|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Type of accumulation** | **Macromorphology** |  **Micromorphology** | **Proposed genesis** |
| **Gypsiferous horizons and materials** | **Vermiform Gypsum** | Very fine, whitish worm-like accumulations. | Infilling or coatings of lenticular gypsum mainly in biopores | Precipitation of gypsum from a saturated gypsum solution in the soil pores |
| **Noduls** | Aggregates of lenticular gypsum crystals of edaphic origin. Very mobile and easily precipitate | Edaphic features more or less, equidimensional, not related to natural surfaces or pores and not formed by individual crystals or crystal intergrowth | Probably formed by gypsum precipitation from a single point and can be polyphasic. Processes of dissolution–precipitation affecting a gypsic parent material can also produce nodules. |
| **Rhizocretions** | Gypsum accumulations that fill holes of old roots | … | Precipitation of gypsum from a saturated gypsum solution in the root systems |
| **Coatings** | Independent gypsum units that cover soil surfaces (pores, grains, nodules, aggregates...) | Gypsum coatings along pores, with idiotopic to xenotopic fabrics | Precipitation of gypsum from a saturated gypsum solution in the soil pores, face of aggregates and faces of gypsum rocks |
| **Pendents** | Gypsum coatings at the base of edges and/or aggregates | Coatings of gypsum crystals in palisade below coarse fragments, crystals normally perpendicular to the stone bottom, idiotopic to xenotopic fabrics | Precipitation of gypsum from a saturated gypsum solution below the bottom face of stones |
| **Coarse crystallizations** | Large crystals (sizes between 50 µm and 5 mm) or desert roses (diameter 0.5 -3 cm) | Gypsum crystals and intergrowths | Precipitation of gypsum in the soil matrix from a gypsum-saturated water table |
| **Gypseous horizons and materials** | **Stratified crusts or laminar gypsum accumulations** | Layers of gypsum grains, several cm thick, normally with increasing grain size in depth. | Layers of loose lenticular gypsum intercalated with detrital material. | Precipitation of gypsum in shallow and underwater conditions. |
| **Powdery gypsic horizon** | Horizons with high gypsum content (> 60%), non-cemented, friable and sandy. | Lenticular gypsic fabric with pedofeatures such as lenticular gypsum coatings and infillings | End-point of the gypsification process (Stoops & Ilaiwi 1981; Herrero et al. 1992;), although other origins may be envisaged. |
| **Polygonal gypsum crusts** | Massive, hardened gypsum accumulations with a prismatic structure. | Mainly made of bands of microcrystalline gypsum (<10 µm), and of hipidiotopic lenticular gypsum. | Gypsification process (Stoops & Ilaiwi 1981; Herrero et al. 1992), and subsequent exhumation and degradation of subsurface crusts. |
| **Microcrystalline gypsum horizons** | Horizons with high gypsum content (> 60%), non-cemented, silty texture, white or white-pink color, hard behavior when dry and friable when wet. | Small (<10 µm) lenticular crystals, soft yellow colors in PPL and almost opaque in XPL. | Fast in situ dissolution and reprecipitation of gypsum of exposed gypsum-rich materials. |
| **Loose gypsum sand** | Coarse, loose gypsum sandy deposits | Lenticular or slightly rounded crystals of gypsum. | Mainly aeolian (gypsum dunes). |
| **Rupture-resistant (cemented) horizons** | Either crumbly, sugar-like (“travertinic”) gypsum, continuous or discontinuous, as pendants when in gravels; or massive (“alabastrine”) gypsum (Artieda 1996). | Non-equigranular hypidiotopic mosaics, together with microcrystalline lenticular gypsum patches and lenticular or anhedral gypsum along the sides of the gravel particles (Artieda 1996; Herrero et al. 2009) | Former gypsum layers which undergo several recrystallization and accretion processes forming crystal intergrowths in a confined space. |