

张永泰 主编

英汉双解
钢铁冶炼词典

北京出版社

英汉双解

钢铁冶炼词典

张清涟 编著

北京出版社

英汉双解钢铁冶炼词典
YING HAN SHUANGJIE GANGTIE
YELIAN CIDIAN

张清涟 编著

北京出版社出版

(北京北三环中路6号)

邮政编码: 100011

北京出版社总发行

新华书店北京发行所经销

北京第二新华印刷厂印刷

787×1092毫米 32开本 21.625印张 702000字

1993年1月第1版 1993年1月第1次印刷

印数 1—3000

ISBN 7-200-01586-5/TF·I

定 价: 14.80元

依靠科技振興
冶金工業

呂東

一九九一年十月廿五日

序

张清澹教授是冶金战线上的老前辈。他于二十年代留学美国，先后就读于科罗拉多州矿冶学院及哥伦比亚大学，获硕士学位。回国后先后在西北大学、河南大学、广西大学、河南焦作工学院等院校任教授、代院长、院长等职。自一九五〇年十月，任沈阳东北工学院冶金系主任、教授，直至一九七九年逝世。

张教授博学广闻，勇于实践。数十年来对中外冶金厂矿实地考察，对钢铁冶炼认真钻研。为振兴祖国的冶金事业，张老曾在河南等地兴办工厂、开采矿山、创办刊物、介绍国外先进冶金理论及经验，曾为祖国早年冶金事业作出过可贵贡献。他热爱教育事业，治学严谨，诲人不倦，悉心执教五十余年，为培养冶金科技人才，呕心沥血，桃李满天下。

在多年的教学与生产实践中，张教授深刻体会从事冶金专业学习及奋战在生产第一线人们的需要，粉碎“四人帮”后，着手编写《英汉双解钢铁冶炼词典》。首先选编了英文词条3000条，进而逐条编译成中文。全书共约七十余万字。不仅对名词有定义式的解释，且对冶炼方法步骤等有扼要说明，集理论阐述与实际应用于一书，是前此出版的词典所不具备的，起到了词典与手册的双重作用。它对大中专院校学生、教员、技术人员、科研工作者以及从事冶金工作的业务干部均有较高的参考价值。

张老不幸于一九七九年病逝，遗留885个词条未来得及编译成中文。由其女张勉学及原包头钢铁设计研究院资料室未蓉续译。续译部分经冶金部标准化研究所高级工程师张麟经（一

九八六年春病故)及冶金工业部自动化研究所高级工程师卜禾校阅,最后由原冶金部北京冶金设备研究所高级工程师阎绍玺对全书进行了审校。张老着手编写词典时年近八旬,他曾表示愿以此书作为晚年向祖国四化的献礼。他深知来日有限了,抱病坚持工作,在生命的最后几天中仍争分夺秒,不肯放下此项工作。然而疾病夺去了他的生命,不得不由后人继续完成辞书。他的夙愿今日始得实现。在此词典出版之际,略述经过,并表示对张老的敬仰和怀念。



一九九一年七月

出版说明

《英汉双解钢铁冶炼词典》这种类型的钢铁工业词典在国内尚属首次印行。从国外经验看，这种词典对从事钢铁冶炼以及有关行业的人员都是重要的，有价值的。本书提供英汉对照术语三千余条，通过对术语的解释，可获得几倍的英汉对照词汇。这本词典通过词条释义，对钢铁冶炼的生产技术、原材料、设备、工具和产品等作了简明叙述，对某些则给予精确定义。专业技术人员虽不需要从本书查阅他们已熟悉的内容，但对其专业以外的有关知识可以从中获得参考及进一步理解的线索。非专业人员对工作中遇到的钢铁冶炼术语，可以从本书获得一定的解释，增加了解和理解。这种集许多领域的知识于一书的词典，便于案头查找，对藏书较少的企业、单位和个人更为有用。

本书是英汉双解词典，所以又是一本外文工具书，可为阅读英文钢铁技术文献资料，进行国际技术交流，对外贸易，以及学习科技英语等方面提供参考及依据。本书为英汉对照并有释义，有助于中译英或直接用英语写作技术文章时正确使用英文技术术语。

本书收集了在钢铁冶炼工业发展过程中曾使用的生产技术、设备、工具及一些以人名命名的工艺方法及设备等，这些对了解钢铁工业发展全过程和保存技术史料，不无裨益。本书还将通过再版不断反映当代科技的进步。

词典中存在的缺点与错误，衷心希望广大读者提出宝贵意见。

1991.8.

目 录

出版说明	1
使用说明	2
正文.....	1—616
附录.....	617
1. 中文索引	617
2. 化学原素表	667
3. 度量衡表	673
4. 参考文献	685
后记.....	686

A

abnormal steel Soft spots can occur in fully-hardened or case-hardened steels, which are of the correct carbon content and have been heat-treated in the normal way. In an annealed specimen, the structure in these areas consists of coarse and irregular pearlite, and at the eutectoid composition, massive cementite is found in the austenite grain boundaries with ferrite on either side. Such abnormality appears to result from the use of aluminium as a deoxidiser during the manufacture of the steel, and may be detected by the McQuaid-Ehn test. (B)

反常(组织的)钢 发生于有正确碳含量和经过正常热处理的完全硬化或表面硬化的钢中的软点。在退火的试样中, 这些地区的结构是由粗而不规则的珠光体组成的, 并在共析成分下块状渗碳体发现于奥氏体晶粒界面, 其两边有铁素体。这种不正常性似由炼钢时用铝作脱氧剂所引起, 可用麦奎德-埃恩奥氏体晶粒度测定试验进行检测。

abrasion Removal of material by mechanical (rubbing or frictional) means. (B)

磨蚀、磨损 用机械的(摩去或摩擦)方法除去物质。

abrasion of refractories The wearing away of refractory surfaces by the scouring action of moving solids, including large and heavy pieces, such as ore, pig iron, or coke, or extremely small and light materials carried at high velocities in the furnace flame or gases. Slag is also a contributing factor, largely because of its softening effect upon refractory surfaces, attended by formation of eutectics with the refractory materials. (H)

耐火材料的磨蚀 耐火材料表面的损耗, 由于重而大的物料如矿石, 生

铁或焦炭，或由于炉中火焰或气体以高速携带极小而轻的物料的冲刷磨擦作用所造成。炉渣也是有影响的因素，主要由于它对耐火材料表面有软化作用并和耐火材料形成易熔质。

abrasive A substance used to smooth, wear down and polish. (O)

磨料 用于刮垢、磨光的物品。

absolute temperature Temperature measured from absolute zero, i.e. the temperature reading in °C plus 273.15 °C or the reading in °F plus 459.4 °F. (O)

绝对温度 从绝对零度测量的温度，也就是说，用°C读得的温度加273.15°C，或用°F读得的温度加459.4°F。

absolute zero (-273.15°C or -459.4°F) Theoretically that temperature at which molecules of a perfect gas would possess no kinetic energy and its volume becomes zero. (O)

绝对零度 理论上是一种完全气体的分子没有动能而其体积变为零的温度。

absorption The taking up of one substance into the interior of another, the material taken up being distributed throughout the body of the sorbent. (O)

吸收(作用) 一种物质被摄入另一种物质的内部而分布于吸着剂的全体。

acetylene (C₂H₂) A gaseous hydrocarbon used extensively in the flame processes, (which see). It is a highly flammable, colorless gas, and is produced commercially by the reaction between water and calcium carbide. When burned with oxygen, it is capable of producing a flame temperature of about 5,600°F. (H)

乙炔、电石气 广泛使用于火焰法的气态碳氢化合物。它是高度易燃的无色气体，工商业上由水和碳化钙之间的反应所生产。当用氧燃烧时，能产生约3093°C的火焰温度。

Acheson furnace A resistance type of furnace for the production of silicon carbide and synthetic graphite. (H)

艾奇逊炉，生产碳化硅的电炉 生产碳化硅和人造石墨所用的电阻式电炉。

Acheson process A process for the production of artificial or synthetic graphite. It consists of sintering pulverised coke in the

Acheson furnace at 5,000-6,000°F. See also graphite. (H)

艾奇逊法 生产人造石墨的方法。其实质是在艾奇逊电炉内于2770-3330°C下烧结粉碎了的焦炭。参阅石墨。

acid (1) A chemical compound containing hydrogen which can be replaced by metallic elements and which produces hydrogen ions in solution. It neutralizes bases to form salts and is usually characterized by a sour taste and by turning blue litmus red. (2) Metallurgically the oxide of a nonmetal. (O)

酸 ①含氢的化合物，可用金属元素置换其中的氢，因而在溶液中产生氢离子。酸中和碱以成盐，并常以具有酸味为特征且能使蓝色石蕊试纸变为红色。②冶金上指非金属的氧化物。

acid Bessemer ore Iron ores yielding pig iron containing not over 0.1% of phosphorus. (T)

酸性转炉矿石 能生产含磷不高于0.1%的生铁的铁矿石。

acid Bessemer pig Pig iron used as a raw material in the acid Bessemer converter. A typical analysis by percentage is: iron; carbon 3.5-4.0; silicon, 1.0-1.5; manganese, 0.5; phosphorus, low, usually between 0.040 and 0.10 per cent. See also acid pig; pig iron. (H)

酸性转炉生铁 在酸性转炉内用作原料的生铁。用百分法的典型分析是铁；碳，3.5-4.0；硅，1.0-1.5；锰，0.5；磷较低，常在0.040和0.10%之间。参阅酸性生铁；生铁。

acid Bessemer process A process of steelmaking consisting of blowing air under pressure through a bath of molten pig iron contained in a Bessemer converter (which see) with an acid refractory lining. A portion of the iron, all of the silicon and manganese, and then the carbon are successively oxidized. The iron, silicon and manganese combine with oxygen to form slag. Carbon is eliminated in the form of carbon dioxide gas. The oxidation of these elements is by exothermic reactions thus producing heat to maintain the metal in the liquid state. After the blowing period, deoxidizers and recarburizers are added as required to give the desired composition and properties. (H)

酸性转炉法 通过具有耐火衬里的转炉(参阅该条)内生铁熔池进行压力

鼓风的一种炼钢方法。部分铁，全部硅和锰，而后碳素连续地被氧化了。铁，硅，锰与氧化合而成渣，碳是以二氧化碳的气体形式被消除的。这些元素的氧化都是放热反应，从而产生热能维持金属于液体状态。吹炼期后，加入脱氧剂与增碳剂，借以获得所需要的成分与性能。

acid bottom and lining In a melting furnace, the inner bottom and lining composed of materials that have an acid reaction in the melting process: either sand, siliceous rock, ganister or silica bricks. (O)

酸性炉底和炉衬 在熔炼炉中，由在熔炼过程中起酸性反应的材料所组成的内部炉底和炉衬，这种材料或是砂，硅质岩，致密硅岩，或是硅砖。

acid electric process The process of making acid steel in an electric furnace. (H)

酸性电炉炼钢法 在电炉内熔炼酸性钢的方法。

acid-forming element Any element the compounds of which tend to yield anions in water solution. Non-metals are acid-forming. (H)

成酸元素 在水溶液中其化合物倾向于产生阴离子的任何元素。非金属是成酸元素。

acid lining Refractories of siliceous type which give acidic reactions at furnace operating temperatures. (B)

酸性炉衬 在炉子操作温度下能给酸性反应的硅质耐火材料。

acid pig The same as acid Bessemer pig, when used in the open-hearth furnace. See also pig iron. (H)

酸性生铁 当用于平炉时和酸性转炉生铁相同。参阅生铁条。

acid process A steelmaking process, which may be carried out in Bessemer, open-hearth or electric furnaces, characterized by the fact that the lining of the furnace employed consists essentially of an acid refractory, e.g. silica, and that the steel is made under an acid slag. Under these conditions, neither sulphur nor phosphorus is removed from the charge. (O)

酸性法 可在转炉、平炉或电炉内进行的一种炼钢方法，其特点是在所使用的炉内由酸性耐火材料，例如二氧化硅，构成衬里，并在酸性渣下炼钢。在这些条件下，炉料中的硫和磷都不能除去。

acid refractories Ceramic materials consisting principally of silica and having a high melting point, e.g. silica brick or sand, and ganister. (O)

酸性耐火材料 主要由二氧化硅组成而具有高熔点的陶瓷材料，例如硅砖或砂和致密硅岩。

acid-resistant Specifically resistant to corrosive action of certain acids or acid solutions, vapors, and atmospheres. See also corrosion-resistant. The word "resistant" in most cases should be interpreted in a relative rather than an absolute sense, e.g. few if any metals are completely unaffected by acid corrosion. (H)

耐酸的 特别指对于某些酸或酸性溶液，蒸汽，气氛的腐蚀作用的抵抗。参阅抗蚀性条。“耐”字在大多数情况下应解释为有相对意义，而不是有绝对意义，例如，能完全不受酸腐蚀影响的金属是很少的。

acid steel Steel produced in a furnace with an acid (i. e. siliceous) hearth and lining and under a slag which is predominantly acid. Pig iron suitable for treatment by the acid open hearth process (which is able to remove only carbon, silicon and manganese from the melt) must be low in sulphur and phosphorus. Since this limitation of the process necessitates careful selection of raw material, acid open hearth steel is sometimes considered superior to basic steel. (M)

酸性钢 在有酸性(即硅质的)底和衬的炉内并在酸性渣占优势的情况下炼成的钢。适合于用酸性平炉法(此法仅能从熔体中除去碳、硅和锰)处理的生铁，必须含硫、磷都低。由于此法的这种限制需要精选原料，酸性平炉钢有时被认为优于碱性钢。

acid value This is denoted by the volume (in cc.) of an N/10 caustic soda or potash solution required to neutralise 1 g. of the substance in question, e.g. oil or resin. (M)

酸值 这是用中和1克所涉及物质，例如油或树脂，所需要的N/10氢氧化钠或氢氧化钾规定溶液的容积(立方厘米)来表示的。

acieration A generic term for the various processes of adding carbon to iron or steel, as in carburizing, case hardening, cementation, etc. (H)

碳化 加碳于铁或钢的各种方法如渗碳、表面硬化等的通称。

activation energy In metallurgical processes, the energy required for initiating or continuing a reaction. It is important in the theoretical analyses of flow, diffusion and other processes. (O)

活化能 在冶金过程中, 开始或继续一个反应所需要的能。对于流动、扩散和其它过程的理论分析它是重要的。

addition agent (addition element) In steelmaking, any material other than the principal alloying constituents, added to the molten metal to produce or promote desirable properties in the steel. These include deoxidizers, carburizers, grain size controllers, elements to improve machinability, elements to accentuate the inherent desirable properties characteristic of the principal alloying constituents, etc. (H)

添加剂 在炼钢中, 除主要合金组分外加于熔融金属以生产或促进钢的原有性能的任何物质。这些物质包括脱氧剂, 增碳剂, 粒度控制剂, 改善切削性的元素, 有能增强主要合金组分原来固有的性质特征的元素, 等等。

adhesion The force of attraction between atoms or molecules of different phases. See cohesion. (B)

附着力 原子或分子在异相间的吸引力。参阅内聚力。

adiabatic A change of the condition of a body without any exchange of heat with the surroundings, e. g. when steam expands or is compressed without losing heat through the walls of the container. (O)

绝热的 物体的情况有变化而和周围没有热交换, 例如, 蒸汽膨胀或被压缩而没有经过容器之壁的热损失。

adsorption A surface phenomenon in which one substance is taken up at the solid surface of another, resulting in a change of concentration at the interface. cf. absorption. (O)

吸附(作用) 一种物质被另一种物质的固体表面所摄取的表面现象, 结果是界面上浓度有变化。参阅吸收(作用)。

affinity See chemical affinity. (O)

亲和力 参阅化学亲和力。

after blow The final stage in the basic Bessemer process, when after the complete removal of the carbon, the blast is continued

for some three or four minutes. During this period that the majority of the phosphorus is removed. (O)

后吹 碱性转炉炼钢过程的最后阶段。当碳素除完后，继续吹炼三、四分钟。大部分的磷是在这个时期内除去的。

ageing (*spelt ageing*) A change in the properties of a metal which occurs slowly at room temperatures and more rapidly at slightly elevated temperatures, usually after some drastic thermal or mechanical treatment which has disturbed the equilibrium of the material. (B)

老化, 时效 金属性质在室温下缓慢发生的变化; 这种变化在稍高温度下, 常在扰动物质平衡的一些猛烈的热处理或机械处理以后, 更加迅速。

agglomerate An assembly of powder particles of one or more constituents knitted closely together by settling from a solution or suspension or by pressing or heating to subsintering temperatures. (O)

人造块矿 使用从溶液或悬浮中沉积的方法, 或使用加压或加热至次于烧结温度的方法, 使单一或多种组分的粉状颗粒结成紧密的聚集物。

agglomeration Agglomeration, as applied to iron ores, may now be defined as a process wherein fine iron-bearing materials are treated to improve the size consist and in which measures are taken to improve or control the chemical, reduction, mineralogical and/or physical properties of the product. (S 81)

造块 当用于铁矿石时, 造块可以定义为处理细小的含铁物料以改善其粒度组成的过程, 并在其中采取措施以改善或控制产品的化学的; 还原的, 矿物的和(或)物理的性质。

aggregate A mass consisting of rock from mineral fragments. The inert material such as sand, gravel and crushed stone that is to be mixed with cement. In reference to metals and alloys, the term is applied to mechanical mixture of two or more phases. Quenched steel, for example, is an aggregate of three phases: solid solution of carbon in gamma-iron, alpha-iron and iron carbide. (M)

集合体 由碎块岩石矿物组成的物质。要和水泥混合的惰性物料例如砂、砾、碎石。对于金属和合金, 此术语适用于二相或多相的机械混合

物。例如淬火的钢是三相的聚合体：碳在 γ 铁中的固溶体， α 铁和碳化铁。

ageing steel Any steel that exhibits ageing characteristics at normal atmospheric temperatures. (H)

时效钢 在正常大气温度下呈现时效特征的任何钢种。

agricultural steels Spades, hoes, forks, ploughs, etc. are usually made of 0.25—0.5% C steel, and an inexpensive hard facing to ploughs, etc., is often the application of a cast-iron weld deposit, which, being chilled by the mass of the plough, forms a hard white or mottled iron. (B)

农业用钢 铲、锄、耙、犁等都常用0.25—0.50%碳钢制成。对犁等的廉价的表面硬化，常用铁焊沉淀，此时，由于犁等本体的冷淬而形成白口铁或麻口铁。

air The atmosphere; a mixture of colorless gases surrounding the Earth. Air is composed of approximately 79 per cent nitrogen and 21 per cent oxygen, with small amounts of water vapor, carbon dioxide, argon, hydrogen, neon, helium, krypton, and xenon. (H)

空气 围绕地球的无色气体的混合物。空气大约由百分之79的氮和百分之21的氧组成，带有小量的水蒸汽，二氧化碳，氩，氢，氦，氖，氙和氙。

air furnace A furnace of the reverberatory type, similar to the puddling furnace. It was used for melting pig iron for the production of castings and consisted of a fireplace at one end, and a stack at the other. The hearth was situated between the two and was usually lined with silica. The roof over the hearth sloped towards the stack. The metal was melted by a flame produced by fuel burning at the one end of the furnace, which passed over the hearth to the exit at the other end. Heat was thus reflected from the roof and sides of the furnace. (O)

火焰炉 反射炉型的一种炉子，和搅炼炉相似。它的构成是一端有壁炉而另一端有烟囱，用于熔化生铁以生产铸件。炉膛在两者之间，常衬以二氧化硅。炉膛上的炉顶向烟囱倾斜。生铁的熔化，是借燃料在炉子一端燃烧所生成的火焰飞越炉膛走向出口时进行的。热能是由炉顶和四壁

反射过来的。

air-hardening steel An alloy steel that can be hardened by cooling in air from above its critical temperature range, and which does not require quenching from above that temperature to produce hardening. A typical example is a nickel-chromium steel containing 0.3% C, 4% Ni, 1.5% Cr. (M)

气硬钢 通过从临界温度范围以上在空气中冷却能已硬化的一种合金钢，并不需要从该温度以上淬火。典型成分是镍铬合金钢，含有0.3% C, 4% Ni, 1.5% Cr。

air port The air inlet in an open-hearth furnace. (O)

空气喷口 平炉的空气进口。

air separation (air classification; air flotation) The separation of metal powders, abrasive grains and flours, and other finely-divided particles into particle size ranges by means of a controlled air stream flowing countercurrent to the material being separated. (H)

风选, 风力分级 (风力分级, 风力浮选) 通过逆流的空气流把金属粉末, 磨料粒, 粉, 以及其它细分的颗粒分成按大小范围的微粒。

alclad Composite sheet of corrosion-resistant aluminum alloy, or aluminum of high purity, applied to base metal of structurally stronger aluminum alloy. (H)

铝包合金 抗腐铝合金的合成板, 或包覆在构造上较强的铝合金基体金属上的高纯铝。

alkali A substance which when dissolved in water, neutralizes acids, turns red litmus blue and yields hydroxyl ions, e.g. caustic soda and caustic potash. (O)

碱, 强碱 一种物质当溶于水时, 能中和酸类, 使红色试纸变蓝, 并生出氢氧离子, 例如, 苛性钠及苛性钾。

alkali metals Metals of group IA of the periodic system, including lithium, sodium, potassium, caesium and rubidium. (O)

碱金属 周期系的 IA 组的金属, 包括锂、钠、钾、铯和铷。

alkaline earth An oxide of one of the alkaline earth metals. (O)

碱土, 碱土金属氧化物 碱土金属之一的氧化物。

alkaline earth metals Metals of group II A of the periodic system,