

halite Mineral, NaCl, common salt. Very common evaporite mineral, found across arid Australia in saline lakes, playas and regolith.

halloysite Clay mineral, $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4 \cdot 2\text{H}_2\text{O}$, similar to kaolinite in chemistry, properties and occurrence, but hydrated (or presumed to have been formerly hydrated), with cylindrical, spherical or rarely platy morphology.

hanging valley A tributary valley whose floor is higher than that of the trunk valley in the vicinity of their junction; most commonly applied to glacial landscapes. [CG]

hardened mottles A mottle in regolith, the mottle being more indurated than its surrounds and so potentially more erosion resistant. Fragments of hardened iron-rich mottles, released from their surrounds, may form a lag of irregularly shaped hematitic/goethitic fragments, commonly of pebble-size (4-64 mm).

the surface. It offers great resistance to digging or drilling, and hampers root penetration and downward movement of water. Its hardness does not change appreciably with changes in moisture content, and it does not slake or become plastic when mixed with water; it can be shattered mechanically or by explosives. It is produced as a result of cementation of soil particles by precipitation of relatively insoluble materials, most commonly silica, with some iron oxide, calcium carbonate, and organic matter. Red-brown hardpans, such as the Wiluna Hardpan (WA), consist of a variety of **hardpan** A relatively hard, impervious layer in the regolith lying at or near

transported or residual host materials, including soil, colluvium, pisolitic horizons and brecciated saprolite, set in a porous, red-brown, earthy matrix, cemented by silica (generally hyalite), clay, and iron oxyhydroxides. This material has a coarsely laminated appearance and commonly has Mn oxides on partings.

hematite Mineral, Fe_2O_3 , hexagonal close-packed structure, very common in regolith of warm or arid regions. Colour black or blue-black where massive, red where fine-grained and dispersed. Its intense colour may mask the presence of goethite.

hematized Impregnated with or replaced by hematite.

heterogranular Said of a granular rock with a grain-size distribution with two or more widely separated modes. [Aleva*]

hill Prominence between 90 and 300 m. Compare with mountain. (See McDonald for a more extensive definition.)

hill (low) A prominence lower than 90 m. (See McDonald for a more extensive definition.)

hillwash See sheet erosion.

hisingerite Clay mineral, brown, vitreous, almost amorphous Fe³⁺ member of the kaolin group: Fe₂Si₂O₅(OH)₄. Low temperature alteration product of pyrite, olivine, and other iron-rich minerals.

Histosol An order in the US soil taxonomy (Soil Survey Staff 1992).

honeycomb weathering A type of chemical weathering in which innumerable pits are produced on a rock exposure. The pitted surface resembles an enlarged honeycomb and is characteristic of finely granular rocks, such as tuffs and sandstones, in an arid region. See also cavernous weathering and tafone. [AGI]

horizon (i) (geol) An interface indicative of a particular position in a stratigraphic sequence. [AGI]

(ii) (soils) A layer of soil approximately parallel to the land surface, with morphological properties different from layers below and/or above it. [McDonald]

(iii) (regolith) A layer within the regolith, approximately parallel to the landsurface, with field observable properties different from layers below and/or above it.

horizon, soil See horizon and soil horizon.

Humic Gleys See Great Soil Group, No. 41 and Appendix 1. [Stace]

Humus Podzols See Great Soil Group, No. 38 and Appendix 1. [Stace]

humus The decomposed organic material in soil. Humus gives surface soil horizons their dark colours. [CG]

hyalite Mineral, glassy form of opaline silica.

hydrolysis Chemical reaction between a solid and water. Hydrolysis changes both the solid and the water; for example the hydrolysis of anorthite
49

may yield kaolinite and release lime.



hydromorphic Formed under conditions of water saturation.

Hydrosols A soil order; soils which are seasonally or permanently wet.

See Appendix 2: Australian Soil Classification. [Isbell]

hydrothermal alteration Alteration produced by chemical changes in rock materials caused by hot water and steam rising through country rock. This is not weathering, but produces very similar effects. The best field distinction between clay bodies formed by weathering and hydrothermal alteration is that weathering decreases with depth, and hydrothermal alteration increases with depth. [RTMAP]

I

50

iddingsite Petrographic term for a pseudomorphic alteration product of olivine, less commonly of pyroxene composed of goethite and minor smectite, Iddingsite is red-brown, cryptocrystalline, and commonly occurs as rims or crack fillings or as complete replacement of the primary mineral.

indigenous gossan See gossan, direct.

illite Mineral, clay mica, approximately $K_{0.75}(Al_{1.75}Mg_{0.25})(Si_{3.5}Al_{0.5})O_{10}(OH)_2$. Regolith illite forms chiefly by the weathering of muscovite and feldspar, but the mineral is better known as a diagenetic mineral in buried marine sediments.

illuviation The process of deposition or accumulation of soil material that has moved from one horizon to another within the soil, generally from an upper to a lower horizon within the profile, but also laterally within a toposequence. Refers particularly to the transportation of material in suspension, especially colloidal particles. Can also apply to the transport of soluble material. [Anand2,GSS]

in-situ In its original place.

Inceptisol An order in the US soil taxonomy (Soil Survey Staff 1992).

incongruent dissolution Dissolution of a solid accompanied by reaction with the liquid so that ions in solution and a new solid are produced.

e.g., $CaAl_2Si_2O_8 + 3H_2O \rightarrow Al_2Si_2O_5(OH)_4 + Ca(OH)_2$
anorthite kaolinite

incrustation See encrustation.

induced fracture Induced fracture occurs when a large rock rests on an underlying rock. This sets up stresses which can act on both the underlying and overlying rock. [RTMAP]

indurated Material that has experienced induration.

indurated material Regolith material that has been hardened and/or cemented.

Indurated material can be further described by a prefix according to 51

the dominant indurating material as : bauxitic, calcareous, clay, ferruginous, gypsiferous, siliceous, humic. See also duricrust.

[RTMAP]

induration The hardening of a rock, rock material or regolith by the action of heat, pressure, or the introduction of some cementing material not commonly contained in the original mass: especially the process by which relatively consolidated rock is made harder or more compact. e.g., the development of a hardpan or duricrust. [AGI*]

inlier An area or group of rocks surrounded by rocks of younger age. [AGI]

inselberg Range, ridge, or isolated hill that stands abruptly from the surrounding plains, like an island from the sea, characterized by steep slopes which meet the adjacent plain in a sharp, almost angular, junction. e.g., Uluru (Ayres Rock), Kata Tjuta (The Olgas). (Twidale 1982).

insolation Sunshine (incoming solar radiation).

insolation weathering Insolation weathering occurs when varying insolation induces temperature changes which cause expansion and contraction of rocks. Repeated temperature changes or rapid change causes rocks to fracture. Insolation weathering is recognized where rocks at the surface consist of interlocking angular fragments.

[RTMAP*]

integrated drainage Drainage having all channels connected, so one can traverse the entire drainage without ever leaving a stream channel. By contrast, interrupted drainage has channels stopping, for example by their entry to a sink-hole, then continuing after a stretch of drainage-free terrain.

interfluvium The area between rivers; especially the relatively undissected upland or ridge between two adjacent drainage basins. [AGI]

intermittent drainage Channels which flow on a seasonal or irregular basis, containing water during wet parts of the year, and drying up during periods of no rain. [RTMAP]

interrupted drainage Drainage where the channel segments are short and unconnected. Typically this occurs in karst landforms, and in areas where the drainage pattern has not been fully integrated. Some parts of the arid centre of Australia show this pattern, because of the lack of sufficient precipitation, and disruption of drainage lines by wind blown materials. [RTMAP]

52

interstice A void in rock or regolith with walls composed of rock or soil. The shape and size of interstices may vary widely and are not directly related to the grain size of the rock forming the walls. See also alveole, cavity, cave, cavern. [Aleva]

intertextic A soil fabric where the skeleton grains are linked by intergranular braces or are embedded in a porous matrix. [AGI]

intrazonal soils Soils with more or less well-developed characteristics which reflect the influence of some local factor other than climate, such as parent material, hydrology and relief. [Aleva]

ion exchange The replacement of a weakly bonded ion of any solid (commonly a surface or interlayer cation of a clay or the alkaline cation of a zeolite) by an ion from solution.

ion exchange capacity The total amount of particular material's exchangeable ions. It is expressed in centimoles of positive charge per kilogram (cmole(+)/kg), formerly in milli-equivalents per kg, and commonly determined for soil or clay.

iron crust A substantial, hard, surficial (or buried) layer or armour of iron oxides and oxyhydroxides. See also cuirasse.

iron segregations Dark nonmagnetic and goethite-rich iron enrichments within ferruginous saprolite or the upper saprolite, occurring as pods, lenses, and large slabs. They lack cutans and range in size from 0.1 m to 25 m.

ironstone Highly ferruginous weathered material consisting mainly of iron oxides and oxyhydroxides, with variable amounts of aluminium hydroxides, silica and phyllosilicates.

Examples are:

(i) a part of a laterite profile, essentially conformable with the land surface, i.e., lateritic ironstone or duricrust;

(ii) essentially linear outcrop following an underlying geological unit or structure (See ironstone (stratigraphic));

(iii) ferruginous gravels composed of a majority of ferruginous grains, which may include hematitic and or goethitic pisoliths or nodules of irregular shape such as are released by erosion of the ferruginous and mottled zones of a weathering profile;

(iv) gossans.

ironstone gravel soils Soils containing abundant pisolitic and/or nodular iron-rich (or ironstone) gravel, and commonly showing an acid reaction.

[Anand2]

53

ironstone (stratigraphic) In-situ weathering products of iron-rich strata.

ironstone, lateritic See cuirasse, duricrust.

ironstone, leakage Ironstone that forms where dissolved iron precipitates. The iron, originally derived from the weathering of iron-bearing minerals, is precipitated at depth along joints, lithological contacts and faults, and at the surface in seepage areas and in drainages.

isalterite French term, synonymous with saprolite. See also alterite. [B&ZJ]

J

54

jarosite-natrojarosite Mineral, $KFe_3(SO_4)_2(OH)_6$ - $NaFe_3(SO_4)_2(OH)_6$. A member of the alunite group. Formed in a reaction between sulfuric acid formed by pyrite oxidation and surrounding silicates. These minerals are common in regolith where pyrite is weathering, and are particularly so in acid-sulfate soils and mine dumps.

joint A fracture in a rock, generally planar. Jointing patterns are generally expressed in the landscape as a result of weathering and geomorphic processes etching the weaknesses provided by the joints. Drainage patterns may reflect such joint control. [RTMAP]

jump up A short steep slope between two tracts of more level land. Very similar to a breakaway, but without necessarily culminating in an escarpment. 'Jump up' is used more commonly in New South Wales, Queensland and the Northern Territory, 'breakaway' in Western Australia.

K

55

kame A conical hill or short irregular ridge of stratified gravel or sand deposited in contact with glacier ice.

kandite Mineral group term for the varieties of $Al_2Si_2O_5(OH)_4$, comprising kaolinite, dickite, nacrite and halloysite. The word has not been widely used in the mineralogical literature.

Kandosols A soil order; soils which lack strong texture contrast, have massive, or only weakly structured B horizons, and are not calcareous throughout.

See Appendix 2: Australian Soil Classification. [Isbell]

kankar (kankar) Term for calcrete.

kaolin An unconsolidated rock in which the kaolinite group (see kandite) represents $\geq 80\%$ of the minerals. It is generally a soft, fine, white, earthy, non-plastic material.

kaolinized Altered to kaolin.

kaolinite Clay mineral, $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$. Major component of regolith, particularly in the plasmic zone of weathering profiles. Formed by the weathering of aluminosilicate minerals, primarily plagioclase and muscovite. Typically forms micron-sized hexagonal platy crystals; cation exchange capacity 20-100 meq/kg. Important as an industrial mineral. See also halloysite.

karst Terrain with distinctive characteristics of relief and drainage arising primarily from a higher degree of rock solubility in natural waters than is found elsewhere (Jennings, 1971). Typically, karst is marked by intermittent stream flow, or by many closed depressions without stream channels, and by subterranean drainage. Karst is most common in limestone terrain, but may develop wherever erosion occurs by solution and collapse, the products being removed through underground channels. e.g., Limestone towers at Riversleigh, Qld., sinkholes and depressions in lateritized sediments, Sturt Plateau, NT.

karst bauxite Bauxite occurring in limestone karst.

karstification The formation of the features of a karst topography by the solutional,
56

and sometimes mechanical, action of water in a region of limestone, dolomite, or gypsum bedrock. [AGI]

kettle A depression in glacial drift, ranging in diameter from a few metres to several kilometres or so.

knickpoint Any interruption or break of slope in the longitudinal profile of a stream or of its valley, especially a point of abrupt change or inflection, resulting from rejuvenation, glacial erosion, or the outcropping of a resistant bed. [AGI]

kopi (copi) Microcrystalline powdery gypsum, found as an alteration product at the surface of more massive gypsum. Also known as flour gypsum. (Jack 1921).

koppie (kopje) A small but prominent hill occurring on the veld of Southern Africa, some reaching 30 m above the surrounding land; especially an isolated, elongate, scrub-covered hillock or knob representing an erosion remnant, such as a small inselberg. [AGI*]

Krasnozems See Great Soil Group, No. 30 and Appendix 1. [Stace]

kankar (kankar) Term for calcrete.

Kurosols A soil order; soils with a strong texture contrast between A horizons and strongly acid B horizons. See Appendix 2: Australian Soil Classification. [Isbell]