelter is vertically integrated with refining, the *R/C* is also included in the terms. Note that the T/C is charged, usually in dollars, per ton of material treated, not per ton of metal recovered. See also *deduction*.

Technical analysis: See *chartist*.

Teeming: Steel trade term for pouring molten metal, usually into *ingot* moulds.

Tempering: When steel, especially *high speed steel*, has been heat-treated it is then normally tempered at lower temperature to optimise hardness without excessive brittleness.

Tender: (i) Delivery of the *physical* commodity against a *futures* contract. (ii) Competitive process whereby producers and physical traders are invited to offer for a defined supply contract, or bid for a mining concession, regular production, or parcel of metal or scrap.

Tenor limit: Part of a broker's control of his exposure to a client by specifying the length of forward position for which he will allow the client to open a transaction. See also *Credit limit*.

Terminal market: A formal market for trading commodities for forward delivery. Lacks several features that distinguish a *futures* market.

Terneplate: Steel sheet coated with a lead-tin *alloy*. Traditional roofing material.

Ternary alloy: An *alloy* of three metals.

Thermit process: Proprietary process using *aluminothermy*.

Theta: Denotes changes in the value of an *option* with the passage of time.

Thixotropic: Liable to become liquid when agitated. Some *concentrates* exhibit this undesirable characteristic. See also *Flow Moisture Point*.

Tick: The minimum permitted price fluctuation between one trade and the next on a *futures* market.

Time decay: Expression covering the passage of time while a position or *option* is open.

Tinplate: Thin steel *sheet* coated with a minute amount of tin. Used to make tin cans.

Toll: Smelters or refiners treat material on toll when they do not take ownership of the *concentrates* or *scrap*, but only make the owner a charge for processing it.

Tom-Next: Within the LME's normal two day *settlement*, a position may nevertheless have a prompt date one day forward. It can still be officially traded up to the first ring of that day under a facility known as Tom(orrow)-Next(day). This permits such positions to be rolled forward to the official *cash* date on payment of a negotiated *premium*.

Ton-mile: Standardised unit of transport cost.

Tool steel: see *high speed steel*.

Totter: English word for an itinerant scrap buyer, a first point on the collection chain.

Toughness: The property of a metal, mostly steel, to have high strength without associated brittleness.

Tough pitch: Copper which has its oxygen content controlled to give it the best electrical characteristics is said to be tough pitch.

Traded Option: An *option* contract based on standardised terms which can be traded to third parties or on an Exchange. The standard *LME* options contracts, structured on a *strike price* on a particular day, are traded option contracts. See also *Tapo*.

Transaction price hedge: A hedge designed to protect an open *physical* position against an adverse price movement while the position is open. See also *Price-fix hedge*.

Transfer: Sometimes erroneously called *give-ups*, transfers are a process whereby a client instructs one of his *LME brokers* to transfer responsibility for an open cleared position to another of his brokers for the sake of strengthening his *open position* with the latter broker.

Treatment charge: See *T/C*.

Tube shell: A short, thick-walled tube for subsequent drawing down to finished size. See also *billet*.

Tungsten carbide: Chemical symbol WC. The hardest known material after diamond.

Turnings: Scrap from machining in a lathe. Turnings, especially of steel, are longer than *swarf* and often harder to handle.

Turnover: See *Volume*.

U-V

U

Umpire assay: See *splitting limits*.

Underlying asset: The *physical* metal whose deliverability underpins an open *futures* position or *option*.

Unit: Many ores are priced per unit of the valuable metal contained. A unit is 1% of a ton, so a 65% ore would contain 65 units.

Unwrought: See *wrought metal*.

USGS: U.S. Geological Survey. Issues reports on metal markets and statistics.

UTS: Ultimate Tensile Strength. The principal measure of the strength of a metal.

V

Value: An *LME* term referring to a price which has been traded in a *volume* sufficient to satisfy all the current buyers and sellers at that price.

VAR: Value at Risk. Technique used by banks to evaluate the risk of loss on an *open position* by reference to historic figures.

Variation margin: Additional funds which may be requested (a *margin call*) to cover any losses on an open position, based on current market values (*mark to market*). Variation margin is assessed by the *clearing house* and called for on a daily basis. An open *LME* position which is in profit against the current market has a positive margin, which can be used in assessing a client's credit position. On some cash cleared markets positive margin can be paid out to a client whose open position is in profit.

Vega: Denotes changes in the value of an *option* as influenced by *volatility* in the relevant market.

Virgin metal: Primary metal produced from ore.

VOD: Vacuum Oxygen decarburisation. A process for cleaning steel in the ladle by simultaneously placing it under vacuum and blowing with oxygen.

Volatility: The propensity of a market or price to fluctuate widely and/or suddenly. See also *standard deviation*.

Volume: The total weight of a commodity traded, expressed either in tonnes or *lots*. Also referred to as *turnover*. Measured per session, day, month or year.

W-Z

W

Warrant: The document of title to metal stored in an *LME* registered warehouse. It takes the form of centrally-maintained electronic records under the *LME*'s *SWORD* system. See also *Lot*.

WBMS: World Bureau of Metal Statistics. Senior UK-based body issuing world non-ferrous metal statistics.

Web: That part of a steel girder between the *flanges*.

Welded tube: (i) Small-diameter steel or aluminium tube roll-formed from *strip* and longitudinally HF welded. (ii) Large-diameter steel tube formed from plate and welded. See also *ERW* and *Spiral welded tube*.

Wire rod: (i) Steel; Product of first rolling of *billet* intended for further rolling and drawing to wire. (ii) Non-ferrous; Raw material, commonly 8 mm in diameter, for subsequent drawing to wire. Usually produced continuously by casting and rolling. See also *Properzi*.

Wood's metal: Alloy which melts at less than the temperature of boiling water. Contains lead, tin, bismuth and cadmium.

Wrought iron: Iron which has been puddled (hammered) until malleable; it has superior corrosion resistance to steel. Largely but not entirely superseded by steel.

Wrought metal: Metal which has undergone physical deformation during *semifabrication*, e.g. sheet, tube and wire. As distinct from *raw metal* or *castings*.

Z

Zinc ashes: Oxidised zinc removed from the surface of molten zinc, usually in a *galvanizing* bath. It is then recycled. See also *skimmings*.

Zone refining: A process for refining metals, usually semi-conductor metals, to a high state of purity (above four nines). A bar of metal is placed horizontally in a suitably-shaped crucible. A small zone at one end is then induction melted and the zone moved along the bar, carrying the impurities with it. At the other end of the bar, after solidifying, the zone is cut off. The process may be repeated several times for the highest purities.

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Emirates Aluminium Company (EMAL) is a strategic joint venture between aluminium producer Dubai Aluminium Company (DUBAL) and Mubadala Development Company (MUBADALA). The joint venture was established in 2007 under the leadership of HH Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE.

The project - the construction and operation of a new hi-tech aluminium smelter in the Emirate of Abu Dhabi – is making history by being one of the largest Greenfield aluminium smelter ever built, and one of the largest industrial projects in the UAE outside the oil and gas sector. This USD 5.7 billion

development project is the flagship of Abu Dhabi's industrialization and diversification strategy.

Located in the new Khalifa Port and Industrial Zone, the project is being built in two phases. The EMAL smelter commenced operations of its First Phase on 2 December 2009. Once complete it will have production capacity of 750,000 tonnes of aluminium per year, doubling to 1.5 million tonnes annually at the end of Phase Two, making it then the most productive single-site aluminium smelter in the world, and the fifth largest aluminium producer in the world.

www.emal.ae