

造纸湿部化学小百科 (C、D部分)

◎ [著] Martin A. Hubbe教授, 美国北卡罗莱纳州立大学森林生物材料系
[译] 王立军教授, 浙江科技学院轻化工程系

Mini-encyclopedia of papermaking wet-end chemistry

◎ Authored by Professor Martin A. Hubbe (Department of Forest Biomaterials, North Carolina State University)
Translated by Professor WANG Li-jun (Department of Papermaking Science & Engineering, Zhejiang University of Science & Technology)

Term 用语	Definition 释义
C	
Calcium carbonate 碳酸钙	A white mineral filler, tending buffer the pH in the alkaline range, that is available as ground limestone (GCC) and in various shapes as precipitated calcium carbonate (PCC). 一类白色的矿物填料, 能将pH值缓冲在碱性范围, 分为研磨碳酸钙 (GCC) 和沉淀碳酸钙 (PCC) 两种, 后者具有多种不同的形态。
Carboxyl group 羧基基团	The -COOH functional group, common on fiber surfaces, that dissociates to form a negative charge, especially at pH>4. -COOH官能团, 普遍存在于纤维表面, 电解后形成负电荷, 特别是pH>4的情况下。
Carry-over 残余物	Substances released from fibers during pulping that fail to be removed during washing. 制浆过程中从纤维中分离出来但未被洗涤去除的物质 (这些物质依然被夹带在纸浆中)。
Cationic 阳离子性的	Having a positive charge (usually balanced by counter-ions in the adjacent solution). 表示带有正电荷特性的 (溶液中其电性通常由相邻的反离子平衡)。
Cationic demand 阳离子需求量	The amount of positively charged polymer needed to titrate a given aqueous suspension of fibers or colloidal matter to zero zeta potential. 将给定的纤维悬浮液或胶体物质的电位滴定到0时需要消耗的阳离子聚合物的量。
Cationic direct dyes 阳离子直接染料	Dye molecules that are similar to "normal" direct dyes (large and flat), but have positively charged amine groups. 阳离子直接染料, 其分子结构与一般性的直接染料类似, 即分子较大且呈平坦状, 但拥有正电性的胺基基团。
Cationic starch 阳离子淀粉	The most widely used dry-strength chemicals for paper machine wet-end addition. 纸机湿部最为广泛添加使用的干强剂。
Charge demand 电荷需求量	The amount of a standard, highly charged polymer required to neutralize the net electrical charges on suspended matter or colloids in an aqueous sample. 中和水性悬浮物或水性胶体所带净电荷所需标准高电荷聚合电解质的量。
Charge	A mechanism of increasing fine particle retention (slightly) by reducing or eliminating like-

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neutralization 电荷中和	charge repulsion between solids. 一种留着机理, 可使细小组分的留着略微得到增加, 通过减少或消除固体颗粒间的同性电荷排斥而实现。
Charge patch 电荷补丁	A mechanism of agglomeration of suspended particles based on adsorption of large, oppositely charged polymers, with the effect maximized at approximately 50% coverage. 一种使悬浮颗粒聚集的机理, 颗粒上吸附与其电荷相反的高分子物质而实现, 一般地, 高分子物质在颗粒表面的覆盖率大约为50%时, 达到最大的聚集。
Clay 瓷土, 高岭土	A platy mineral filler composed of aluminum silicate, formally known as kaolinite (except that other minerals, such as montmorillonite, also can be called "clays"). 一种由硅酸铝组成的片状矿物填料, 通常指高岭土(除此之外, 其他矿物原料如蒙脱石, 也可被称为“瓷土”)。
Closed water system 封闭循环用水系统	A papermaking process in which the amount of liquid effluent has been decreased, sometimes to zero (totally closed). 降低外排废水量的一种造纸工艺过程, 有时甚至可将外排废水量降低为零, 即实现全封闭。
Coagulation 凝结	The coming together and sticking of small, suspended particles, brought about by addition of salt, change of pH, or chemical additions that reduce or eliminate like-charge repulsion. 细小的悬浮颗粒互相靠近并黏附在一起的现象, 通过添加盐类物质、改变pH值、或者添加其他能减小或消除颗粒间同性电荷排斥的物质来实现。
Colloidal 胶体的	Having to do with finely divided substances in which at least one dimension is within the range of about 0.001 to 1 micrometers. (现象、性质等) 与至少一个维度为0.001~1微米的细小物质有关的。
Colloidal silica 胶体二氧化硅	A type of microparticle product that is usually used in sequential addition with either cationic starch or a PAM retention aid product to achieve enhanced dewatering and retention. 一种微粒产品, 通常与阳离子淀粉或阳离子聚丙烯酰胺等助留剂依次添加, 以提高留着和脱水。
Complexation 络合, 复合, 配位	1. Interaction between small molecules (ligands) and an ion to form a chemical complex. 2. Interaction between a soluble polymer and something else to form a polyelectrolyte complex that may precipitate. 1. 配位体小分子和离子之间的相互作用, 两者配位形成化学复合物; 2. 指可溶性聚合物和其他物质之间的相互作用, 两者形成有可能沉淀的聚合电解质复合物。
Colloidal titration 胶体滴定法	A method of determining the charge demand of an aqueous sample by addition highly charged polymer to a neutral endpoint, usually with a charge-sensitive dye endpoint. 一种测定水样电荷需求量的方法, 通常将高电荷密度的聚合电解质滴加到水样直至滴定终点, 以一种对电荷敏感的染料为终点指示剂。
Conductivity 电导率	Ease with which an aqueous solution conducts electricity; conductivity increases with salt, acid, or base concentrations. 反映水溶液导电能力大小的一种水质参数, 其值随盐、酸或碱浓度的增大而增大。
Consistency	The mass fraction (or percentage) of solid, filterable material in a given slurry sample.

Term 用语	Definition 释义
浓度	悬浮物样品中固体组分特别是过滤时可截留物质的质量分数(或百分比)。
Contact angle	The angle, drawn through the liquid phase, between a flat solid and an air-liquid interface when a drop is placed on a surface.
接触角	液滴置于固体表面时在气、液、固三相交点处所形成的夹角, 介于固-液交界线和气-液界面的切线之间。
Copolymer 共聚物	A long-chain molecule composed of two or more different types of monomer units. 由两种或两种以上不同单体聚合而成的长链高分子。
Counter-ion 反离子	Ions in solution adjacent to a charged surface, so that the net charge of the system is zero. 溶液中与带电表面相邻的离子, 它的存在使得系统的净电荷保持为零。
Crystal modifier 晶形调变剂	An additive that tends to make scale deposits weaker or less able to adhere to surfaces. 一种能够减轻垢物沉积或使垢物更难附着于固体表面的添加剂。
Curing 熟化	Reactions of certain sizing agents and wet-strength agents that occur during the drying of paper. 指干燥纸张时某些施胶剂或湿强剂继续发生反应。
D	
DCS 溶解与胶体物质	Dissolved and colloidal substances, usually derived from wood and usually having a negative charge, tending to interfere with retention aids and other papermaking additives. 全称是“dissolved and colloidal substances”, 即溶解与胶体物质, 通常来源于木材并带有负电荷, 往往会对助留剂以及其他造纸添加剂的效果产生负面干扰。
Defoamer 消泡剂	An additive mixture, usually containing a water-insoluble surfactant and often containing hydrophobic particles, that destabilizes foam bubbles. 降低泡沫稳定性的一种复配型添加剂, 通常含有不溶于水的表面活性剂和疏水性微粒。
Deposits 沉积物	Accumulations of material, coming from the water or suspended particles, onto wetted surfaces within a paper machine system. 纸机系统中积累于某些湿表面上物质, 来源于水或悬浮颗粒。
Detackifier 消黏剂	A mineral (e.g. talc) or polymer having the ability to adsorb onto tacky materials and reduce their tendency to adhere. 可吸附黏性物质并降低其黏性的矿物(如滑石粉)或聚合物。
Direct dyes 直接染料	Dye molecules that are sufficiently large and planar that they tend to remain on a fiber surface without need of a fixative. 分子需足够大且平, 不需要固着剂的帮助即可直接吸附于纤维表面的染料。
Dirt 尘埃	Visible blemishes, different in color from the paper, especially when they are dark and numerous. 纸张表面可见的斑点, 其颜色可明显区别于纸张本身的颜色, 特别是呈黑色且数量较多时。
Dispersants 分散剂	Substances such as phosphates or acrylates that cause finely divided particles to come apart and remain separate from each other in suspension. 磷酸盐或聚丙烯酸盐等有助于细小颗粒在悬浮液中互相分离并保持分散状态的助剂。

Term 用语	Definition 释义
Dispersed rosin size 分散松香胶	Rosin or fortified rosin acid that has been emulsified at high temperature and cooled. 将松香或强化松香在高温下乳化并冷却后得到的产品。
Dissociation 电离	The separation of a molecule into two parts, often with one of the parts having a negative charge (anionic) and the other positive. 指化合物分子分离成两部分, 往往一部分带有负电荷(阴离子性), 另一部分带有正电荷(阳离子性)。
Dissolved air 溶解空气	Molecules of nitrogen, oxygen, CO ₂ , and other gases that are part of the liquid phase. 指氮气、氧气、二氧化碳及其它已溶入液相的气体分子。
Drainage 滤水	The ease with which water is released from among fibers during the formation of paper. 纸页成形过程中水从纤维间释放出来的容易程度。
Dry strength 干强度	The force or energy required to break a paper sample, by one of various procedures, after equilibration in a standard atmosphere. 先将纸张在标准的温湿度条件下平衡水分, 再通过一系列操作使纸张产生破裂时所测得的力或能。
Dye 染料	A chemical compound having the ability to absorb visible light over a certain range of wavelengths so that the diffusely reflected light appears colored. 能吸收掉一定波长的可见光从而使漫反射光显示颜色的一类化合物。

注: 本小百科全书词汇见 <http://www4.ncsu.edu/~hubbe/Glossary.htm>。

编辑说明: 《造纸湿部化学小百科词典》, 原作者Martin Hubbe教授在湿部化学领域非常知名, 近年来美国TAPPI一直请他给企业作培训。对于准确理解湿部化学词语的英文原意、普及知识具有一定的作用。因篇幅较长, 本刊拟按字母顺序以连载的形式刊出。

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4.2 MicroBar

首先介绍用于L材的引进事例。在本次所介绍的工厂中有2个系列采用了MicroBar。在第一个系列中, 原有2台DDR(规格: 26"), 将其中的一台改成使用MicroBar, 另一台DDR停止运行。在第二个系列中, 原有3台DDR(规格: 26" 2台, 34" 1台), 将26"型中的一台DDR改成使用MicroBar, 另一台26"型DDR停止运行。图7示出所采用的MicroBar外形图, 表4汇总了该引进事例。

其次介绍应用于N材的引进事例。在一台运行的DDR(规格: 34")中进行试验, 试验结果示出: 取消了磨浆时控制游离度的目标值(300ml), 还取得了节能100kW的效果。图8示出试验用的MicroBar外形图, 表5

汇总了引进事例。

用于进行N材试验的MicroBar是将磨浆区缩短的称为“短停留”(アンダーハング)型磨盘, 可降低DDR的空载负荷动力。因MicroBar具有窄细的磨齿宽度和窄细的齿槽宽度结构, 所以, 即使使用“短停留”型磨盘, 仍能保持磨浆能力, 并且可将该减少的空载负荷动力部分利用于磨浆。该效果最终使电机负荷降低, 节约了能源。

节能用磨浆扇形磨片MicroBar用于L材磨浆事例在不断增加, 并得到好评。在N材中的应用, 由于找到了用于N材的切断能力优良的类型磨盘, 若进一步将该型做到充分可靠, 想会加速在N材磨浆中的应用。Pd

(鲁玉欣译)

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