SECTION XIV

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SECTION XVI

GLOSSARY

This section is an alphabetical listing of the technical terms (with definitions) used in this document that may not be familiar to the reader.

4-AAP Colorimetric Method

An analytical method used to detect and quantify total phenols and total phenolic compounds. The method involves reaction with the color developing agent 4-aminoantipyrine.

Acidity

The quantitative capacity of aqueous solutions to react with hydroxyl ions. The acidity of a solution is measured by titrating the solution with a standard solution of a base to a specified end point. Acidity is usually expressed as milligrams of calcium carbonate per liter.

Acrylic Resins

Synthetic resins used as sand binders in core making. These resins are formed by the polymerization of acrylic acid or one of its derivatives using benzoyl peroxide or a similar catalyst. The most frequently used starting materials for acrylic resins include acrylic acid, methacrylic acid, or acrylonitrile. Exposure of these binder materials to hot metal temperatures can cause breakdown of the chemical bonds within the resin molecules and subsequent generation of cyanide.

The Act

The Federal Water Pollution Control Act Amendments of 1972 as amended by the Clean Water Act of 1977 (P.L. 92-500).

Agglomerate

The collecting of small particles together into a larger mass.

Air Setting Binders

Sand binders which harden upon exposure to air. Sodium silicate, Portland cement, and oxychloride are the primary constituents of such binders. Air setting binders that are composed primarily of oxychloride contain up to 10 percent finely divided metallic copper. The copper is added to off-set the effects of such impurities as calcium oxide, calcium hydroxide, and calcium silicate, which may be introduced during the blending of oxychloride. These impurities otherwise would decrease mold strength and durability.

Alkyd Resin Binders

Cold set resins used in the formation of cores. This type of binder is a three component system using alkyd-isocyanate, cobalt naphthenate, and diphenyl methane di-isocyanate. Cobalt naphthenate is the drier, and diphenyl methane di-isocyanate is the catalyst. Exposure of these binders to hot metal temperatures can cause the breakdown of these binder materials, and the resulting degradation products might include naphthalenes, phenols, and cyanides.

Alloy

A mixture having metallic properties, composed of two or more chemical elements at least one of which is an elemental metal.

Alloying Element

An element added to a metal to effect changes in properties, and which remains within the metal. The following is a list of materials known to be used as alloying materials or additives in foundry metals:

Aluminum	Chromium	Manganese	Sulfur
Beryllium	Cobalt	Molybdenum	Tantalum
Bismuth	Columbium	Nickel	Tin
Boron	Copper	Nitrogen	Titanium
Cadmium	Hydrogen	Oxygen	Tungsten
Calcium	Iron	Phosphorus	Vanadium
Carbon	Lead	Potassium	Zinc
Cerium	Lithium	Selenium	Zirconium
Chloride	Magnesium	Silicon	

Amortization

The allocation of a cost over a specified period of time by the use of regular payments. The size of the payments is based on the principal, the interest charged, and the length of time over which the cost is allocated.

Analytical Quantification Level

The analytical quantification level of a pollutant is the minimum concentration at which concentrations of that pollutant can be reliably measured.

Backwashing

The operation of cleaning a filter or column by reversing the flow of liquid through it, thus washing out matter previously trapped.

Baghouse

An independent structure or building that houses fabric bag filters, which are used to remove dust from air. A baghouse usually incorporates fans and dust conveying equipment.

Batch Treatment

A waste treatment method where wastewater is collected over a period of time, and the collected wastewater is treated in a tank or lagoon prior to discharge. Wastewater collection may be continuous when treatment is batch.

Bench-Scale Pilot Studies

Laboratory experiments providing data concerning the treatability of a wastewater stream or the efficiency of a treatment process. Bench-scale experiments are conducted using laboratory-size equipment.

Best Available Demonstrated Technology (BDT)

The treatment technology upon which new source performance standards are based, as defined by Section 306 of the Act.

Best Available Technology Economically Achievable (BAT)

The level of technology chosen as the basis for effluent limitations, applicable to toxic and nonconventional pollutants, to be achieved by July 1, 1984. BAT effluent limitations are established based on the degree of effluent reduction that this technology can attain. BAT limitations apply to industrial point sources discharging to surface waters as defined in Section 301(b)(2)(E) of the Act.

Best Conventional Pollutant Control Technology (BCT)

The level of technology chosen as the basis for effluent limitations, applicable to conventional pollutants, to be achieved by July 1, 1984. BCT effluent limitations are established based on the degree of effluent reduction that this technology can attain. BCT limitations apply to industrial point sources discharging to surface waters as defined in Section 301(b)(2)(E) of the Act.

Best Management Practices (BMP)

Regulations intended to control the release of toxic and hazardous pollutants from plant runoff, spillage, leaks, solid waste disposal, and drainage from raw material storage.

Best Practicable Control Technology Currently Available (BPT)

The level of technology chosen as the basis for effluent limitations, applicable to toxic and nonconventional pollutants, that was to have been achieved by July 1, 1977. BPT effluent limitations are established based on the degree of effluent reduction that this technology can attain. BPT limitations apply to industrial point sources discharging to surface waters as defined in Section 301(b)(1)(A) of the Act.

Binder

A material, other than water, added to foundry sand to bind the particles together, sometimes with the use of heat.

Biochemical Oxygen Demand (BOD)

The quantity of oxygen used in the biochemical oxidation of organic matter under specified conditions for a specified time.

Blast Furnace

A shaft furnace in which solid fuel is burned with an air blast to smelt ore in a continuous operation. Where the temperature must be high, as in the production of pig iron, the air is preheated. Where the temperature can be lower, as in smelting copper, lead, and tin ores, a smaller furnace is economical, and preheating of the blast is not required.

Blowdown

The minimum discharge of circulating water from a unit operation such as a scrubber for the purpose of discharging dissolved solids or other contaminants contained in the water.

Borides

A class of boron-containing compounds, primarily calcium boride, used as a constituent in refractory materials. Metallic impurities that often accompany the use of these materials include titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, thorium, and uranium.

Bulk Bed Washer

A type of wet dust collector consisting of a bed of lightweight spheres through which the dust laden air must pass while being sprayed by water or another scrubbing liquor.

Carbon Reduction

The process of using the carbon of coke as a reducing agent in the blast furnace.

Catalysts

Materials that accelerate the setting of binders used in core and mold formation. Phosphoric acid and toluenesulfonic acid are common set catalysts. Exposure of residual catalyst materials in the mold to hot metal temperatures could cause chemical breakdown of these materials with the possible generation of free toluene.

Charcoal

A product of the destructive distillation of wood. Used as a fuel and as a source of carbon in the foundry industry. Because of the nature of the destructive distillation process, charcoal may contain residuals of toxic pollutants such as phenol, benzene, toluene, naphthalene, and nitrosamines.

Charge

The combination of liquid and solid materials fed into a furnace for one cycle of its operation.

Chemical Oxygen Demand (COD)

A measure of the oxygen-consuming capacity of the organic and inorganic matter present in the water or wastewater.

Chrome Sand (Chrome-Iron Ore)

A dark material containing dark brown streaks with submetallic to metallic luster. Usually found as grains disseminated in perioditite rocks. Used in the preparation of molds.

Chromite Flour (see Chrome Sand above)

Chrome sand ground to 200 mesh or finer which can be used as a filler material for mold coatings for steel castings.

Clarification

The process of removing undissolved materials from a liquid, specifically by sedimentation. A clarifier is a specialized piece of equipment used for this purpose.

Classifier

A device that separates particles from a fluid stream by size. Stream velocity is gradually reduced, and the larger sized particles drop out when the stream velocity can no longer carry them.

Cleaning Agents and Degreasers

Solvents used to clean oil and grease or dirt from the surface of a metal. Common cleaning and degreasing agents include ethylene dichloride, polychloroethylene, and trichloroethylene.

Coagulant

A compound which, when added to a wastewater stream, enhances wastewater settleability. The coagulant aids in the binding and agglomeration of the particles suspended in the wastewater.

Coatings - Corrosion Resistant

Generally alkyd or epoxy resins. See Alkyd Resin Binders and Epoxy Resins. Applied to metal molds to prevent surface corrosion.

Coke-Foundry

The residue from the destructive distillation of coal. A primary ingredient in the making of cast iron in the cupola. Because of the nature of the destructive distillation process and impurities in the coal, the coke may contain residuals of toxic pollutants such as phenol, benzene, toluene, naphthalene, and nitrosamines.

Coke-Petroleum

Formed by the destructive distillation of petroleum. Like foundry coke, petroleum coke can also be used for making cast iron in the cupola.

Coke-Pitch

Formed by the destructive distillation of petroleum pitch. Used as a binder in the sand molding process.

Cold-Set Resins

Resins that set or harden without the application of heat. Used in foundry operations as sand binders.

Complete Recycle

The complete reuse of a stream, with makeup water added for evaporation losses. There is no blowdown stream from a totally recycled flow and the process water is not periodically or continuously discharged.

Composite Samples

A series of samples collected over a period of time but combined into a single sample for analysis. The individual samples can be taken after a specified amount of time has passed (time composited), or after a specified volume of water has passed the sampling point (flow composited). The sample can be automatically collected and composited by a sampler or can be manually collected and combined.

Consent Decree (Settlement Agreement)

Agreement between EPA and various environmental groups, as instituted by the United States District Court for the District of Columbia, directing EPA to study and promulgate regulations for the toxic pollutants (NRDC, Inc. v. Train, 8 ERC 2120 (D.D.C. 1976), modified March 9, 1979, 12 ERC 1833, 1841).

Contact Water

Any water or oil that comes into direct contact with the metal being cast, or with a mold that has been in direct contact with the metal. The metal contacted may be raw material, intermediate product, waste product, or finished product.

Continuous Treatment

Treatment of waste streams operating without interruption (as opposed to batch treatment). Sometimes referred to as flow-through treatment.

Contractor Removal

Disposal of oils, spent solutions, or sludge by a commercial firm.

Conventional Pollutants

Constituents of wastewater as determined by Section 304(a)(4) of the Act, including but not limited to pollutants classified as biological-oxygen-demanding, oil and grease, suspended solids, fecal coliforms, and pH.

Coolants

Water, oil and air. Their use is determined by the extent and rate of cooling desired.

Cooling Tower

A hollow, vertical structure with internal baffles designed to break up falling water so that it is cooled by upward-flowing air and the evaporation of water.

Cope

The top half of a two-piece sand mold.

Core

A very firm shape of sand used to obtain a hollow section in a casting. The core is placed in a mold cavity to give interior shape to the casting.

Core Binders

Bonding and holding materials used in the formation of sand cores. The three general types consist of those that harden at room temperature, those that require baking, and the natural clays. Binders that harden at room temperature include sodium silicate, Portland cement, and chemical cements such as oxychloride. Binders that require baking include the resins, resin oils, pitch, molasses, cereals, sulfide liquor, and proteins. Fireclay and bentonite are the natural clay binders.

Core Binder Accelerators

Used in conjunction with furan resins to cause hardening of the resin-sand mixture at room temperature. The most commonly used accelerator is phosphoric acid.

Core and Mold Washes

A mixture of various materials, primarily graphite, used to obtain a better finish on castings, including smoother surfaces, less scabbing and buckling, and less metal penetration. The filler material for washes should be refractory type composed of silica flour, zircon flour or chromite flour.

Core Oils

Used in oil-sand cores as a parting agent to prevent the core material from sticking to the cast metal. Core oils are generally classified as mineral oils (refined petroleum oils) and are available as proprietary mixtures or can be ordered to specification. Typical core oils have specific gravities of 0.93 to 0.965 and contain a minimum of 70 percent nonvolatiles at 177oC (350oF).

Crucible

A highly refractory vessel used to melt metals.

Cupola

A vertical shaft furnace consisting of a cylindrical steel shell lined with refractories and equipped with air inlets at the base and an opening near the top for charging fuel and melting stock.

Cyclones

A funnel-shaped device for removing particulates from air or other fluids by centrifugal means.

Data Collection Portfolio (DCP)

The written questionnaire used to survey the metal molding and casting industry.

Die Casting

A casting process where molten metal is forced under high pressure into the cavity of a metal mold.

Die Coatings

Oil containing lubricants or parting compounds such as carbon tetrachloride, cyclohexane, methylene chloride, xylene and hexamethylenetetramine. The coatings are used to prevent castings from adhering to the die and to provide a casting with a better finish. A correctly chosen lubricant will allow metal to flow into cavities that otherwise cannot be filled.

Direct Chill Casting

A method of casting where the molten metal is poured into a water-cooled mold. The base of this mold is the top of a hydraulic cylinder that lowers the metal first through the mold and then through a water spray and bath to cause solidification. The vertical distance of the drop limits the length of the ingot. This process is also known as semi-continuous casting.

Direct Discharger

Any point source that discharges to a surface water.

Drag

The lower half of a two-piece sand mold.

Drying Beds

Areas for the dewatering of sludge by evaporation and seepage.

Effluent

Wastewater discharged from a point source.

Effluent Limitation

Any standard (including schedules of compliance) established by a state or EPA on quantities, rates, and concentrations of chemical, physical, biological, and other constituents that are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean.

Electrode

Long cylindrical rods made of carbon or graphite used in electric arc furnaces to conduct electricity into the metal charge.

Epoxy Resins

Two-component resins used to provide corrosion resistant coatings for metallic molds or castings. These materials are synthetic resins obtained by the condensation or polymerization of phenol, acetone, and epichlorohydrin (chloropropylene oxide). Alkyds, acrylates, methacrylates, and allyls, hydrocarbon polymers such as indene, coumarone and styrene, silicon resins, and natural and synthetic rubbers all can be applied as additives or bases. Polyamine and amine based compounds are normally used as curing agents. Because of the temperatures to which these materials are exposed, and because of the types of materials that are used to produce many of the components of these materials, toxic pollutants such as zinc, nickel, phenol, benzene, toluene, naphthalene, and possibly nitrosamines could be generated.

Filter Cake

That layer of dewatered sludge removed from the surface of a filter. Filters are used to reduce the volume of sludge generated as a result of the waste treatment process.

Flashing

In die casting, the fin of metal that results from leakage between the mating die surfaces.

Flask

A rectangular frame open at top and bottom used to retain molding sand around a pattern.

Flocculation

The process by which particles agglomerate, resulting in an increase in particle size and settleability.

Flux

A substance added to molten metal to help remove impurities and prevent excessive oxidation, or promote the fusing of the metals.

Furan Resin

A heterocyclic ring compound formed from diene and cyclic vinyl ether. Its main use is as a cold set resin in conjunction with acid accelerators such as phosphoric or toluene sulfonic acid for making core sand mixtures that harden at room temperature. Toluene could be formed during thermal degradation of furan resins during metal pouring.

Furfuryl Alcohol

A synthetic resin used to formulate core binders. The amount of furfuryl alcohol used in the binder formulation depends on the desired core strength. One method of formulating furfuryl alcohol is by batch hydrogenation of furfuryl at elevated temperature and pressure with a copper chromite catalyst.

Gas Chromatography/Mass Spectroscopy (GC/MS)

Chemical analytical instrumentation used for quantitative organic analysis.

Gate

An entry passage for molten metal into a mold.

Gilsonite

A material used primarily for sand binders. It is one of the purest natural bitumens (99.9 percent) and is found in lead mines. Lead may be present as an impurity in Gilsonite.

Grab Sample

A single sample of wastewater taken without regard to time or flow.

Gypsum Cement

A group of cements consisting primarily of calcium sulfate and produced by the complete dehydration of gypsum. It usually contains additives such as aluminum sulfate or potassium carbonate. It is used in sand binder formulation.

Head

A large reservoir of molten metal incorporated into a mold to supply hot metal to a shrinking portion of a casting during its cooling stage.

Heat Treatment

Heating and cooling a solid metal or alloy in such a way as to obtain desired conditions or properties. Heating for the sole purpose of hot working is excluded from the meaning of this definition.

Hydraulic Cyclone

A fluid classifying device that separates heavier particles from a slurry.

Impingement

The striking of air or gas-borne particles on a wall or baffle.

Impregnating Compounds

Materials of low viscosity and surface tension, used primarily for the sealing of castings. Polyester resins and sodium silicate are the two types of materials used. Phthalic anhydride and diallyl phthalate are used in the formulation of the polyester resins.

Indirect Discharger

Any point source that discharges to a publicly owned treatment works.

Induction Furnace

A crucible surrounded by coils carrying alternating electric current. The current induces magnetic forces into the metal charged into the crucible. These forces cause the metal to heat.

Inductively-Coupled Argon Plasma Spectrophotometer (ICAP)

A laboratory device used for the analysis of metals.

In-Process Control Technology

Any procedure or equipment used to conserve chemicals and water throughout the production operations, resulting in a reduction of the wastewater volume.

Investment Mold Materials

A broad range of waxes and resins including vegetable wax, mineral wax, synthetic wax, petroleum wax, insect wax, rosin, terpene resins, coal tar resins, chlorinated elastomer resins, and polyethylene resins used in the manufacture and use of investment molds. The presence of coal tar resins in investment mold materials indicate the possible presence of toxic pollutants such as phenol, benzene, toluene, naphthalene, and nitrosamines as residues in the resins or as possible products of degradation of these resins when subjected to heat.

Ladle

A vessel used to hold or pour molten metal.

Lignin Binders

Additives incorporated into resin-sand mixtures to improve surface finish and to eliminate thermal cracking during pouring. Lignin is a major polymeric component of woody tissue composed of repeating phenyl propane units. It generally amounts to 20-30 percent of the dry weight of wood. Phenol might be generated during thermal degradation of lignin binders during metal pouring.

Lubricants

Substances added to resin-sand mixtures to permit the easy release of molds from patterns. Calcium stearate, zinc stearate and carnauba wax are common lubricating agents.

Mica

A class of silicates with widely varying composition used in the refractory making process. They are essentially silicates of aluminum but are sometimes partially replaced by iron, chromium and an alkali such as potassium, sodium or lithium.

Mold

A form made of sand, metal, or refractory material that contains the cavity into which molten metal is poured to produce a casting of definite shape and outline.

MOLDING

CO_2 Molding. The CO_2 (carbon dioxide) molding process uses sodium silicate binders to replace the clay binders used in sand molds and cores. In the CO_2 process, a low-strength mold or core is made with a mixture of sodium silicate (3-4 percent) and sand. Carbon dioxide gas is passed through the sand, causing the sodium silicate to develop a dry compressive strength greater than 200 psi. Ready-to-use cores and complete molds can be made quickly, with no baking or drying needed. The high strength developed by the CO_2 process enables molds to be made and poured without backup flasks or jackets.

Investment Casting. Casting metal into a mold produced by surrounding (investing) an expendable pattern with a refractory slurry that sets at room temperature. After the mold has set, the wax, plastic or frozen mercury pattern is removed through the use of heat. Also called precision casting, or lost-wax process.

No-Bake Molding. The process is of fairly recent (15 years) origin. The sand coating consists of a binder and catalyst; their interaction results in a molded sand with high green strength (over 200 psi). No heat is required to set the mold. The amount of sand used and the general form of the molds are similar to green sand operations; however, the high strength permits flask removal and mold pouring without a jacket. The castings poured using this process have good dimensional accuracy and excellent finish.

Permanent Mold Casting. Metal molding using molds that consist of two or more metal parts, used repeatedly for the production of many castings of the same form. The molten metal enters the mold by gravity. Permanent mold casting is particularly suitable for high-volume production of small, simple cast-ings that have a uniform wall thickness and no undercuts or intricate internal coring.

Plaster Mold Casting. Molding wherein a gypsum-bonded aggregate flour in the form of a water slurry is poured over a pattern, permitted to harden, and after removal of the pattern, thoroughly dried. Plaster mold casting is used to produce nonferrous castings that have greater dimensional accuracy, smoother surfaces, and more-finely reproduced details than can be obtained with sand molds or permanent molds.

Shell Molding. Shell molding is a process in which a mold is formed from a mixture of sand and a heat-setting resin binder. The sand resin mixture is placed in a heated metal pattern in which the heat causes the binder to set. As the sand grains adhere to each other, a sturdy shell, which becomes one half of the mold, is formed. The halves are placed together with cores located properly, clamped and adequately backed up, and then the mold is poured. This process produces castings with good surface finish and good dimensional accuracy while using smaller amounts of molding sand.

New Source Performance Standards (NSPS)

Effluent limitations for new industrial point sources as defined by Section 306 of the Act.

No-Bake Binders

Sand binders that set without the addition of heat. Furan resins and alkyd-isocyanate compounds are the two predominant no-bake binders. Furan resins, as previously mentioned, are cyclic compounds which use phosphoric acid or toluenesulfonic acid as the setting agents.

Nonconventional Pollutant

Parameters selected for consideration in performance standards that have not been previously designated as either conventional or toxic pollutants.

Non-Water Quality Environmental Impact

The ecological impact as a result of solid, air, or thermal pollution due to the application of various wastewater technologies to achieve the effluent guidelines limitations. Also associated with the non-water quality aspect is the energy impact of wastewater treatment.

NPDES Permits

Permits issued by EPA or an approved state program under the National Pollutant Discharge Elimination System, as required by the Clean Water Act.

Off-Gases

Gases, vapors, and fumes produced as a result of metal molding and casting operations.

Oil and Grease (O&G)

Any material that is extracted by freon from an acidified sample and that is not volatilized during the analysis, such as hydrocarbons, fatty acids, soaps, fats, waxes, and oils.

Pattern

A form of wood, metal, or other material around which molding material is placed to make a mold for casting metals.

pH

The pH is the negative logarithm of the hydrogen ion activity of a solution. The pH of a solution is an indication of its acidity or alkalinity. Solutions with high pH values are considered acidic; low pH values indicate alkalinity.

Phenolic Resins

Phenol formaldehyde resins - A group of varied and versatile synthetic resins. They are made by reacting almost any phenolic and an aldehyde. In some cases, hexamethylenetetramine is added to increase the aldehyde content. Both types of materials are used separately or in combination in the blending of commercial molding materials. Due to the thermal degradation of phenolic resins that may occur during metal pouring, phenol and formaldehyde may be generated.

Pitch Binders

Thermosetting binders used in core making. Baking of the sand-binder mixture is required for evaporation-oxidation and polymerization to take place.

Pollutant Parameters

Those constituents of wastewater determined to be detrimental to human health or the environment.

Polymeric Flocculant (Polyelectrolyte)

High molecular weight compounds which, due to their charges, aid in particle binding and agglomeration.

Priority Pollutants

Those 129 pollutants included in Table 2 of Committee Print number 95-30 of the "Committee on Public Works and Transportation of the House of Representatives," subject to the Act.

Process Water

Water used in a production process that contacts the product, raw materials, or reagents.

Production Normalizing Parameter (PNP)

The unit of production specified in the regulations used to determine the mass of pollution a production facility may discharge.

PSES

Pretreatment standards (effluent regulations) for existing sources applicable to indirect dischargers.

PSNS

Pretreatment standards (effluent regulations) for new sources applicable to new indirect dischargers.

Publicly Owned Treatment Works (POTW)

A waste treatment facility that is owned by a state or municipality.

Quenching

A process of inducing rapid cooling of a casting from an elevated temperature, usually by sudden immersion in water.

Quenching Oil

Medium to heavy grade mineral oils used in the cooling of metal. Standard weight or grade of oil would be similar to standard SAE 60.

Recycle

Returning treated or untreated wastewater to the production process from which it originated for use as process water.

Recuperator

A steel or refractory chamber used to reclaim heat from waste gases.

Reduction

A reaction in which there is a decrease in valence, or electric charge, resulting from a gain in electrons.

Reuse

The use of treated or untreated process wastewater in a different production process.

Reverberatory Furnaces

Rectangular furnaces in which the fuel is burned above the metal and the heat reflects off the walls and into the metal.

Riser

A reservoir of molten metal connected to the casting to provide additional metal to the casting. Additional metal is required as the result of shrinkage that occurs before and during solidification.

Riser Compounds

Extra strength binders used to reduce the extent of riser erosion. Such materials generally contain lignin, furfuryl alcohol, and phosphoric acid.

Rosins, Natural

(Gum rosin, colophony, pine resin, common rosin) - A resin obtained as a residue from distillation of turpentine oil from crude turpentine. Rosin is primarily an isomeric form of the anhydride of abietic acid. It is one of the more common binders in the foundry industry.

Runner

A channel through which molten metal flows from one receptacle to another. Runner is often used to refer to the portion of the gate assembly that connects the riser with the casting.

Sand Binders

Binder materials are the same as those used in core making. The percentage of binder may vary in core and molds depending on sand strength required, extent of mold distortion from hot metal and the metal surface finish required.

Sand Flowability Additives

A mixture of sand, dicalcium silicate, water and wetting agents. This combination is based on a process of Russian origin which achieves a higher degree of flowability than either the conventional sand mix or those with organic additives.

Scrap

Usually refers to miscellaneous metal used in a charge to make new metal.

Scrubber Liquor

The untreated wastewater stream produced by wet scrubbers cleaning gases produced by metal manufacturing operations.

Seacoal

Finely ground bituminous coal used as an ingredient in molding sands to control the thermal expansion of the mold, and to control the composition of the mold cavity gas during pouring.

Shakeout

The operation of removing castings from the mold. A mechanical unit is used to separate the mold material from the solidified casting.

Shot Blast

A casting cleaning process employing a metal abrasive (grit or shot) propelled by centrifugal or air force.

Slag

A product resulting from the action of a flux on the oxidized non-metallic constituents of molten metals.

Slag Quench

A process of rapidly cooling molten slag to produce a more easily handled solid material. Usually performed by sudden immersion in a water trough or sump.

Snorkel

A pipe through the furnace roof, or an opening in a furnace roof, used to withdraw the furnace atmosphere.

Spray Chamber

A large chamber in a flowing stream where water or liquor sprays are introduced to wet the flowing gas.

Sprue

A vertical channel from the top of the mold used to conduct the molten metal to the mold cavity.

Subcategorization

The process of segmentation of an industry into groups of plants for which uniform effluent limitations can be established.

Supernatant

A liquid or fluid forming a layer above settled solids.

Surface Water

Any visible stream or body of water, natural or manmade. This does not include bodies of water whose sole purpose is wastewater retention or the removal of pollutants, such as holding ponds or lagoons.

Surfactants

Surface active chemicals that tend to lower the surface tension between liquids.

Tapping

The process of removing molten metal from a furnace.

Thermoset Resins

Resins used as binding agents in molding sands. Thermoset resins require the addition of heat in order to solidify and "set" the mold.

Total Dissolved Solids (TDS)

Organic and inorganic molecules and ions that are in true solution in the water or wastewater.

Total Organic Carbon (TOC)

A measure of the organic contaminants in a wastewater. The TOC analysis does not measure as much of the organics as the COD or BOD tests, but is much quicker than these tests.

Total Suspended Solids (TSS)

Solids in suspension in water, wastewater, or treated effluent. Also known as suspended solids.

Tubing Blank

A sample taken by passing one gallon of distilled water through a composite sampling device before initiation of actual wastewater sampling.

Tuyeres

Openings in the shell and refractory lining of a furnace through which air is forced.

Urea Formaldehyde Resins

An important class of thermosetting resins identified as aminoplastics. The parent raw materials (urea and formaldehyde) are united under controlled temperature and pH to form intermediates that are mixed with fillers (cellulose) to produce molding powders for patterns.

Venturi Scrubber

A type of wet dust collector that uses the turbulence developed in a narrowed section of a conduit to promote intermixing of dust-laden gas with water sprayed into the conduit.

Volatile Substances

Materials that are readily vaporizable at relatively low temperatures.

Washing Cooler

A large vessel where a flowing gas stream is subjected to sprays of water or liquor to remove gas-borne dusts and to cool the gas stream by evaporation.

Wet Cap

A mechanical device placed on the top of a furnace stack that forms a curtain from a water stream through which the stack gases must pass.

Wetting Compounds

Materials which reduce the surface tension of solutions, thus allowing uniform contact of solution with the wetted material. Sodium alkylbenzene sulfonates comprise the principal type of surface-active compounds, but there are a number of other compounds used.

Zero Discharger

Any industrial or municipal facility that does not discharge wastewater.