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Standard Terminology for Coal Combustion Products[1]

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1. Scope

1.1 This standard defines terms used in the production, management and use of coal combustion products (CCPs). It is intended to promote understanding by providing precise technical definitions of terms used.

1.2 Terms used only within an individual coal combustion product (CCP) standard, and having a meaning unique to that standard, may be defined or explained in the terminology section of that individual standard.

2. Terminology

acid mine drainage (AMD), *n*—water exhibiting a pH of less than 6.0 and in which total acidity exceeds total alkalinity, discharged from an active, inactive or abandoned coal mine and reclamation operation or from an area affected by surface coal mining and reclamation operations.

acid mine water, *n*—see **AMD**.

admixture, *n*—a material other than water, aggregates, hydraulic cement, and fiber reinforcement, used as an ingredient of concrete or mortar, and added to the concrete batch immediately before or during its mixing.

advanced sulfur control products (ASC), *n*—products generated from advanced coal conversion technologies including FBC (fluidized-bed combustion) and products from advanced environmental emission cleanup technologies such as duct injection and lime injection multiphase burners (LIMB). The type of by-product is technology-dependent and could be a bed ash and high-lime fly ash for an FBC technology, etc.

aeration, *n*—exposing a substance or area to air circulation; the process of mixing air with a pulverized fuel or a powdered material such as fly ash in a transport pipe or storage bin.

aggregate, *n*—granular material such as sand, gravel, crushed stone, crushed hydraulic-cement concrete, iron blast furnace slag, or coal bottom ash and boiler slag used as a component in concrete or mortar with a hydraulic cementing medium to produce either concrete or mortar.

aggregate, lightweight (LWA), *n*—aggregate of low density. Examples of LWA include coal bottom ash, pumice, scoria, volcanic cinders, tuff, and diatomite; expanded or sintered clay, shale, slate, diatomaceous shale, perlite, vermiculite, or slag; and bonded or sintered coal combustion products (CCPs) used to produce lightweight concrete or component products.

alkali, *n*—salts of alkali metals, principally sodium and potassium; a hydroxide or carbonate of an alkali metal.

alkali metal, *n*—a metal in Group 1A of the Periodic Table, that is, lithium, sodium, potassium, rubidium, cesium, and francium.

alkalinity, *n*—the capacity of water to neutralize acids, a property imparted by the water's content of carbonates, bicarbonates, and hydroxides and occasionally borates, silicates, and phosphates. It is often expressed in milligrams per liter of calcium carbonate (see **calcium carbonate equivalent**).

ammoniated ash, *n*—ash that contains ammonia and/or ammonium salts as a result of the addition of ammonia or ammonium salts to the flue gas at the power plant.

angle of repose, *n*—the maximum angle from horizontal at which a given material will rest on a particular stationary surface without sliding or rolling.

aquifer , *n*—a geologic formation, group of formations, or part of a formation that is saturated with water and capable of providing a significant quantity of water.

ash pond, *n*—an impoundment or surface impoundment used to store or dispose of ash primarily from the combustion of coal. See **surface impoundment**.

baghouse, *n*—a facility that removes fly ash from the flue gas by the use of fabric filter bags.

batch, *n*—quantity of concrete, mortar, ash grout, or flowable fill mixed at one time.

beneficial use of a CCP, *n*—the use of or substitution of the coal combustion product (CCP) for another product based on

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performance criteria. For purposes of this definition, beneficial use includes but is not restricted to raw feed for cement clinker, concrete, grout, flowable fill, controlled low strength material; structural fill; road base/sub-base; soil- modification; mineral filler; snow and ice traction control; blasting grit and abrasives; roofing granules; mining applications; wallboard; waste stabilization/solidification; soil amendment and agriculture.

beneficiation, *n*—improvement of the chemical or physical properties of a raw material or intermediate product by the removal or modification of undesirable components or impurities.

boiler slag, *n*—a molten ash collected at the base of slag tap and cyclone boilers that is quenched with water and shatters into black, angular particles having a smooth, glassy appearance.

borrow, *n*—an area designated as a source for soil in construction or mine reclamation projects; a source or sources of material other than the required excavation.

bottom ash, *n*—agglomerated ash particles formed in pulverized coal boilers that are too large to be carried in the flue gases and impinge on the boiler walls or fall through open grates to an ash hopper at the bottom of the boiler. Bottom ash is typically grey to black in color, is quite angular, and has a porous surface structure.

bulk density, *n*—the mass of a material per unit volume including voids. Bulk density is usually reported on a dry basis.

calcium carbonate equivalent (CCE), *n*—the content of carbonate in a liming material or calcareous soil calculated as if all the carbonate is in the form of $CaCO_3$.

calcium sulfate dihydrate ($CaSO_4 \cdot 2H_2O$), *n*—gypsum; the primary product of a forced-oxidation wet flue gas desulfurization system in which additional air is introduced and lime or limestone is used as the reagent.

calcium sulfite ($CaSO_3$), *n*—the primary product of a wet flue gas desulfurization system where there is no forced oxidation and lime or limestone is used as the reagent.

cap, *n*—a layer of clay or other low permeability material installed over the top of a closed landfill to prevent entry of rainwater and minimize leachate.

carbon reduction process, *n*—a process to reduce the concentration of carbon in high-carbon fly ash.

cell, *n*—a portion of a landfill that is isolated, usually by means of soil or an impermeable barrier, from its surroundings.

cementitious ash, *n*—fly ash, which hardens irreversibly when mixed with water. Also referred to as self-cementing ash.

cementitious material (hydraulic), *n*—an inorganic material or a mixture of inorganic materials that sets and develops strength by chemical reaction with water by formation of hydrates and is capable of doing so under water.

cementitious mixture, *n*—a combination of more than any one of the following materials to make a cement paste: hydraulic cement; Portland cement; coal fly ash; FBC ash; lime; ground granulated blast furnace slag; lime kiln dust; cement kiln dust. It may be used by itself for grout, or used to bind aggregates or fine materials to make concrete or controlled low strength materials (CLSM), or used for soil stabilization and solidification.

class C fly ash, *n*—fly ash, which meets criteria defined in ASTM C618 for use in concrete.

class F fly ash, *n*—fly ash, which meets criteria defined in ASTM C618 for use in concrete.

clean coal technology combustion products, *n*—products generated from any technology, including technologies applied at the pre-combustion, combustion, or post combustion stage, at a new or existing facility which will achieve significant reductions in air emissions of sulfur dioxide or oxides of nitrogen associated with the utilization of coal in the generation of electricity, or process steam which was not in widespread use as of November 15, 1990.

closure, *n*—the decommissioning of a disposal facility.

closure plan, *n*—a written plan that describes the steps the owner or operator of the disposal facility will take to close the facility in accordance with regulatory or other requirements.

coal ash, *n*—a collective term referring to any solid materials or residues (such as fly ash, bottom ash or boiler slag) produced primarily from the combustion of coal.

coal combustion products (CCPs), *n*—fly ash, bottom ash, boiler slag, fluidized-bed combustion (FBC) ash, or flue gas desulfurization (FGD) material produced primarily from the combustion of coal or the cleaning of the stack gases.

coal mine waste, *n*—the coal processing waste and underground development waste.

coal processing waste, *n*—the earth materials which are separated and wasted from the coal during cleaning, concentrating, or other processing or preparation of coal.

coal refuse, *n*—waste products of coal mining, cleaning, and coal preparation operation (for example, culm, gob, etc.) containing coal, matrix material, clay, and other organic and inorganic material. This does not include overburden from surface mines.

compaction, *n*—the densification of a soil or coal combustion product by means of mechanical manipulation; reduction in bulk volume of solid waste by rolling and tamping.

conditioned ash, *n*—ash that has been moistened with water during the load out process at the temporary storage silo at the power plant to allow for its handling, transport, and placement without causing fugitive dusting.

consolidation, *n*—the reduction in volume of a fill caused by movement of water out of the fill mass. Consolidation generally occurs due to an increase in the vertical stress on a fill. It is the movement of water rather than the compression of air-filled voids that distinguishes consolidation from compaction.

controlled low-strength material (CLSM), *n*—a flowable fill conforming to ACI 229 R.

cyclone, *n*—a cone-shaped air-cleaning apparatus that operates by centrifugal separation and is used in particle collecting