Review Article for Clay Minerals

**Exploring the link between silicate weathering and reverse weathering across geological time: A review**

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**Supplementary Information**

**Supplementary Table 1**

**Occurrences of glauconite, celadonite and other authigenic minerals through geological time**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Serial No | Authors | Basin | | Host rock | | Authigenic clay minerals | | Depositional environment | | Remarks | |
| Quaternary | | | | | | | | | | | |
| Glauconite | | | | | | | | | | | |
| 1 | Wang (1983) | Recent/Fuxiangraben lake, Yunnan | | muds | | Glauconite | | marine 35-150 m | |  | |
| 2 | Giresse et al. (2004) | Recent/Gulf of Lion | | - | | Glauconite | | marine | | - | |
| 3 | Rothe (1973) | Recent/Coast of Morocco, Canary and Cape Verde Islands | | marl | | Glauconite | | marine | |  | |
| 4 | Bell and Goodell (1967)  Dill (1969) | Recent/Atlantic continental shelf and slope of USA | | sands and muds | | Glauconite | | shelf to slope | |  | |
| 5 | Furquim et al. (2010) | Recent/Lake of Nhecolândia (Pantanal wetland) | | - | | Glauconite | | lacustrine | |  | |
| 6 | Seed (1965) | Recent/South Island of New Zealand | | sand | | Glauconite | | - | |  | |
| 7 | Vaz (2000) | Recent/Offshore Cauvery basin, India | | muds | | Glauconite | | Shelf to slope | |  | |
| 8 | Wang et al. (1985) | Recent/Sanya Bay, South China Sea | | - | | Glauconite | | - | |  | |
| 9 | Birch, (1979); Parker and Siesser (1972) | Recent/Continental shelf off South Africa | | sands and muds | | Glauconite | | shallow marine | |  | |
| 10 | Chen and Chen (1997) | Recent/Taiwan Strait, S. China Sea | | - | | Glauconite | | shallow marine | |  | |
| 11 | Basa et al. (1997)) | Recent/Sands of Dungeness | | sands and silts | | Glauconite | | intertidal to subtidal | |  | |
| 12 | Martins et al. (2012) | Recent/Continental shelf and upper slope of Portugal | | sands | | Glauconite | | shelf (50-150m) | |  | |
| 13 | Giresse et al. (1988) | Recent/Near the Congo river mouth | | sands, muds | | Glauconite | | inner shelf | |  | |
| 14 | Lee et al. (2002) | Recent/Continental shelf off Yellow Sea | | sands and sandy muds | | Glauconite | | intertidal to subtidal(10-80 m) | |  | |
| 15 | Nelson and Bornhold (1984) | Recent/Offshore Vancouver Island | | limestone and muds | | Glauconite | | shelf (<200m) | |  | |
| 16 | Ehlmann et al. (1963) | Recent/Southeast coast of USA | | sands | | Glauconite | | 34 to 826 m | |  | |
| 17 | Lim et al. (2000); Rongchuan et al. (1986) | Recent/Offshore Yellow Sea, East Sea, | | muds and sands | | Glauconite | | middle shelf (~100 m) | |  | |
| 18 | Mackenzie et al. (1988) | Recent/Chatham Rise and Oamaru | | - | | Glauconite | | shelf | |  | |
| 19 | Hesse et al. (1971) | Recent/Apulian shelf, Mediterranean | | limestone sands | | Glauconite | | shelf | |  | |
| 20 | Porrenga (1967) | Recent/Niger delta, the Orinoco shelf and the shelf off Sarawak | | sands | | Glauconite | | outer shelf (125 to 250 m) | |  | |
| 21 | Alveirinho Dias and Nittrouer (1984) | Recent/Offshore Portugal | | sands and biogenic limestone | | Glauconite | | outer shelf to shelf break (100-200 m) | |  | |
| 22 | Mendes et al. (2004) | Recent/Guadiana shelf | | sandy and silty clay | | Glauconite | | outer shelf (100-200 m) | |  | |
| 23 | Demirpolat (1991) | Recent/Continental shelf off the Russian River | | sand | | Glauconite | | outer shelf | |  | |
| 24 | Bornhold and Giresse (1985) | Recent/Continental shelf off Vancouver Island | | muddy sands to sandy muds | | Glauconite | | outer shelf-upper slope(100-500 m) | |  | |
| 25 | Thompson and Hower (1975) | Recent (offshore California) | | sand | | Glauconite | |  | |  | |
| 26 | Baldermann et al. (2013); Giresse and Wiewióra (2001) | Deep sea, Ivory coast Ghana | | - | | Glauconite | | 2100 m | |  | |
| 27 | Buatier et al. (1989) | Galapagos spreading centre | | pelagic sediments | | Glauconite | | 2500 m | |  | |
| 28 | Wigley and Compton (2007) | Holocene/ Oligocene-Miocene/ Cape Canyon of South Africa | | sands or muds | | Glauconite | | middle shelf to shelf edge (50-400 m) | |  | |
| 29 | Chen et al. (1980); Chen and Duan (1987) | Recent, Continental shelf of East and South China Sea | | - | | Glauconite | | outer shelf to upper slope (200-400m) | |  | |
| 30 | Burnett (1980) | Recent, Peru and Chile offshore | | diatomaceous sediments | | Glauconite | | deep marine (300 m to 400 m) | |  | |
| 31 | Riedinger et al. (2005) | Holocene western continental margin off Argentina and Uruguay | | mudstone | | Glauconite | | deep marine | |  | |
| 32 | Odin and Matter  (1981) | Pleistocene-Holocene of Senegal and Gulf of Guinea | | sands | | Glauconite | | - | | alteration of micas, quartz, chert and feldspars | |
| 33 | Compton and Wiltshire (2009) | Pleistocene/western shelf of South Africa | | - | | Glauconite | | Outer shelf | |  | |
| 34 | Bau et al. (2004) | Pleistocene/Cape Cod aquifer, Massachusetts, USA | | - | | Glauconite | |  | |  | |
| 35 | Altaner et al. (2013) | Quaternery (~55ka)/Mount Epomeo Green Tuff, Italy | | tuff | | Glauconite | |  | |  | |
| 36 | Parry and Reeves (1966) | Pleistocene to Recent)/ Pluvial Lake Mound, USA | | sands and dolomites | | Glauconite | | lacustrine | |  | |
| 37 | Bandy (1972) | Pleistocene Lomita Marl, California | | marl | | Glauconite | | -  -  - | |  | |
| 38 | Giresse et al. (2015) | Early Quaternary-Late Pliocene, Cedrino paleovalley (Orosei area) | | - | | Glauconite | |  | |  | |
| 39 | Humphreys and Balson (1985); Merriman (1983) | Early Pleistocene-Pliocene /Red Crag & Coralline Crag Formation (East Anglia, North Sea) | | shelly sands | | Glauconite | | shallow marine | |  | |
| 40 | Kitamura (1998) | Early Pleistocene Omma Formation, offshore Japan | |  | | Glauconite | | 50-120 m | |  | |
| 41 | Arning et al. (2009) | Pleistocene to Recent offshore Peru | | sandstone and limestones | | Glauconite | | shelf | |  | |
| 42 | Saito et al. (1989) | Pleistocene to Holocene/Shelf and upper slope off Sendai, NE Japan | | sand, sandy mud | | Glauconite | | shelf | |  | |
| 43 | McMaster and Lachance (1969) | Pleistocene/ North-western African Shelf | | sands | | Glauconite | | shelf and upper slope | |  | |
| 44 | Ly (1981) | Pleistocene central and eastern coasts of Ghana, West Africa | | sands | | Glauconite | | upper shoreface (<25 m) | |  | |
| 45 | Howe et al. (1997) | Mid-Pleistocene to Pliocene South Atlantic Ocean | | sandstone | | Glauconite | | deep marine (1000-3000m) | |  | |
| 46 | Rao et al. (1993, 1995) | Late Pleistocene-Holocene eastern and SW continental margin of India | | sandy clays, clayey sands | | Glauconite | | shelf and slope (20 to 280m) | |  | |
| 47 | Barusseau et al. (1988) | Pleistocene and Recent/Shelf areas off Congo, Senegal | | sandstones | | Glauconite | | middle shelf | |  | |
| 48 | Brandano and Civitelli (2007) | Plio-Pleistocene/Pontinian Islands, Tyrrhenian Sea | | sands and silts | | Glauconite | | middle shelf | |  | |
| 49 | Carter (1975) | Late Pleistocene to Recent/ Hawkes Bay-Wairarapa shelf, New Zealand | | - | | Glauconite | | middle shelf to outer slope (130-300m) | |  | |
| 50 | Cook and Marshall (1981) | Late Pleistocene/ East Australian Continental Shelf | | muds | | Glauconite | | outer shelf/ 200-300 m | |  | |
| Other Minerals | | | | | | | | | | | |
| 1 | Bailey (1988) | (review) (i) the Ogooue River prodelta (Congo); (ii) continental  shelf between the Amazon and Orinoco Rivers; (iii) Niger River prodelta; (iv) Koukoure  River prodelta and Los Islands (Guinea); (v) North Sarawak continental shelf; (vi) Congo  River prodelta; (vii) continental shelf facing the Comoe River mouth (Ivory Coast); (viii)  reef lagoon SW of New Caledonia; (ix) continental shelf of Cap Vert (Senegal); (x) east of  Mayotte Island lagoon (Comoro); and (xi) within the estuary of the Casamance River  (Senegal) | | quartz sand | | odinite | | lagoon, shallow marine | | odinite is very susceptible to alteration and cannot found older rock than Quaternary | |
| 2 | Weir & Greene-Kelly (1962) | Black jack mine, Idaho | |  | | beidellite | |  | |  | |
|
| 3 | Cole and Shaw (1983) | Bauer Deep of the equatorial eastern Pacific and the Atlantis II Deep in the Red Sea | |  | | smectite, nontronite, montmorillonite | | recent marine condition | | direct precipitation from hydrothermal fluid | |
|
| 4 | Bischoff (1972) | Red Sea | |  | | nontronite (Fe-smectite) | | marine | | geothermal condition | |
|
| 5 | Murnane and Clague (1983) | Juan De Fuca Ridge | |  | | nontronite | | marine | | associated with hydrothermal system | |
|
| 6 | Köhler et al. (1994) | Galapagos Rift and Mariana Trough | |  | | nontronite | | deep marine | | submarine hydrothermal chimney | |
|
| 7 | Dekov et al. (2007) | SE slope of the Eolo Seamount, Tyrrhenian Sea | | mud | | nontronite | | marine | | submarine hydrothermal | |
|
| 8 | Ta et al. (2017) | South Mid-Atlantic Ridge | |  | | nontronite | | marine | | low-temperature hydrothermal activities | |
|
| 9 | Ueshima and Tazaki (2001) | Iheya Basin, Okinawa Trough, Japan | |  | | nontronite | | deep marine | | microbes exude extracellular polymeric substances (EPS), Nontronite layers appeared  to form and grow within the EPS materials | |
| 10 | Singer et al. (1984) | South Pacific | |  | | nontronite | | deep marine | | hydrothermal | |
|
| 11 | Alt (1988) | Eastern Pacific | |  | | nontronite | | deep marine | | seamount hydrothermal | |
|
| 12 | Corliss et al. (1978); Lubetkin et al. (2018) | Galapagos seamount | |  | | nontronite | | deep marine | | hydrothermal | |
|
|
| 13 | Milesi et al. (2019) | Dziani Dzaha, S.Atlantic | | Carbonate rock | | saponite | | lacustrine | | Formed by diagenesis, water chemistry influenced by volcanism | |
| 14 | Sun et al. (2012) | Valu Fa Ridge, Lau Basin | |  | | nontronite | | marine | | hydrothermal | |
|
| 15 | Severmann et al. (2004) | TAG hydrothermal field, Mid Atlantic Ridge | |  | | nontronite | | seafloor hydrothermal | | Al poor nontronite | |
|
| 16 | Cuadros et al. (2017) | Atlantis II Deep (Red Sea), Guaymas Basin (Gulf of California), East Pacific Rise (EPR), and Mid-Atlantic Ridge (MAR) | |  | | nontronite | | marine | | submarine hydrothermal | |
|
| 17 | Buey et al. (2018) | Longar, LG and temporal lakes (Altillo Chica, AC and Altillo Grande, AG | |  | | palygorskite-sepiolite and minor smectite | | lake | | formed in microbial mats hosted in Si-poor and Mg-rich | |
| 18 | Stoessell and Hay (1978) | Amboseli, Kenya | |  | | sepiolite | | near-surface deposits | |  | |
| 19 | Mokatse et al. (2023) | Chobe Enclave (northern Botswana) | |  | | Sepiolite, kaolinite, smectite | | aluvial fan/fluvial deposits | |  | |
| 20 | Tlili et al. (2010) | Chonabine Formation, Ypresian phosphatic series Gafsa-Metlaoui basin Tunisia | | marl | | Sepiolite, Palygorskite, Smectite | | Shallow marine water | | Associated with bacterial activity | |
| 21 | Andrews (1980) | Mid Atlantic Ridge | | basalt | | Celadonite, saponite | | Deep marine | | Alteration from basalt in a low temp sea water interaction | |
| 22 | Hong et al. (2014); Yin et al. (2013, 2018) | Yangtze River, south-eastern China | | Red earth sediments | | Illite-vermiculite interstratification | | Alluvial fan | |  | |
| 23 | Vanderaveroet et al. (2000) | north-western Atlantic Ocean | |  | | Illite-vermiculite interstratification | | marine | | Chemical weathering of detrital silicates | |
| 24 | Craw et al. (1995) | Otago and South Canterbury, New Zealand | | Greywacke | | Smectite-vermiculite | | fluvial | | Late Cretaceous to Quaternary terrestrial sediments derived from fault scarps and actively growing folds in schist and greywacke | |
| 25 | Muller et al. (2023) | Lake Alchichica, Mexico | | silicates | | Stevensite | | lacustrine | |  | |
| 26 | Burne et al. (2014) | Lake Clifton, Western Australia | | thrombolitic microbialites | | Stevensite | | lake | |  | |
| 27 | Banfield et al. (1991) | Albert Lake | |  | | stevensite | |  | |  | |
| 28 | Crowe et al. (2007) | Lake Matano, Indonesia | |  | | minnesotaite | | experimental | |  | |
| 29 | Oinuma (1966) | Pacific ocean, Eastern sea, Tokyo Bay, | | Recent marine sediment | | Kaolinite, montmorillonite, illite, chlorite | | marine | |  | |
| 30 | Gutierrez-Mas et al. (1997) | Bay of Cádiz | | Muddy sediments | | illite, kaolinite, smectite, randomly mixed-layered illite-smectite-vermiculite, chlorite, and randomly mixed-layered illite-chlorite | | Continental shelf | |  | |
| 31 | Chen et al. (2004) | Pleistocene Chinmen Island | | Sandstone, shale | | kaolinite | | fluvial | | Formed after alteration of granitoid rock | |
| 32 | Robinson and Zamora (1999) | Pleistocene Chipilapa geothermal system, El Salvador | | Associated with volcanic rock | | Chlorite-smectite | |  | | Geothermal system | |
| 33 | Hagerty and Newsom (2003) | Pleistocene; Basalt; Lonar crater, DVP, India | | Non-marine | | Celadonite | | Replaces plagioclase, vug and vesicle’s fill | | Hydrothermal process (130-200°C) | |
| Neogene | | | | | | | | | | | |
| Glauconite | | | | | | | | | | | |
| 1 | Odin and Matter (1981) | Mio-Pliocene/shelf of NW Spain | | sands | | Glauconite | | - | | alteration of micas, quartz, chert and feldspars | |
| 2 | Harris and Whiting (2000) | Miocene to Pliocene US Mid-Atlantic margin | | - | | Glauconite | | - | |  | |
| 3 | Griffioen et al. (2012); Huisman et al. (1997) | Miocene Breda Formation, Netherland | | sands | | Glauconite | | shallow marine and coastal | |  | |
| 4 | John et al. (2011) | Miocene cores from NE Australian offshore | | limestones and marls | | Glauconite | | middle, outer shelf to upper slope (100-350m) | |  | |
| 5 | Vandenberghe et al. (2014) | Miocene Diest Formation | | sandstone | | Glauconite | | - | |  | |
| 6 | Gier et al. (2008) | Early-Middle Miocene Vienna basin | | sandstones | | Glauconite | | shallow marine | |  | |
| 7 | Van-Delft et al. (1990) | Middle Miocene Miste Bed, Rupel-Formation | | clays and sands | | Glauconite | | - | |  | |
| 8 | Chen (1983) | Miocene/Xiayang Formation | | arkosic sandstone | | Glauconite | | shelf | |  | |
| 9 | De Ros et al. (1997) | Miocene/NW African margin offshore | | sandy mudstone and sandstone | | Glauconite | | middle shelf to upper slope | |  | |
| 10 | Fischer (1987); Stille and Fischer (1990) | Miocene/Upper Marine Molasse | | sands, clays and marls | | Glauconite | | Marine (200m-600m) | | altered biotite | |
| 11 | Pérez-Asensio et al. (2012) | Miocene/lower Guadalquivir basin | | siltstone and sandstone | | Glauconite | | inner shelf to middle slope (50-600 m) | |  | |
| 12 | Lantzsch et al. (2010) | Miocene-Holocene/Offshore Iberia | | sandstone | | Glauconite | | outer shelf | |  | |
| 13 | Özgüner and Varol (2009) | Miocene/Manavgat basin, Anatolia | | pelagic limestone | | Glauconite | | outer shelf | |  | |
| 14 | Amorosi et al. (1997) | Lower Miocene/Visone Formation | | sandstone | | Glauconite | | outer shelf | |  | |
| 15 | Charpentier et al. (2011) | Miocene to Pleistocene/Offshore Nicoya Peninsula Costa Rica | | - | | Glauconite | | abyssal plain | | - | |
| 16 | Muza and Wise (1983)) | Miocene/Falkland Plateau | | pelagic limestone | | Glauconite | | abyssal plain | |  | |
| 17 | Follmi and Von Breymann (1992) | Miocene to Pleistocene/Japan Sea | | diatom-rich limestone | | Glauconite | | abyssal plain | |  | |
| Celadonite | | | | | | | | | | | |
| 1 | Hover and Ashley (2003); McHenry et al. (2011) | Plio-Pleistocene; claystone; Paleo-Olduvai lacustrine basin, East African rift, Northern Tanzania | | Non-marine (Saline‐alkaline Lake) | | Celadonite | | Neoformed celadonite, replaces precursor Sm | | Diagenesis | |
| 2 | Giorgetti et al. (2001); Marescotti et al. (2000) | Pliocene–Pleistocene (0.6 to 3.0 Ma); Pillow basalts; MORB; Juan de Fuca Ridge (ODP Leg 168), USA | | Marine | | Celadonite | | Replaces phenocrysts, fill veins and vesicles | | Low-temperature seawater alteration | |
| 3 | Hofmann et al. (2004) | Middle Pliocene age (3.30±0.06 Ma); Grimsel breccia (gneisses and granites); Central Swiss Alps | | Non-marine | | Celadonite | | Very late-stage cement in pores | | Hydrothermal process | |
| 4 | Schramm et al. (2005) | Plio-Pleistocene (0.12 to 4.6 Ma), Basalt, MORB, East Pacific Rise | | Marine | | Celadonite | | Replaces olivine, Plagioclase and groundmass, voids and fractures fill | | Low-temperature seawater alteration | |
| 5 | Yanev et al. (2007) | Mid-Miocene; Pyroclastic rock (rhyolitic composition), Silicic LIP, Oaxaca, Southern Mexico | | ̶̶ | | Celadonite | | Replace shards and pumice fragments | | ̶ | |
| 6 | Baker et al. (2012) | Miocene; Tholeiitic basalt; Grande Ronde basalt, Columbia River flood basalt group | | Non-marine | | Celadonite | | Replaces groundmass, fills vesicle | | Early diagenesis (groundwater alteration, 15–35°C) | |
| 7 | Bowen et al. (1989); Reid et al. (1988) | Miocene (8-12 my); Entisol (soil developed on basalt); Dove Spring Formation, Tropico group volcanics, California, U.S.A. | | Non-marine | | Celadonite | | Amygdales and Veins fill, as matrix | | Hydrothermal alteration | |
| 8 | Kimbara and Shimoda (1973) | Miocene; Altered dolerite, Haginari formation, Back arc magmatism, Taiheizan Plutonic mass, Akita Prefecture | | Marine | | Celadonite | | Fills vesicular cavity, veins and groundmass | | ̶ | |
| 9 | Sudo (1951) | Miocene; Deep green tuff breccia (intermediate composition), Shiroishi Machi, Miyagi Prefecture, Japan | | Marine | | Celadonite | | Replaces volcanic glass | | Alteration by hot spring | |
| 10 | Kohyama et al. (1971) | Miocene; Rhyolitic welded tuff, Oya, Tochigi Prefecture, Japan | | Marine? | | Celadonite | | Alteration product of glass fragment | | ̶ | |
| 11 | Bustillo and Martínez-Frías (2003); Rodríguez-Losada et al. (2000) | Mid-Upper Miocene; Ankaramite basalts; Arco de Taganana, Punta Poyata, Tenerife, Spain | | Marine | | Celadonite | | Cavities and vein fill | | Hydrothermal alteration (~90°C) | |
| 12 | Park et al. (2022) | Miocene; fault fill zone in Trachy basaltic flow; Janggi Basin, SE Korean Peninsula | | Non-marine | | Celadonite | | Vesicle and fault/fracture-fill, matrix, mineral replacement | | Alteration by hybridized fluid (i.e., magmatic and groundwater) | |
| 13 | Zhang and Smith-Duque (2014) | Miocene (~13.5 Ma); oceanic basalt; IODP Sites (U1365) | | Marine | | Celadonite | | Vesicle and vein fill | | Low-temperature seawater alteration | |
| 14 | Walker (1960) | Miocene; Antrim basalt, British Tertiary volcanic province | | Non-marine | | Celadonite | | line vesicle/pore | | Burial metamorphism | |
| 15 | Laverne et al. (2006) | Miocene; basalts, Hole 1256D, ODP  Leg 206, East Pacific Rise | | Marine | | Celadonite | | Fill vein,  vesicles and voids | | Low-temperature to  hydrothermal alteration | |
| Other minerals | | | | | | | | | | | |
| 1 | Galán and Pozo (2011) | Review (Pleistocene- Miocene) | |  | | Palygorskite and Sepiolite | | Continental, lake | |  | |
| 2 | Sánchez-Roa et al. (2016) | Plio-Pleistocene Galera fault zone, Betic Cordillera, SE Spain | | marl | | Sepiolite, smectite, palygorskite | | Continental, shallow lake | |  | |
| 3 | Miles (2011) | Pliocene-Pleistocene Amargosa Valley, Nevada | |  | | Sepiolite, saponite | | fresh or saline water | |  | |
| 4 | Arslan et al. (2006) | Plio-Pleistocene Eastern Black Sea coast, Trabzon City, NE Turkey | | Altered pyroclastic rock | | Kaolinite, saprolite, chlorite, smectite | | marine | | Chemical weathering controlled by meteoric and marine water | |
| 5 | Kadır et al. (2017) | Early Pliocene Sakarya and Porsuk Formations, Sivrihisar and Yunusemre-Biçer regions, Turkey | | dolomite | | Sepiolite, palygorskite | | lacustrine | | Formed under anoxic-dysoxic conditions | |
| 6 | Post (1984) | Pliocene Noonday Dolomite Formation, Ballara, California | | Metamorphosed dolomitic limestone | | saponite | | limestone structure containing the clay minerals was submerged in Lake | | Occur in joints and open fractures, hydrothermal alteration | |
| 7 | Schiffman and Staudigel (1995) | Pliocene La Palma, Canary Island | | Silicates ocuur as vein, vesicle filling and alteration of volcanic rock | | Chlorite, smectite | | Deep water facies | | Hydrothermal system | |
| 8 | Inoue et al. (1984) | Pliocene Tobe Formation, Ohyu District, Akita Prefecture, Japan. | | pyroclastic with tufaceous mudstone | | Chlorite-smectite | |  | |  | |
| 9 | Kadir and Akbulut (2001) | Pliocene-Miocene Cameli Formation, western Aegean depression zone, SW Turkey | | Occur as vein within magnesite deposit | | Sepiolite | | shallow and alkaline lake conditions | | Sepiolite grown from relict carbonate minerals | |
| 10 | Madon (1992) | Miocene Terengganu ironstones, Offshore Peninsular Malaysia | | oolitic ironstone | | berthierine, kaolinite | | offshore shelf storm layers | |  | |
| 11 | Isphording (1973) | Miocene Georgia-Florida deposits, SE USA | | limestones and dolomites | | palygorskite and sepiolite | | shallow, marginal seas | | concentration of alumina is low and the pH is alkaline | |
| 12 | İrkec and Ünlü (1993) | Miocene Köroğlu (Gallatian) Volcanic Belt | | Sepiolite occur within vitric tuff | | sepiolite | |  | | Hydrothermal alteration, sepiolite has formed in a volcanic sequence, by the alteration of pyroclastic material | |
| 13 | Inoue and Utada (1991) | Miocene Kamikita, northern Honshu, Japan | | Mudstone in altered volcano clastic rock | | Chlorite-smectite | | Thermal metamorphic env | | Low grade metamorphism | |
| 14 | Tounekti et al. (2021) | Miocene Burdigalian-Langhian green sandstone, Northern Tunisia | | Sandstone, shale | | Glauconite, chamosite | | Shallow marine | | High K2O | |
| 15 | Kadír et al. (2010) | Mid Miocene Sarıyer Formation, C¸ anakkale, Turkey | | Red mustone | | palygorskite | | percolating soil-derived water in a near-surface setting | |  | |
| 16 | Herranz and Pozo (2022) | Miocene Madrid Basin (Spain) | | Mudstone, carbonates | | saponite and palygorskite, smectite, illite | | mud-flat and palustrine deposits (lake margin) | |  | |
| 17 | Pozo and Calvo (2018) | Review paper authigenic Mg rich clay (Miocene-Paleogene) | | Sepiolite, palygorskite, saponite, Mg-Smectite | | Lacustrine and alluvial | |  | |  | |
| 18 | Galan (1996) | Review paper about application of palygorskite- sepiolite (Miocene) | | | |  | |  | |  | |
| 19 | Akbulut and Kadir (2003) | Neogene Cameli Formation,Serinhisar-Acõpayam basin, western Anatolia, Turkey | | Red mudstone | | sepiolite, palygorskite, saponite | | swampy and/or semi-swampy, alkaline-lake environments (fluvial and lacustrine) | | Direct precipitation from lake, authigenically from interstitial pore water, Fe-Al derived from volcanism and Si, Mg derived from surrounding ultrabasic or volcanism | |
| 20 | Ece (1998); Kadír et al. (2002) | Neogene Eskişehir area, Turkey | | conglomerates | | sepiolite | | lacustrine | | Diagenetic alteration of magnetite pebble partially or totally formed sepiolite | |
| Paleogene | | | | | | | | | | | |
| Glauconite | | | | | | | | | | | |
| 1 | Hower (1961) | Oligocene/ Byram Formation | | marl | | Glauconite | |  | |  | |
| 2 | Boukhalfa et al. (2020) | Oligo-Miocene Fortuna Group, Northern Tunisia | | Sandstone, shale | | glauconite | | Offshore, shoreface | |  | |
| 3 | Chattoraj et al. (2017) | Oligocene Maniyara Fort Formation, Western India | | Green shale, limestone | | Glauconite, smectite | | Platform carbonate | | High K content | |
| Banerjee et al. (2012) | Oligocene/Maniyara Fort Formation | | shale | | Glauconite | | lagoonal | |  | |
| 4 | Porrenga (1968) | Oligocene/Aardebrug | | sandstone | | Glauconite | | lagoonal and hypersaline lake | |  | |
| 5 | Boukhalfa et al. (2015) | Oligocene/Fortuna Formation, Lower Béjaoua Group | | Glauconitic siltstone and mudstone | | Glauconite | | inner shelf and lagoonal | | Lagoonal glauconite of Fortuna Formation overlies a Fe, S bearing horizon | |
| 6 | Dix and Parras (2014) | Oligocene–Early Miocene/San Julián Formation | | hardgrounds in limestones | | Glauconite | | shallow marine | | Microcrystalline siderite is associated with glauconite  Glauconite overlies coal bearing member  Zeolite is present within the section | |
| 7 | Rasmussen and Dybkjær (2005) | Oligocene/Ringkøbing-Fyn High, Denmark | | Bioturbated greenish silty clay | | Glauconite | | Sediment starved open marine condition: Shallow marine | | Glauconite is abundant with pyritised burrow  Glauconitic clay is overlain by silty to sandy unit with iron oolite and siderite cemented sandstone | |
| 8 | Skiba et al. (2014) | Oligocene/ GóraPuławska | | quartzose sandstone | | Glauconite | | - | |  | |
| 9 | Lewis and Belliss (1984) | Oligocene-Miocene /Gee Greensand, Otekaike Limestone, Kokoamu Greensand | | sandstone and limestone | | Glauconite | | shelf | |  | |
| 10 | Chang et al. (2008) | Oligocene-Miocene/ Shuichangliu Formation, Changhukeng Formation, Tsukeng Formation, Takeng Formation | | siltstone and mudstone | | Glauconite | | - | |  | |
| 11 | Hesselbo and Huggett (2001) | Oligocene-Pliocene/Offshore New Jersey | | mudstone and sandstone | | Glauconite | | Deeper water (600-1000m) but in-situ: Deep marine | | Glauconite has ooidal coating of glauconitic smectite, while shallow water glauconites have cores of siderite  Maturity of glauconite is correlated with residence time in suboxic environment | |
| 12 | Kelly et al. (2001); Kelly and Webb (1999) | Oligocene-Miocene/Torquay Group | | bioclastic limestone and mudstones | | Glauconite | | Lower energy, mid-shelf environment; water depth probably less than 120m: Shallow marine | | Pyrite, siderite, phosphate and iron oxide minerals overlie basal glauconite rich units  Glauconitic unit also comprises pyrite, phosphates and iron oxides but lacks siderite | |
| 13 | Tóth et al. (2010) | Upper Oligocene/Eger Formation | | Carbonate  cemented sandstone layers | | Glauconite | | Deep sublittoral–epibathyal: Deep marine | | Phosphate is associated with glauconite even as very fine particles | |
| 14 | Tazaki and Fyfe (1992) | Oligocene/Izu-Bonin Sediments along Bonin-Mariana trench | | volcanogenic sandstone | | Glauconite | | deep sea | | Glauconite along with Celadonite and graphite occurs in volcanoclastic sediments | |
| 15 | McConchie and Lewis (1978) | Oligocene/ Coleridge Formation, New Zealand | | Glauconitic sandstone with feacal pellets | | Glauconite | | Shallow marine | |  | |
| 16 | Sageman and Speed (2003) | Oligocene/ Caratas Formation., Tinajitas Limestone. and Los Jabilos Formation., Venezuela | | Arenites with foraminiferal infillings | | Glauconite | | Algal balls, LBF and glauconite indicate shallow marine environment | |  | |
| 17 | Wigley and Compton( 2006) | Oligocene/ Upper Oligocene-Lower Miocene Calcareous unit, South Africa | | Calcareous sand | | Glauconite | | Shallow marine | | Phosphate (CFA) is associated with glauconite | |
| 18 | Miller et al. (2009) | Oligocene/ Sequence O2, New Jersey Coastal Plain, USA | | Glauconitic sand | | Glauconite | | Deep shelf water (~75 m): Shallow marine | |  | |
| 19 | Miller et al. (2009) | Oligocene/ Bumpnose sequence, SSQ section Alabama Gulf Coastal Plain, USA | | Glauconitic sand | | Glauconite | | Deep shelf water (~75 m): Shallow marine | |  | |
| 20 | De Man and Van Simaeys (2004) | Oligocene/ Southern North Sea Basin, Belgium | | Glauconitic sand | | Glauconite | | Marginal marine to brackish water, water depth as shallow as 20m; Marginal (Shallow) marine | | Coals are present in the Formation but exact location is not given(?) | |
| 21 | van der Lingen et al. (1978) | Oligocene/ Oxford Chalk, New Zealand | | Cross-bedded glauconitic sand with Foraminiferal infillings | | Glauconite | | Shallow marine | |  | |
| 22 | Jiang et al. (2007) | Eocene/half-graben lake basin (ShuluSag), China | | mudstone, calcareous shale | | Glauconite | | deep lake | |  | |
| 23 | Huggett and Cuadros (2010) | Eocene-Oligocene/Seagrove Member | | marl/siltstone/ clay minerals | | Glauconite | | lacustrine | |  | |
| 24 | Odin and Matter (1981) | Eocene-Oligocene of Paris Basin | | sandstones, shales, limestones | | Glauconite | | -  -  -  - | | alteration of micas, quartz, chert and feldspars  -  - | |
| 25 | Hower (1961); Thompson and Hower (1975) | Eocene/ Bashi Formation, Pierson Formation, Gatchell Formation, Matalani Formation, Domengine Formation, Carrizo Formation, Reklaw Formation, Moody's Branch Formation, Winona Formation, Weches Formation | | sandstone, marl, chert | | Glauconite | |  | |  | |
| 26 | Thompson and Hower (1975) | Eocene/ Cayat Formation, Zilpha Formation, Nanafalia Formation, Landrum Formation | | sandstone, shale, marl | | Glauconite | |  | |  | |
| 27 | Czuryłowicz et al. (2013) | Eocene-Oligocene/Lubartów area, eastern Poland | | sandstone | | Glauconite | |  | |  | |
| 28 | Velde and Medhioub (1988) | Eocene/Peeler Ranch well, Texas | | sandstone and mudstones | | Glauconite | |  | |  | |
| 29 | Amaral (1967) | Eocene-Oligocene/Marajó Basin and Sergipe-Atagoas Basin | | fine sandstone and siltstone | | Glauconite | |  | |  | |
| 30 | Das and Duarah (1993) | Eocene/Siju Formation | | impure imestone | | Glauconite | |  | |  | |
| 31 | Baioumy (2007) | Eocene (Hamra Formation) | | sandstone, shale | | Glauconite | | shallow marine | |  | |
| 32 | Sarmah and Borgohain (2012) | Eocene/Narpuh Sandstone | | Calcareous sandstone | | Glauconite | | Shallow marine | | At the basal part, thin lenses of coal seams are observed and sandstones are ferruginous | |
| 33 | Strickler and Ferrell (1990) | Eocene/Wilcox Sandstone | | sandstone | | Glauconite | | shallow marine/littoral | |  | |
| 34 | Fanning et al. (2010) | Eocene/Nanjemoy Formation | | sands | | Glauconite | | shallow marine | |  | |
| 35 | Clark and Robertson (2005) | Eocene/Gűműs Member | | nummulitic limestones | | Glauconite | | shallow marine | |  | |
| 36 | Harding et al. (2014) | Eocene/Main Glauconite Bed | | mudstone | | Glauconite | | shallow marine | | - | |
| 37 | Rasser and Piller (2004) | Eocene/Austria | | algal limestones | | Glauconite | | shallow marine | |  | |
| 38 | Sarma and Basumallick (1979) | Eocene/Sylhet Limestone | | limestone | | Glauconite | | shallow marine | |  | |
| 39 | Geptner et al. (2008) | Eocene–Oligocene/Amanin Formation | | volcanogenic sandstone, mudstone | | Glauconite | | shallow marine | |  | |
| 40 | Tlig et al. (2010) | Eocene/El Garia Formation Metlaoui Group Tunisia | | impure limestones | | Glauconite | | shallow marine | |  | |
| 41 | Newman et al. (2013) | Eocene/Lambeth Group | | sands | | Glauconite | |  | |  | |
| 42 | Aitchison, (1988) | Eocene/Tapui Glauconitic Sandstone | | sandstones | | Glauconite | | inner shelf | |  | |
| 43 | van der Lingen et al. (1978) | Eocene/Eyre Sand Group | | sandstone | | Glauconite | | inner shelf | |  | |
| 44 | Huggett and Cuadros (2010) | Eocene/Claiborne Group | | clayey sandstones and shale | | Glauconite | | inner to middle shelf | |  | |
| 45 | Banerjee et al. (2012) | Eocene/Harudi Formation | | shale | | Glauconite | | middle shelf (40-60m) | |  | |
| 46 | Plint (1983) | Eocene/Bracklesham Formation | | - | | Glauconite | | - | |  | |
| 47 | Marivaux et al. (2014) | Eocene/Fortuna Formation | | shale | | Glauconite | | subtidal to upper intertidal | |  | |
| 48 | Chattoraj et al. (2009) | Eocene/Naredi Formation | | shale | | Glauconite | | middle shelf | |  | |
| 49 | Hughes and Whitehead (1987) | Eocene/Barton Formation | | sandstone | | Glauconite | | deep shelf to slope | |  | |
| 50 | Stassen et al. (2015) | Eocene/ Manasquan Formation, New Jersey Gulf Coastal Plain, USA | | Fine sand/silt | | Glauconite | | Shallow marine | |  | |
| 51 | Gibson et al. (1993); Goodman (1979) | Eocene/ Nanjemoy Formation, Northern Gulf Coastal Plain, USA | | Fine-grained quartz sand | | Glauconite | | Nearshore gulf to outer shelf: Shallow marine | |  | |
| 52 | John et al. (2008) | Eocene/ Lodo Formation, USA | | Fine sandstone | | Glauconite | | Outer shelf: Deeper marine | |  | |
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| 53 | Pietsch et al. (2016) | Eocene/ Gosport Sand, Alabama Gulf Coastal Plain, USA | | Sandstone | | Glauconite | | Shallow marine | |  | |
| 54 | Strickler and Ferrell (1990) | Eocene/ Wilcox Sandstone, USA/ Lower Eocene, Texas, USA | | Glauconitic lithic arkose/ Feldspathic litharenite with pellets | | Glauconite | | Littoral sand bar deposit; Shallow marine | |  | |
| 55 | Harris et al. (1984) | Eocene/ Santee Limestone (South Carolina), USA | | Bryozoan-sponge biomicrudite, molusc-dominated biomicrudite, Byrozoan biomicrudite and biosparudite ,Glauconitic sand | | Glauconite | | Shallow marine | |  | |
| 56 | Harris et al. (1984) | Eocene/ Castle Hayne Limestone (North Carolina), USA | |  | | Glauconite | | Shallow marine | |  | |
| 57 | Harris et al. (1984) | Eocene/ Cross Formation, USA | |  | | Glauconite | | Shallow marine | |  | |
| 58 | Tlig et al. (2010) | Eocene/ El Garia Formation, Metlaoui Group, Tunisia | | Impure limestone | | Glauconite | | Shallow marine | | Glauconite associated with phosphate  Background lithology is marl, black shale and clayey limestone | |
| 59 | Metwally and Mahfouz (2018) | Eocene/ Esna Formation, Dababiya Quarry Member, Egypt | | Shale | | Glauconite | | Relatively deeper marine indicated by high P/B ratio (approx. 90%): Shallow marine | | Glauconite is associated with phosphates | |
| 60 | Marivaux et al. (2014) | Eocene/ Fortuna Formation, Tunisia | | Shales | | Glauconite | | Subtidal to upper intertidal: Shallow marine | |  | |
| 61 | Jorry et al. (2003) | Eocene/ Choubine Formation, Central Tunisia | | Marl | | Glauconite | | Shallow marine | | Glauconitic marl is overlain by rich phosphate deposits | |
| 62 | Hegab et al. (2016) | Eocene/ Qarara Formation/ Middle Eocene, Egypt | | Green shales with pellets | | Glauconite | | Shallow marine | |  | |
| 63 | Samanta et al. (2013) | Eocene/ Cambay Shale Formation, India | | Shale | | Glauconite | | Lagoonal | | Lignite appears as thick seams within a dominantly shaly lithology | |
| 64 | Kalia and Kintso (2007) | Eocene/ Laki Formation, Jaisalmer Basin, India | | Sandy clay | | Glauconite | | Shallow marine | | Lignite is present at the Paleocene-Eocene boundary, along with glauconite and pyrite | |
| 65 | Kharkwal (1966) | Eocene/ Subathu Formation, Simla, India | | Limestone and calcareous sandstone | | Glauconite | | Shallow marine | | Clays are carbonaceous at the basal part, at places forming coal.  Reports on presence of ooidal ironstone at the basal Subathu Formation is present | |
| 66 | Shiloni et al. (1977) | Eocene/ Zor’a Formation, Israel | | Glauconitic chalky limestone | | Glauconite | | Shallow marine | | Phosphate bearing rocks underlie the glauconitic limestone at the top part of the formation | |
| 67 | Zarasvandi et al. (2019) | Eocene/ Pabdeh Formation, Iran | |  | | Glauconite | | Shallow marine | | Glauconite associated with Fe-oxide and overlain by massive phosphorite  REE data shows oil-bearing phosphorites are formed in sub-oxic to anoxic condition whereas oil-free phosphates are formed in oxic condition | |
| 68 | Beavington-Penney et al. (2006) | Eocene/ Seeb Formation, Oman | | Wackestone-Packstone | | Glauconite | | Shallow marine | | Glauconite is associated with minor phosphate and siderite | |
| 69 | Clark and Robertson (2005) | Eocene/ Gümüs Member, Hasangazi Formation, Turkey | | Faecal pellets and infillings | | Glauconite | | Shallow marine | |  | |
| 70 | Bektemirova et al. (2018) | Eocene/ Hanabad Formation, Kyzyltokoy Basin, Kyrgyzstan | | Clay | | Glauconite | | Shallow marine | |  | |
| 71 | Rasser and Piller (2004) | Eocene/ Helvetic Shelf, Austria | | Nummulitic limestone | | Glauconite | | Shallow marine | |  | |
| 72 | Cosovic and Drobne (1995) | Eocene/ Adriatic Carbonate Platform, Istrian Peninsula, Croatia | | Wackestone, packstone | | Glauconite | | Shallow marine | |  | |
| 73 | Schweitzer et al. (2005) | Eocene/ “Marl with crab”, Istrian Peninsula, Croatia | | Foraminiferal packstones | | Glauconite | | Quiet, open-marine, outer ramp setting in lower photic zone, Winter water temp. >16°C: Shallow marine | |  | |
| 74 | Ćosović et al. (2004) | Eocene/ Adriatic Carbonate Platform, Istrian Peninsula, Croatia | | Foraminiferal Wackestone/ Packstone | | Glauconite | | Slightly deeper water | | In the Liburnian Formation, the basal part of Eocene succession, coal occurs locally | |
| 75 | Amorosi and Centineo (1997); Huggett and Cuadros (2010); Huggett and Gale (1997) | Eocene/ Harwich Formation, Hampshire Basin, UK | | Fine grained glauconitic sandstone | | Glauconite | | Shallow marine | | Siderite bearing units are found alternating with glauconites.  Harwich Formation contain few meter thick tephra deposits. | |
| Eocene/ London Clay Formation, Hampshire Basin, UK | | Fine grained glauconitic sandstone | | Glauconite | | Shallow marine | |  | |
| Eocene/ Wittering Formation, Hampshire Basin, UK | | Glauconitic silty sand | | Glauconite | | Shallow marine | | Two glauconitic horizon are overlain by siderite concretion bearing units. | |
| Eocene/ Earnley Formation, Hampshire Basin, UK | | Bioturbated glauconitic sand | | Glauconite | | Shallow marine | |  | |
| Eocene/ Barton Clay, Hampshire Basin, UK | | Glauconitic muddy silt | | Glauconite | | Shallow marine | |  | |
| Eocene/ Headon Hill Formation, Hampshire Basin, UK | | Shale, siltstones and marls | | Glauconite | | Lacustrine | |  | |
| 76 | Steurbaut et al. (2003) | Eocene/ Mont Héribu Clay Member, Belgium | | Glauconitic clayey very fine sand | | Glauconite | | Mostly Lagoonal succession: Marginal (Shallow) marine | |  | |
| 77 | Vanhove et al. (2011) | Eocene deposits of Belgium (including Tielt, Hyon, Gentbrugge & Aalatar Formation), Belgium | | Glauconitic sand and muds | | Glauconite | | In varying depositional environment, restricted to shallow marine condition | |  | |
| 78 | Morton et al. (1984) | Eocene/ Offshore Ireland, DSDP Leg-81, North Sea Basin | | Pale green Clay | | Glauconite | | Shallow marine shelf | |  | |
| 79 | Czuryłowicz et al. (2013) | Eocene/ Siemeń Formation, Lubartów area, Poland | | Siltstone and sandstone | | Glauconite | | Shallow marine | | Glauconitic silty sand overlies a phosphate unit | |
| 80 | Gedl (2014) | Eocene sediments of Solokija Graben, Roztocze, Poland | | Glauconitic sand  Calcareous and non-calcareous | | Glauconite | | Shallow marine | |  | |
| 81 | Dill et al. (1996) | Eocene/ Formation C, North German Basin, Germany | | Sandstone | | Glauconite | | Shallow marine | | Glauconite is confined within the lower sandstones while Pyrite formed in clays and marls | |
| 82 | Wei (2004) | Eocene/ Tasmanian Gateway, ODP Leg No 189, New Zealand | | Silty Claystone and Siltstone | | Glauconite | | Shallow marine | |  | |
| 83 | Dallanave et al. (2016) | Eocene/ Ashley Mudstone, New Zealand | | Mudstone | | Glauconite | | Upper bathyal: Deep marine | |  | |
| 84 | Sorrentino et al. (2014) | Eocene/ Red Bluff Tuff Formation, New Zealand | | Volcanic tuff | | Glauconite | | Shallow marine | | Magnetite and Hematite are associated with glauconite | |
| 85 | Crouch et al. (2003) | Eocene/ Wanstead Formation, Tawanui, New Zealand | | Glauconitic sandy siltstone | | Glauconite | | Upper middle bathyal water depths of  500-1000 m: Deeper marine | | Although depositional environment was deep, land derived terrestrial components are abundant | |
| 86 | Aitchison (1988) | Eocene/ Tapui glauconitic sandstone, New Zealand | | Sandstone | | Glauconite | | Storm dominated Inner Shelf: Shallow marine | |  | |
| 87 | Macgregor (1983) | Eocene/ Waitakere Limestone. Nile Group, New Zealand | | Limestone | | Glauconite | | 0-12 m water-depth, near-shore, algal facies swept by weak tidal currents: Marginal (Shallow) marine | | Pyrite is found at upper part of the section, probably related to diagenesis  Underlying Brunner Coal measure is a thick coal bearing unit | |
| 88 | Amouric and Parron (1985); Parron and Amouric (1990) | Palaeocene of Eboinda region, Ivory Coast | | black shale | | Glauconite | | deep marine | |  | |
| 89 | Liu et al. (1997) | Paleocene/ Hornerstown Formation, ODP Leg 150X, USA | | Quartzose glauconitic clay | | Glauconite | | Middle neritic: Shallow marine | | Lignite appears at the top part of the section | |
| 90 | Mancini and Tew (1993) | Paleocene/ Matthews Landing Marl Member, Porters Creek Formation, USA | | Fossiliferous sandstone and marlstone | | Glauconite | | Shallow marine near-coast environment | |  | |
| 91 | Mancini and Tew (1993) | Paleocene/ Coal Bluff Member, Naheola Formation, USA | | Fossiliferous sandstone and marlstone | | Glauconite | | Shallow marine shelf deposit | | The glauconitic sandstones and marlstones overlie a lignitic marlstone member, which grades laterally into carbonaceous shale | |
| 92 | Sluijs et al. (2014) | Paleocene/ Tuscahoma Formation, Wilcox Group, Gulf Coastal Plain, USA | | Glauconitic sands and silts | | Glauconite | | During the PETM, sea-level rise created shallow marine environment when the glauconite is deposited, estuarine and lagoonal deposits resulted in lignite formation | | Lignite appears intermittently within the formation | |
| 93 | John et al. (2008) | Paleocene/ Moreno Formation, Tumley Gulch Section, USA | | Glauconitic shale | | Glauconite | | Sediment starved Outer Shelf setting | |  | |
| 94 | Cramer et al. (2003) | Paleocene/ Vincetown Formation, ODP Leg 174AX, USA | | Glauconitic sand (>40% sand) | | Glauconite | | Shallow marine | |  | |
| 95 | Sprong et al. (2013) | Palaeocene of Kasserine Island | | marls and shale | | Glauconite | | deep marine | |  | |
| 96 | Self-Trail et al. (2012) | Paleocene/ Aquia Formation, USA | | Glauconitic sandstone | | Glauconite | | Shallow marine shelf deposit | |  | |
| 97 | Mancini (1981) | Paleocene/ Nanafalia Formation, USA | | Glauconitic sandstone | | Glauconite | | Shallow marine shelf deposit | |  | |
| 98 | Knox (1979) | Paleocene/ Thanet Beds, England | | Glauconitic clayey sandstone | | Glauconite | | Shallow marine | | The high degree of montmorillonite in most of the 'glauconite' pellets is correlated to the montmorillonite-rich nature of associated clays or even to a pyroclastic mud precursor. | |
| 99 | Fitch et al. (1978) | Paleocene/ Oldhaven Beds, Thanet Sand, England | | Sandstones | | Glauconite | | Shallow marine | |  | |
| 100 | Huggett et al., (2017) | Paleocene/ Upnor Formation, England | | Fine to medium-grained sandstone with glauconite feacal pellets | | Glauconite | | Warm, shallow marine to estuarine with lowered salinity: Marginal (Shallow) marine | |  | |
| 101 | Ellison et al. (1996) | Paleocene/ Upnor Formation, England | | Medium-grained, glauconitic, quartzose sands | | Glauconite | | Lower part: turbid water, Shallow marine environment, Upper part: marine environment with high stress, such as lower than normal salinity | |  | |
| 102 | Schmitz et al. (2004) | Paleocene/ Ølst Fm., Østerrenden core, Denmark | | Siltstone | | Glauconite | | Shallow marine | | Presence of ash layer directly points towards explosive basaltic volcanism | |
| 103 | Clemmensen and Thomsen (2005) | Paleocene/ Lellinge Greensand Formation, North Sea Basin | | Greensand | | Glauconite | | Inner shelf: Shallow marine | |  | |
| 104 | Hamberg et al. (2005) | Paleocene/ Bohr Member, Vále Formation, Siri Canyon, Stavanger Platform Area, Denmark | | Sandstone | | Glauconite | | Deep marine | |  | |
| Paleocene/ Ty Member, Vile Formation, Siri Canyon, Stavanger Platform Area, Denmark | | Sandstone | | Glauconite | | Deep marine | |  | |
| Paleocene/ Heimdal Member, Holmehus Formation, Siri Canyon, Stavanger Platform Area, Denmark | | Sandstone | | Glauconite | | Deep marine | | Hamberg et al. (2005) | |
| Paleocene/ Heimdal Member, Lista Formation, Siri Canyon, Stavanger Platform Area, Denmark | | Sandstone | | Glauconite | | Deep marine | | Hamberg et al. (2005) | |
| 105 | Schmitz et al. (2004) | Paleocene/ Zumaya and Ermua Section, Basque Basin, Spain | | Grey Limestone with glauconite at the top | | Glauconite | | Middle to lower bathyal: Shallow marine | | Schmitz et al. (2004) | |
| 106 | Dypvik et al. (2011) | Paleocene/ Frysjaodden Formation, Norway | | Highly bioturbated sandstone | | Glauconite | | Submarine shelf-related sand ridge: Deep marine | | Dypvik et al. (2011) | |
| 107 | Ferrow et al. (2011) | Paleocene/ Conway Formation, New Zealand | | Sandstone | | Glauconite | | Shallow marine | | Ferrow et al. (2011) | |
| 108 | Hines et al. (2013) | Paleocene/ Awhea Formation, New Zealand | | Glauconitic sandstone | | Glauconite | | Turbidite sequence formed in a sub-marine fan: Deep marine | | Hines et al. (2013) | |
| Paleocene/ Mungaroa Limestone, New Zealand | | Glauconitic sandstone | | Glauconite | | Distal part of a fan margin: Deep marine | | Hines et al (2013) | |
| 109 | Garnit et al. (2017) | Paleocene/ Chouabine Formation, Metlaoui Group, Tunisia | | Glauconite associated with phophorite | | Glauconite | | Open marine condition | | Restricted marine condition in Eastern Basin and Gafsa-Metlaoui Basin inhibited glauconite formation and favoured phosphorite deposit  Open ocean condition in Northern Basin favoured upwelling related phosphorite formation with abundant glauconite | |
| 110 | Messadi et al. (2016) | Paleocene/ Thelja Formation, Southern Tunisia | | Glauconite associated with phophorite | | Glauconite | | Shallow marine intertidal deposits | | Glauconites are associated with phosphates | |
| 111 | Steurbaut et al. (2000) | Paleocene/ Aïn Settara marls, El Haria Formation, Tunisia | | Marl | | Glauconite | | Shallow marine | |  | |
| 112 | Speijer and Schmitz (1998) | Paleocene/ Dhakla Formation, Egypt | | Conglomeratic and Glauconitic marl | | Glauconite | | Paleodepth varies at ̴200m | |  | |
| 113 | Kechiched et al. (2018) | Paleocene/ Djebel el Kouif and Kef Essenoun deposit, Algeria | | Argillaceous Phosphorite | | Glauconite | | Shallow marine | | Associated with phosphorite deposits, glauconites are concentrated in the phosphorite rich bands | |
| 114 | Egger et al. (2009) | Paleocene/ Kroischbach Member, Kressenberg Formation, Austria | | Glauconite bearing quartz sandstone | | Glauconite | | Shelf deposit | | Coal bearing terrestrial deposits of the Paleogene Holzer Formation yielded palynoflora typical of *Nypa* mangrove forest, it is in the abyssal part of the section | |
| 115 | Schiøler et al. (2010) | Paleocene/ Tartan Formation, New Zealand | | Glauconitic mudstone | | Glauconite | | Marginal marine condition except in a layer of greenish grey sandstone which has more distal palynofacies proxies: Shallow marine | |  | |
| 116 | Franzosi et al. (2014) | Paleocene/ Salamanca Formation, Argentina | | Moderately sorted and weakly consolidated sand | | Glauconite | | Shallow marine | | Volcanic clasts and glass sherd are common within the sand that hosts glauconite | |
| 117 | Frieling et al. (2014) | Paleocene/ Lyulinvor Formation, Russia | | Sandstone | | Glauconite | | Shallow marine shoreface (from Rudmin et al., 2018) | | In the eastern part, a sapropelic unit overlies the glauconite, correlated to the global high stand of the ocean. In the Western part, much thicker glauconitic sandstone of older age is overlain by oolitic ironstone. | |
| 118 | Iakovleva and Kulkova (2003) | Paleocene/ Talitskaya Formation, West Siberia | | Glauconitic sand and siltstone | | Glauconite | | Shallow marine | |  | |
| 119 | Iakovleva and Kulkova (2003) | Paleocene/ Serovskaya Formation, West Siberia | | Glauconitic sandstone | | Glauconite | | Shallow marine | |  | |
| 120 | Polevaya et al. (1961) | Paleogene deposits of Abkhazia, Russia | | Sandstone, clayey sandstone and limestone | | Glauconite | | Shallow marine | |  | |
| Paleogene deposits of Turgay, Russia | | Sandstone, clayey sandstone and limestone | | Glauconite | | Shallow marine | |  | |
| Paleogene deposits of Volga River Area, Russia | | Sandstone, clayey sandstone and limestone | | Glauconite | | Shallow marine | |  | |
| 121 | Nahon et al. (1980) | Paleocene/ Eboinda region, Ivory Coast | | Shale | | Glauconite | | Shallow marine | | Diagenetic pyrite replaces many glauconite Glauconite layers alternate with black shale | |
| 122 | Téllez Duarte and López Martínez (2002) | Paleocene/ Sepultura Formation, Mexico | | Glauconitic sandstone with ovoid and vermiform pellets | | Glauconite | | Shallow marine | |  | |
| 123 | Kouwenhoven et al. (1997) | Paleocene/ El Kef section, El Haria Formation, Tunisia | | Siltstone | | Glauconite | | Middle to inner neritic setting | | At the basal part, close to K-Pg boundary, pyrite is major secondary form.  At the Upper part, towards the top of Paleocene, phosphorite appears | |
| 124 | Banerjee et al. (2020) | Review paper of Paleogene authigenic deposit (124 paper listed) | | | | Glauconite | | Shallow marine, deep marine | |  | |
| 130 | Choudhury et al. (2022) | Paleocene-Eocene Giral  Member of the Barmer Basin | | Green shale | | glauconite | | Marine marine | |  | |
| Celadonite | | | | | | | | | | | |
| 1 | Wise and Eugster (1964) | Oligocene, basalt, Washington | | Non-marine | | Celadonite | | ̶ | | Diagenesis | |
| 2 | Albright et al. (2008) | Oligocene; Augite andesitic tuff; John Day River, central Oregon | | Non-marine | | Celadonite | | Matrix and cement fill, replaces pumice fragments | | Diagenesis | |
| 3 | Leggo et al. (2001) | Oligocene; Zeolitized rhyodacitic to rhyolitic tuff; Rhodope Massif, Bulgaria | | Marine | | Celadonite | | Thin film around zeolitized glass shards | | Diagenesis | |
| 4 | Odin et al. (1988) | Eocene-Oligocene; Basalt; Monte Baldo, Southern Alps | | Marine | | Celadonite | | Veinlets, vesicle fill, | | Hydrothermal alteration | |
| 5 | Keeling et al. (2014) | Early Eocene (Sleaford Bay and mine) Early-Mid Miocene (Uley); Deeply weathered graphitic schist and gneiss; Uley graphite mine, Hutchison Group  Australia | | Marine | | Celadonite | | Replaces biotite and infills veinlets | | Alteration by saline meteoric water during local high sea level events | |
| 6 | Mattioli et al. (2016) | Late Paleocene – Late Oligocene; basalt, Lessini Mountains, Veneto Volcanic Province, Northern Italy | | Marine | | Celadonite | | Line vesicle | | Low-temperature seawater alteration | |
| 7 | Demant et al. (1998)) | Paleocene; basalt; Hole 917A, Leg 152; SE Greenland Margin | | Marine | | Celadonite | | Vesicle fill | | Hydrothermal fluid influenced by seawater | |
| 8 | Parra et al. (1985) | Tertiary; Basalt; Faeroe Island archipelago, NE Atlantic | | Non-marine | | Celadonite | | Pseudomorph after olivine, fill vesicles | | Deuteric or hydrothermal alteration | |
| 9 | Weisenberger and Selbekk (2009) | Late Tertiary to Early Quaternary; NAIP Flood basalt; Hvalfjo¨rdur area, Iceland | | Non-marine | | Celadonite | | Line vesicles and as groundmass | | Near-surface alteration | |
| 10 | Neuhoff et al (1999) | Late Tertiary to Early Quaternary; NAIP Flood basalt, Teigarhorn, Eastern Iceland | | Non-marine | | Celadonite | | Line vesicles and occur in groundmass | | Near-surface alteration | |
| 11 | Robert (2001) | Tertiary; Inter Basaltic Formation, Causeway Tholeiite Member, Northern Ireland | | Non-marine | | Celadonite | | Line vesicle | | Hydrothermal alteration | |
| 12 | Benjamin and Haymon (2006) | Quaternary; Oceanic basalt; Abyssal hill; EastPacific Rise | | Marine | | Celadonite | | Vein-fill, matrix/cement | | Hydrothermal alteration | |
| 13 | Renac et al. (2010) | Cenozoic; Basalt, Northern Kerguelen Archipelago, Kerguelen flood basalt | | Non-Marine | | Celadonite | | Veinlets, vesicle fill | | Meteoric-hydrothermal fluid alteration | |
| 14 | Shallaly et al. (2013) | Tertiary; basalt flow and crystal lithic tuff; SW Sina, Gulf of Suez rift, Egypt | | ̶ | | Celadonite | | Pseudomorph olivine, glassy matrix, amygdule and vesicles fill | | ̶ | |
| 15 | Canet et al. (2003) | Tertiary; oceanic basalt, Punta Mita, Western coast of Mexico | | Marine | | Celadonite | | Replaces augite, groundmass, line vug | | Low-temperature Hydrothermal alteration | |
| 16 | Pérez-Martínez et al. (2020) | Neogene–Quaternary; Andesitic rock; Continental arc, Trans-Mexican Volcanic Belt, Mexico | | Non-marine | | Celadonite | | Fill pores, as crusts or veinlets | | Hydrothermal alteration | |
| Other minerals | | | | | | | | | | | |
| 1 | Esteoule-Choux (1984) | Oligocene -Eocene Armorican Massif | |  | | Palygorskite, ferriferous illite, smectite | | marine, transitional marine and lacustrine | | Ions are derived after lateritic watering of different rocks | |
| 2 | Mansurbeg et al. (2008) | Paleocene Shetland-Faroes Basin | | sandstone | | kaolinite | | Deep marine | |  | |
| Mesozoic | | | | | | | | | | | |
| Glauconite | | | | | | | | | | | |
| 1 | Díez-Canseco et al. (2014) | | Cretaceous-Paleogene boundary/Lower Tremp Formation | | - | | Glauconite | | Tide dominated delta | | -  - |
| 2 | Witts et al. (2015) | | Maastrichtian/ López de Bertodano Formation | | siltstone, sandstone | | Glauconite | | middle to outer shelf | |  |
| 3 | Harris (1976); Harris and Bottino (1974); Legrand (1989) | | Maastrichtian/ Peedee Formation, N. Carolina | | sandstone, claystone | | Glauconite | | open marine shelf deposition | |  |
| 4 | Mishra and Sen (2001); Tewari et al. (2010) | | Maastrichtian/ Mahadek Formation, India | | sandstone | | Glauconite | | shallow marine | |  |
| 5 | Isaac et al. (1991) | | Campanian-Maastrichtian/ Tahora Formation | | sandstone | | Glauconite | | outer shelf | |  |
| 6 | Ahmad et al. (2014); Baioumy (2007); Glenn and Arthur (1990); Rifai and Shaaban (2007) | | Campanian-Maastrichtian/ Duwi Formation, Egypt | | sandstone | | Glauconite | | shallow marine | |  |
| 7 | Baioumy and Boulis (2012); Baioumy and Boulis, (2012); Khalifa, 1983) | | Campanian (Qusseir Formation) Cenomanian (Baharaiya Formation), Egypt | | shale, sandstone | | Glauconite | | inner shelf | | alteration of micas or clays |
| 8 | Amorosi (2011); Walker and Bergman (1993) | | Campanian/ Shannon sandstone | | sandstone | | Glauconite | | shoreface, shallow marine | |  |
| 9 | Banning et al. (2013) | | Santonian/ Haltern Formation | | sandstone | | Glauconite | | shallow marine (40–60m) | |  |
| 10 | Valanciene et al. (2014) | | Late Cretaceous-Palaeogene/Sventoji glauconite deposit, Lithuania | | - | | Glauconite | |  | |  |
| 11 | McConchie and Lewis (1980) | | Late Cretaceous-Palaeogene/South Island of New Zealand | | - | | Glauconite | |  | |  |
| 12 | Cas et al. (1989) | | Late Cretaceous-Palaeogene/ Waiareka-Deborah Formation | | volcaniclastic, mudstones sandstones | | Glauconite | | outer shelf | | alteration of basaltic glass |
| 13 | Morton and Long (1980) | | Upper Cretaceous/Dessau Formation,(Austin) Texas | | - | | Glauconite | |  | |  |
| 14 | Cimbálníková (1971) | | Upper Cretaceous/ Bohemia | | - | | Glauconite | |  | |  |
| 15 | Bitschene et al. (1992) | | Upper Cretaceous/South Kerguelen Plateu ODP leg 120 (Site 748) | | sandstones, siltstone, claystones, limestones | | Glauconite | | nearshore, inner-outer shelf | |  |
| 16 | Hower  (1961) | | Cretaceous/ Vidono Formation, Temblador Formation, Burditt marl, Colorado shale, Panoche Formation, Eutaw Formation, Ripley Formation, Prairie Bluff Formation | | sandstone, marl, chert | | Glauconite | |  | |  |
| 17 | Thompson and Hower (1975) | | Cretaceous/ Bornholm Island, Taft Hill Formation | | sandstone | | Glauconite | |  | |  |
| 18 | Ferrow et al. (2011) | | Cretaceous–Palaeocene/Conway Formation | | - | | Glauconite | |  | | Ferrow et al. (2011) |
| 19 | Salamon (2007) | | Cenomanian strata in the Wolbrom-Miechów area (southern Poland) | | sandstone | | Glauconite | |  | |  |
| 20 | Selby (2009) | | Cenomanian/ section at Pays de Caux, Normandy, France. | | - | | Glauconite | |  | |  |
| 21 | Martinec et al. (2010) | | Cenomanian/ Zamel Sandstone, Bohemia | | sandstone | | Glauconite | | shallow marine | |  |
| 22 | Amorosi et al. (2012) | | Cenomanian to Santonian/ Sierra de Guadarrama Formation | | mudstones | | Glauconite | |  | |  |
| 23 | El-Azabi and El-Araby (2007); Farouk (2015) | | Coniacian–Santonian/Matulla Formation | | shale | | Glauconite | | lagoon/shoreface | |  |
| 24 | Marshall-Neill and Ruffell (2004) | | Coniacian-Santonian/ Hibernian Greensand Formation | | sandstone | | Glauconite | | - | |  |
| 25 | Caracciolo et al. (2011) | | Turonian-Coniacian/ Peruc–Korycany Formation | | sandstone | | Glauconite | | shoreface | |  |
| 26 | Metwalli et al. (1987) | | Turonian/ Abu Qada Formation | | calcareous sandstone | | Glauconite | | shallow marine | | Metwalli et al. (1987) |
| 27 | Rea et al. (1990) | | Turonian to Santonian/ Indian Ocean, ODP leg 121 (Broken Ridge) | | tuffs | | Glauconite | | deep marine | |  |
| 28 | Anan (2014) | | Cenomanian-Turonian/ Raha Formation, Egypt | | sandstone | | Glauconite | | shallow marine | | Anan (2014) |
| 29 | Farouk (2015) | | Cenomanian/ Galala Formation Galala Plaetauex, Egypt | | sandstones, shale | | Glauconite | | shallow subtidal | |  |
| 30 | Wilmsen et al. (2005) | | Cenomanian/ Essen Greensands, Pläner Limestone, N. Germany | | sandstone, siltstone, limestone | | Glauconite | | near shore to mid-shelf (20-100m) | |  |
| 31 | Afanasjeva et al. (2013) | | Cenomanian/Melovatskaya Formation, SE Russia | | siltstones and sandstones | | Glauconite | | marine | |  |
| 32 | Banerjee et al. (2016) | | Aptian-Coniacian/Karai Formation | | shales | | Glauconite | | middle shelf | |  |
| 33 | Jiménez-Millán and Castro (2008) | | Hauterivian/Los Villares Formation | | sandstones | | Glauconite | | mid-shelf to slope | |  |
| 34 | Ostwald (1990) | | Cenomanian/ Groote Eylandt Mn-deposit, Australia | | sandstone, shale | | Glauconite | | outer shelf | |  |
| 35 | Retzler et al., 2013) | | Santonian-Campanian/ Menuha Formation | | organic-rich chalk | | Glauconite | | outer shelf | |  |
| 36 | Berra et al. (2007) | | Santonian of Neka Valley, Iran | | limestone | | Glauconite | | deep marine (200-500 m) | |  |
| 37 | Ghabeishavi et al. (2009) | | Santonian of Zagros SW Iran | | mudstone-wackestone | | Glauconite | | deep platform | |  |
| 38 | El Kadiri et al. (2005) | | Campanian-Maastrichtian/Tamezzakht succession, Morocco | | calcareous sandstones and shales | | Glauconite | | deep marine | |  |
| 39 | Courbe et al. (1981) | | Turonian/ Maine-et-Loire, France | | sandstone | | Glauconite | |  | |  |
| 40 | Chen (1980) | | Cretaceous/Yaojiazu Formation | | sandstones | | Glauconite | |  | |  |
| 41 | Baker et al. (1997) | | Cretaceous/Bonaparte and northern Carnarvon Basins, offshore Australia | | - | | Glauconite | |  | |  |
| 42 | Cao et al. (2010) | | Cretaceous/Unclassified, eastern Heilongjiang Province | | sandstones | | Glauconite | |  | |  |
| 43 | Robert (1973) | | Cenomanian/Cormes and Villers Formation, France | | sand | | Glauconite | |  | |  |
| 44 | Prélat et al. (2015) | | Cenomanian-Campanian/Svarte, Tryggvason, lower Kyrre Formation | | sandstones | | Glauconite | | -  - | | - |
| 45 | García-García et al. (2011) | | Barremian-Aptian/Cerrajón Formation | | - | | Glauconite | |  | |  |
| 46 | McRae and Lambert (1968) | | Aptian-Albian/ Lower Greensand Formation | | sandstone | | Glauconite | |  | |  |
| 47 | Fiet et al. (2006) | | Hauterivian-Albian/Vocontian basin (SE, France) | | - | | Glauconite | |  | |  |
| 48 | Li et al. (2012) | | Albian/ Gajie Formation | | sandstone | | Glauconite | | shelf | |  |
| 49 | Ireland et al. (1983) | | Albian/Glauconitic Sandstone or Blusky Formation, Canada | | sandstones | | Glauconite | |  | |  |
| 50 | Srasra and Trabelsi-Ayedi (2000) | | Barremian/Unclassified, Gafsa area , Tunisia | | sands | | Glauconite | |  | |  |
| 51 | Lorenzen et al. (2013) | | Aptian/Stratotype at Roquefort-La Bédoule, SE France | | limestone, marl, marly limestone | | Glauconite | |  | |  |
| 52 | Wortmann et al. (2004) | | Aptian/Rehbreingraben Formation | | turbidite sandstones | | Glauconite | |  | |  |
| 53 | Vijan et al. (2000) | | Albian/ Goru and Pariwar Formation | | - | | Glauconite | | -  - | | -  - |
| 54 | Reeder et al. (1972) | | Albian / Clearwater Formation | | sandstone | | Glauconite | |  | |  |
| 55 | Debrabant and Paquet (1975) | | Albian/ Sierra de Espufia, southern Spain | | - | | Glauconite | |  | |  |
| 56 | Guo (1991) | | Barremian/Kizilsu Group | | sandstone, greywacke | | Glauconite | |  | |  |
| 57 | El Albani et al. (2004, 2005) | | Berrisian of Aquitaine basin | | claystone, dolomitic mudstone | | Glauconite | | lagoon and estuary | |  |
| 58 | Meshri and Comer (1990) | | Albian/ Glauconite Sandstone, Canada | | sandstone | | Glauconite | | deltaic | |  |
| 59 | Wood and Hopkins (1992) | | Lower Cretaceous/Glauconitic member in Badger fields | | - | | Glauconite | |  | |  |
| 60 | Lu and Smith (1996); Smith et al. (1996) | | Lower Cretaceous/Jonava region, central Lithuania | | - | | Glauconite | | -  -  - | | -  - |
| 61 | Saha et al. (2010) | | Late Cretaceous/ Lameta Formation | | sandstone | | Glauconite | | subtidal, estuarine (<200m) | |  |
| 62 | Parize et al. (2005) | | Lower Cretaceous of Saint Laurent de l’Escarène, SE France | | sandstone and siltstone | | Glauconite | | shoreface | |  |
| 63 | Varol et al. (2000) | | Aptian, Cenomanian/ Kilimli, Sapca and Cemaller Formations | | sandstone and shale | | Glauconite | | shoreface to middle shelf | |  |
| 64 | Odin et al. (1977) | | Aptian, Albian and Cenomanian of Paris Basin | | sandstone | | Glauconite | | shallow marine | |  |
| 65 | Pasquini et al. (2004) | | Valanginian-Cenomanian of Nice Arc, France | | marl, sandstone | | Glauconite | | shallow marine | |  |
| 66 | Henderson (1998) | | Aptian-Turonian/ Darwin, Marligar, Wangarlu, Moonkinu Formations | | sandstones | | Glauconite | | shallow marine | |  |
| 67 | Bansal et al. (2018) | | Lameta Bed | | sandstone | | Glauconite | | shallow marine | |  |
| 68 | Amireh (1997); Amireh et al. (1998); Jarrar et al. (2000) | | Albian-Cenomanian/ Kurnub Group | | limestone, mudstone | | Glauconite | | shallow marine | |  |
| 69 | Carson and Crowley (1993); Garrison et al. (1987); Loveland (1981) | | Albian-Cenomanian/ Upper Greensand Formation and Beer Head Limestone | | sandstones, marl, limestone, chalk | | Glauconite | | shallow marine | |  |
| 70 | Yilmaz et al. (2012) | | Barremian of Sakarya Zone, Turkey | | limestones, shale | | Glauconite | | shallow marine | |  |
| 71 | Godet et al. (2010, 2011) | | Hauterivian-Barremian/ Urgonian platform, Switzerland | | limestones | | Glauconite | | shallow marine | |  |
| 72 | Orberger and Pagel (2000) | | Albian/Drill core MAR 501 Nimes fault - Cevennes fault SE France | | sandstone and siltstone | | Glauconite | | shallow marine | |  |
| 73 | Najarro et al. (2011) | | Aptian / Patrocinio Formation | | impure limestone | | Glauconite | | shallow marine | |  |
| 74 | Maher et al. (2004) | | Aptian–Albian / Carolinefjellet Formation | | sandstone | | Glauconite | | shallow marine | |  |
| 75 | Rathore et al. (1999) | | Albian/Ukra member, Bhuj Formation | | sandstone and shale | | Glauconite | | shallow marine | |  |
| 76 | Humez et al. (2013) | | Albian / Paris basin, France | | sandstone | | Glauconite | | - | |  |
| 77 | Vasković et al. (2010) | | Cretaceous/Belgrade and Carpatihan areas | | sandstone | | Glauconite | | shallow marine | |  |
| 78 | Ashuri et al. (2010); Sharafi et al. (2013) | | Albian–Cenomanian/ Aitamir Formation, Dargaz | | shale | | Glauconite | | shoreface and outer shelf | |  |
| 79 | Michalík et al. (2012) | | Albian/ Manín Formation | | limestone | | Glauconite | | shallow marine (50-60m) | |  |
| 80 | Gebhard (1982) | | Albian/Near Clars (Escragnolles, Var, SE-France) | | - | | Glauconite | | marine, condensed zone | |  |
| 81 | Barringer et al. (2010); Boyer et al. (1977); Montag and Seidemann (1981); Obasi et al. (2011); Olsson (1989) | | Cretaceous/ (Bass River Formation, Merchantville Formation, Marshalltown Formation, Navesink Formation, New Egypt Formation, Tinton Formation, Hornerstown Formation), New Jersey | | shale, sandtone | | Glauconite | | shoreface and shelf environment | |  |
| 82 | Rousset et al. (2004) | | Albian-Cenomanian / Dent de Marcoule,SE France | | siltstones and sandstones | | Glauconite | | shelf/ transgressive | |  |
| 83 | Dypvik et al. (1992) | | Berriasian/ Myklegardfjellet Bed, Spitsbergen, Norway | | silty clays and siltstones | | Glauconite | | marine shelf/ transgression | |  |
| 84 | Garzanti et al. (1989) | | Albian /Giumal Greensand Formation | | sandstone | | Glauconite | | shelf | |  |
| 85 | Delamette (1989) | | Albian/Aravis Formation | | sandstone | | Glauconite | | shelf (50-150m) | |  |
| 86 | Bréhéret (1991) | | Mid-Cretaceous/Vocontian Basin ,SE France | | black shales | | Glauconite | |  | |  |
| 87 | Roban and Melinte-Dobrinescu (2012) | | Aptian-Albian/Audia Formation, TarcăuNappe, Eastern Carpathians | | sandstone | | Glauconite | | deep marine turbidite sandstone | |  |
| 88 | Odin and Matter (1981) | | Jurassic and Upper Cretaceous/ Unclassified | | sandstone, shale, limestone | | Glauconite | | -  - | | -  - |
| 89 | Hower (1961); Thompson and Hower (1975) | | Jurassic (Sundance Formation) | | sandstone | | Glauconite | |  | |  |
| 90 | Thompson and Hower (1975) | | Jurassic(Weilheim- Germany) | | - | | Glauconite | |  | |  |
| 91 | Misik and Sucha (1994) | | Middle to Late Jurassic, Slovak republic | | limestone | | Glauconite | |  | |  |
| 92 | Baldermann et al. (2012) | | Jurassic/Oker, Germany | | - | | Glauconite | | shallow marine/lagoon | |  |
| 93 | Deconinck and Strasser (1987) | | Tithonian to Berriasian/Swiss and French Jura, the northern margin of the Tethys ocean. | | limestone and marl | | Glauconite | | hypersaline lake, estuary, subtidal, shallow-marine | |  |
| 94 | Gygi and Marchand (1982) | | Callovian- Oxfordian/ northern Switzerland | | - | | Glauconite | | inner-middle shelf(<100m) | |  |
| 95 | Jimenez-Millan (1998) | | Jurassic/(Zegri Formation, Gavilán Formation), Albian-Turonian (Represa Formation), Spain | | limestone | | Glauconite | | shelf to slope | |  |
| 96 | Hallam and Maynard (1987) | | Oxfordian -Valanginian/Chichali Formation | | sandstone | | Glauconite | | middle shelf | |  |
| 97 | Eder et al. (2007); Sánchez-Navas et al. (2008) | | Jurassic/Georgiev Formation | | claystone, siltstone and limestone | | Glauconite | | middle shelf | | Formed after alteration of micas or clays |
| 98 | Fürsich (1984) | | Late Jurassic/ Kap Leslie Formation | | sandstones, siltstones and mudstones | | Glauconite | | outer shelf | |  |
| 99 | Böhm (1986) | | Jurassic, Adnet Group, Austria | | limestone | | Glauconite | | deep marine | |  |
| 100 | Strasser et al. (2005) | | Oxfordian/Ariño section, Spain | | limestone | | Glauconite | | deep marine | |  |
| 101 | Saraev and Baturina (2008) | | Triassic/ Bergamak,Formation, Yar Formation, Voivov Formation | | sandstones and siltstones | | Glauconite | |  | |  |
| 102 | Kirkham (2003) | | Triassic (unclassified)/ Bristol area, SW England | | marly limestone | | Glauconite | | lacustrine | |  |
| 103 | Bozkaya and Yalçin (2013) | | Triassic/Yoncalı, Uludere and Uzungeçit Formations, Turkey | | limestones | | Glauconite | |  | |  |
| 104 | Xie (1991) | | Upper Triassic/Yanchang group | | feldspathic sandstone | | Glauconite | | lacustrine, deltaic | |  |
| 105 | El-ghali et al. (2009) | | Triassic/ GrèsáVoltzia and Coquillier Formation, France | | sandstones, limestone | | Glauconite | | fluvio-deltaic and shoreface | | alteration of micas |
| 106 | Smalley et al. (1987) | | Triassic Barentsøya Formation, Spitsbergen | | sandstone, black shales | | Glauconite | | marginal marine | | alteration of micas |
| 107 | Vecsei (1998) | | Triassic/ southwestern Germanic basin, Luxemburg | | limestones | | Glauconite | | tidal flat environment | | alteration of micas |
| 108 | Whiteside and Robinson (1983) | | Late Triassic/ Limestone at Tytherington Quarry | | sandstones and breccias | | Glauconite | | brackish environment(~40m) | |  |
| 109 | Parrish et al. (2001) | | Triassic/ Shublik Formation | | sandstone | | glauconite | | middle shelf | |  |
| Celadonite | | | | | | | | | | | |
| 1 | Machiels et al. (2014) | | Late Cretaceous, mafic pyroclastic rocks, Cayo arc Formation, Ecuador | | Marine | | Celadonite | | – | | Hydrothermal  alteration |
| 2 | Davies et al. (1989) | | Late Cretaceous; Oceanic basalt; Kerguelen Plateau LIP | | Marine | | Celadonite | | Replaces interstitial glass, plagioclase and pyroxene, fill vesicle, vein and amygdule | | Low-temperature seafloor alteration |
| 3 | Einaudi et al. (2000) | | Late Cretaceous; Oman ophiolite, Wadi Shaffan | | Marine | | Celadonite | | Fill vesicle and vein | | Hydrothermal alteration |
| 4 | Barzoi and Seclaman (2010) | | Late Cretaceous; pyroclastic rocks (intermediate); Rachitova–Stei unit, continental island arc, Hateg Basin, South Carpathians | | Marine (assumed) | | Celadonite | | Occur in lithic fragments and matrix, vesicle fill | | Diagenesis |
| 5 | Ottens et al. (2019) | | Late Cretaceous -Paleocene; Savda, Deccan volcanic province (DVP), India | | Non-marine | | Celadonite | | Vesicle fill | | Hydrothermal alteration |
| 6 | Lima et al. (2021) | | Late Cretaceous; Basalt; Brazilian Cerrado | | Non-marine | | Celadonite | | Amygdaloidal fill in basalt and as altering fragment in Luvisol | | ̶ |
| 7 | Clayton and Pearce (2000) | | Late Cretaceous; Oceanic basalt (LIP), ODP site 1001, Caribbean Sea | | Marine | | Celadonite | | Veins, vesicle fill | | Low- temperature seawater alteration |
| 8 | Gallahan and Duncan (1994); Gillis and Robinson (1990); Laureijs et al. (2021); Staudigel et al. (1986) | | Late Cretaceous; Troodos ophiolite, Cyprus | | Marine | | Celadonite | | Vein and lenses; coat grain boundary and line fractures | | Low-temperature hydrothermal alteration |
| 9 | Worthington et al. (2006) | | Mid-Cretaceous; ocean floor basalt, Osbourn Trough | | Marine | | Celadonite | | Replaces groundmass | | Hydrothermal alteration |
| 10 | Duraiswami et al. (2022) | | Early Cretaceous; LIP Basalt, Sylhet Traps | | – | | Celadonite | | Line and fill Vesicles | | – |
| 11 | Banerjee et al. (2004) | | Early Cretaceous; Leg 192; submarine basalts, Ontong Java Plateau | | Marine | | Celadonite | | Replaces olivine, fill vesicle and veins | | Low-temperature |
| 12 | de Moraes and Seer (2018); Duarte et al. (2009); Hartmann et al. (2012); Rosenstengel and Hartmann (2012) | | Early Cretaceous; Flood basalt; Paraná Continental Magmatic Province | | Non-marine | | Celadonite | | Replaces matrix | | Hydrothermal alteration (low-salinity fluids) |
| 13 | Schenato et al. (2003) | | Cretaceous, Basalt, Southern side of Paraná Continental Magmatic Province | | Non-marine | | Celadonite | | Fill vesicle and replaces Olivine | | Deuteric alteration |
| 14 | Zhang and Smith-Duque  (2014) | | Early Cretaceous (~100 Ma); oceanic basalt; IODP Sites (U1368) | | Marine | | Celadonite | | Fill vesicle and vein | | Hydrothermal alteration |
| 15 | Bach and Edwards (2003) | | Early Cretaceous; oceanic basalt; DSDP/ODP Hole 504arB; North Pacific Ocean | | Marine | | Celadonite | | Replace glass, olivine, plagioclase and pyroxene, fill fractures and voids | | Low- temperature seawater alteration |
| 16 | Alt and Honnorez (1984); Scheidegger and Stakes (1980) | | Late Cretaceous; oceanic pillow lavas; Hole 417 and 418 | | Marine | | Celadonite | | Replaces groundmass and olivine, fill vein, vesicle and fracture | | Low- temperature seawater alteration with hydrothermally influence |
| 17 | Delacour and Guillaume (2013); Sager et al. (2016) | | Jurassic; volcaniclastic, (typically hyaloclastite) and basaltic rocks, Shatsky Rise oceanic plateau | | Marine | | Celadonite | | Alteration halos, vesicle fill | | Low-temperature seawater derived fluid |
| 18 | Kuzmichev (2009); Kuzmichev and Lebedev (2008) | | Middle Jurassic to Early Cretaceous; interpillow hyaloclastite; remnant ocean basin, Amerasia basin | | Marine | | Celadonite | | ̶ | | Hydrothermal alteration |
| 19 | Lepore et al. (2017) | | Jurassic; Metachert, ophiolitic sequence, Cerchiara mine, Eastern Liguria, Italy | | Marine | | Celadonite | | Forms thin and extremely elongated lamellae in radial aggregates | | Submarine hydrothermal vents (strongly oxidizing condition) |
| 20 | Gradstein and Ludden (1992) | | Jurassic; Oceanic pillow basalt; Sites 765 and 766 Leg 123 | | Marine | | Celadonite | | Vein | | Low-temperature seawater alteration |
| 21 | Alt et al. (1992); Alt and Teagle (2003); Shau and Peacor (1992) | | Middle Jurassic; Basalt; Site 801, Leg 129, oceanic basement, Western Pacific | | Marine | | Celadonite | | line veins, replaces olivine, volcanic glass, fill vesicles and as cement | | Low- temperature hydrothermal alteration (<20°C) |
| 22 | Nieto et al. (2021) | | Early Jurassic; Pillow basalt; Subbetic, Betic Cordillera, southern Spain | | Submarine | | Celadonite | | Void fills in between pillow lava bodies | | Microbial mediated mineral formation with hydrothermal input |
| 23 | Weiszburg and Tóth (2004) | | Early Jurassic; Úrkút Manganese Ore Formation (Shale), Transdanubian Central range, Hungary | | Marine | | Celadonite | | Euhedral laths | | Primary precipitation (Intrashelf basin of restricted circulation) |
| 24 | De Wet and Hubert (1989) | | Middle Triassic to Early Jurassic; Carbonate; Fundy Group, Nova Scotia, Canada | | Non-marine (Alkaline Lake) | | Celadonite | | Late cements | | Hydrothermal spring |
| 25 | Baker (1997) | | Early Triassic; sandstone, Rewan Group, Southwestern flank of Bowen Basin | | Marine | | Celadonite | | Replaces phenocrysts and forms fracture and vesicle fill | | Detrital |
| 26 | Boles and Coombs (1975); Li et al. (1997) | | Early Triassic; Altered crystal-vitric tuff (rhyolitic to andesitic), Murihiku Supergroup, Hokonui Hills, New Zealand | | Marine | | Celadonite | | Fills microvesicles and partially replaces pumiceous glass shards | | Diagenesis and very low-grade metamorphism |
| 27 | Pe-Piper (1983, 1985) | | Triassic; mafic to intermediate, extension related volcanism, western Greece | | Marine | | Celadonite | | Replaces pyroxene, olivine, plagioclase, phlogopite and groundmass | | Burial diagenesis |
| 28 | Katranidou et al. (2017) | | Triassic; Altered Pillow lavas, Lamia area, Central Greece | | Marine | | Celadonite | | Interpillow greenish material | | Low-temperature alteration? |
| 29 | Campbell (1984); Maurizot et al. (2020) | | Late Permian –Middle Triassic, felsic–intermediate composition arc derived volcanic and volcaniclastics, Baie de Téremba Group | | Marine | | Celadonite | | Green clast | | Hydrothermal alteration |
| 30 | Pękala et al. (2003) | | Late Permian to middle Jurassic; Trachy basalt; extensional, intracontinental setting, Polish Rotliegend basin | | Non-marine | | Celadonite | | Replaces mafic phase and groundmass, fill amygdule | | Hydrothermal alteration |
| Other minerals | | | | | | | | | | | |
| 1 | Hornibrook and Longstaffe (1996) | | Early Cretaceous Clearwater Formation, Alberta, Canada | | sandstone (oil sand) | | berthierine, odinite minor chamosite and smectite, illite, kaolinite | | delta/  estuarine | |  |
| 2 | Virolle et al. (2022) | | Early Cretaceous Wealden Group, Paris Basin, France | | Sandstone | | Berthierine | |  | |  |
|
| 3 | Leite et al. (2020) | | Early Cretaceous Piçarras and Itapema formations , Santos basin, SE Brazil | | (hybrid rock) | | Stevensite | | lacustrine | |  |
| 4 | Donaldson et al. (1999) | | Early Cretaceous Bad Heart Formation, Western Canada | | Oolitic ironstone | | berthierine | | shallow marine | |  |
|
| 5 | Netto et al. (2022) | | Early Cretaceous Barra Velha Formation, Santos basin, Brazil | | carbonate | | Stevensite, saponite | | lacustrine | |  |
| 6 | Afify et al. (2015, 2018) | | Early Cretaceous-Eocene Bahariya Formation, Egypt | | Ironstone | | glauconite, smectite, illite-smectite, kaolinite, nontronite | | fluvial, transitional, shallow marine | |  |
|
| 7 | Virolle et al. (2022) | | Early Cretaceous Wealden Group of the Paris Basin | | sandstone | | berthierine, kaolinite, smectite | | most distal (offshore) to the most proximal (alluvial plain) e | |  |
|
| 8 | Mørk et al. (2003) | | Early Cretaceous-Triassic Tilje, Tofte, Ile, Garn, Melke, Spekk formations, Norwegian Sea | | mudstone | | Kaolinite,illite | | Shallow to open marine | |  |
| 9 | Armelenti et al. (2016) | | Early Cretaceous Lagoa Feia Group, Campos Basin, Brazil | | Carbonate rock | | stevensite | | shallow, alkaline lacustrine environments | | Stevensite occur as ooids, peloids |
| 10 | Hallam and Maynard (1987) | | Early Cretaceous - Late Jurassic Chichali Formation, Pakisthan | | Sandstone-siltstone | | glauconite, kaolinite | |  | |  |
|
| 11 | Sarki Yandoka and Kwaya (2020) | | Cretaceous Sekuliye Formation Sediments, Yola Sub-basin, Northern Benue Trough, Nigeria | | Sandstone-shale | | Kaolinite, illite, glauconite | | Continental shelf or open marine shore | |  |
| 12 | Jiménez-Millán and Castro (2008) | | Cretaceous Los Villares Formation, eastern Betic Cordillera | | calcareous mudrock | | berthierine, glauconite  (cretaceous) | | distal, hemipelagic ramp | | condensation in a general transgressive context |
| 13 | Chan (1992) | | Cretaceous Sedo-Neslen Formation,Utah | | Oolitic ironstone | | berthierine | | marginal marine to backshore | |  |
|
| 14 | Thomson et al. (2011) | | Cretaceous Arctic Red Formation | | Pisoidal ironstone | | chamosite, rarely glauconite | | offshore marine sedimentation in deep foreland basin | |  |
|
| 15 | El-Azabi and El-Araby (2007) | | Late Cretaceous Matulla Formation, Gulf of Suez, Egypt | | Oolitic ironstone | | glauconite, chamosite | | nearshore, restricted lagoon | |  |
|
| 16 | Mücke et al. (1999) | | Late Cretaceous Agbaja Ironstone Formation,Nupe Basin, Nigeria | | Oolitic ironstone | | kaolinite | | marginal marine low salinity condition | |  |
|
| 17 | Bhattacharyya (1989) | | Late Cretaceous Nubia Formation, Egypt | | Oolitic ironstone | | Kaolinite, berthierine | | shallow marine, subtidal mudflat | |  |
|
| 18 | Okoro and Igwe (2018) | | Late Cretaceous Nkporo Formation,southern Anambra Basin, Nigeria | | Oolitic ironstone | | chamosite | |  | |  |
|
| 19 | Mücke (2000) | | Late Cretaceous Agbaja Ironstone Formation,Nupe Basin, Nigeria;Shendi; Nubian Formation,Wadi Halfa, Sudan; Wadi Kalabscha, Egypt; Bida sandstone series, Bida;Sokoto and Potiskum | | Oolitic ironstone | | Kaolinite | |  | |  |
| Timsha Formation,Aswan,Egypt and Okigwe, Nigeria | | Oolitic ironstone | | chamosite | | nearshore, marginal marine, low salinity | |  |
| 20 | Rudmin et al. (2019, 2020, 2022) | | Cretaceous-Eocene Bakchar, Kolpashevo and Narym ironstone Formation, west Siberia | | Oolitic ironstone | | chamosite, glauconite, illite, berthierine | | shallow marine shoreface deposit | | Fe-rich fluid flux or hydrothermal fluid related to warming events |
| 21 | Rudmin et al. (2017) | | Late Cretaceous -Paleocene Bakchar iron ore | | Sandstone, shale, oolitic ironstone | | glauconite | | marine | |  |
| 22 | Velde et al. (1974) | | Cretaceous Mauretanian, Massyliau and Ultra-Tellian series, NE Algeria | | sandstone | | berthierine | | shallow marine | |  |
|
| 23 | Rivas-Sanchez et al. (2006) | | Cretaceous Pena Colorada ˜ magnetite-bearing ore deposit, Mexico | | berthierine in stratified ore body and chamosite present as stockwork type/vein in breccia | | Berthierine and chamosite | | chamosite-hydrothermal, berthierine-hydrothermal SEDEX | |  |
|
| 24 | Šegvić et al. (2020) | | Cretaceous Gamba Formation, Gabon Basin, Western Africa | | sandstone | | odinite,interstratified odinite-chlorite (O-C),  and to a lesser extent, illite-chlorite-smectite (I-C-S) and illite-smectite | | fluvio-lacustrine deltaic environment | | occur as grain coating and pore filing phases showing honeycomb texture formed from aluminosilicates as a product of diagenesis |
| 25 | Baioumy (2014) | | Cretaceous Malha Formation, Red Sea area, Egypt | | Sandstone, siltstone, limestone | | kaolinite | | Non-marine | |  |
| 26 | Yalçin and Bozkaya (2011) | | Cretaceous Western and Central Anatolian continental basins, especially Eskis¸ehir, Konya, Denizli, Ankara and Sivas, Turkey | | siliciclastic-clayey carbonate rocks | | Sepiolite, palygorskite, smectite, chlorite | | Shallow marine coastal lagoon, Saline– alkaline lake and/or playa | | Hydrothermal alteration and diagenetic neoformation |
| 27 | Post et al. (1997) | | Cretaceous Black Jack Mine, Florida Mountain, Idaho | | beidellites occur in veins along faults and others as alteration of orthoclase feldspar phenocrysts | | beidellite, illite, kaolinite | | veins, or thick blankets where ash beds have been deposited in near-surface environments | | associated rocks granodiorite, basalt, rhyolite, latite |
|
| 28 | Tosca and Wright (2018) | | Cretaceous Barra Velha Formation, Santos Basin, offshore Brazil | | carbonate | | talc | | lacustrine | |  |
| 29 | Herlinger et al. (2017); Lima and De Ros (2019) | | Cretaceous Itabapoana Formation, Northern Campo Basin , Offshore Brazil | | Limestone, dolostone | | Stevensite, talc | | lacustrine | |  |
| 30 | Yalçin and Bozkaya (2006) | | Cretaceous Yagmurluseki Formation, Sivas basin, Turkey | | Claystone, marl | | Talc, illite-smectite | | Transitional | |  |
| 31 | López et al. (2005) | | Cretaceous Escucha and Utrillas Formations, Oliete Basin, Spain | | sandstone | | Kaolinite, illite | | marine | |  |
| 32 | Kodama et al. (1988) | | Cretaceous Mont Mrgantic, Quebec | | gabbro | | saponite | |  | | Weathering of mafic rock |
| 33 | Bansal et al. (2019) | | Cretaceous Karai Shale Formation, Cauvery basin | | Sandstone, shale | | glauconite | | marine | | Oceanic anoxic event |
| 34 | Bansal et al. (2017) | | Cretaceous Ukra Hill Member, Kutch basin, India | | Sandstone, shale | | glauconite | | Mid shelf (MFS) | | Evolved nature of glauconite |
| 35 | Jafarzadeh et al. (2020) | | Cretaceous Aitamir Formation,  Kopet-Dagh Basin, northeastern Iran | | Sandstones, shale | | glauconite | | Shallow marine | | High K2O, related to Cretaceous global warming |
| 36 | Taylor et al. (2002) | | Cretaceous Paddy Member, Peace River Formation,  Alberta, Canada | | Oolitic ironstone | | berthierine | | Estuarine | |  |
| 37 | Castlegate Sandstone, Mesaverde Group, Colorado | | Oolitic ironstone | | berthierine, kaolinite, rarely glauconite | | shallow marine | |  |
|
| 38 | Nicholas et al. (2006) | | Late Cretaceous- Paleogene Kilwa group, Tanzania | | limestone, silty-sand | | berthierine, illite, kaolinite | | mid to outer shelf | |  |
|
| 39 | Bansal et al, (2018) | | Late Cretaceous Lameta Formation, Narmada basin, India | | sandstone | | glauconite | | estuarine | | High K2O content |
| 40 | Banerjee et al. (2019) | | Campanian Duwi Formation, Abu Tartur  Plateau, Egypt | | Sandstone, shale | | glauconite | | Shallow marine | | High Mg content |
| 41 | Baldermann et al. (2017, 2022) | | Late Cretaceous Langenstein section, Halberstadt, HarzMountains, Germany | | Conglomerate, sandstone, marlstone, limestone | | Glauconite  Illite-smectite | | Fluvial to shallow marine | |  |
| 42 | Bansal et al. (2020) | | Late Cretaceous Bryozoan Limestone Formation, Bagh Group | | Plane laminated rudstone | | glauconite | | Shallow marine | | Evolve to highly evolve, related to greenhouse climate |
| 43 | Steinitz et al. (1995) | | Late Cretaceous - Early Jurassic-Ardon Formation, Israel | | shale | | kaolinite | | Marine shelf | | Detrital source influence kaolinite formation |
| 44 | Chenot et al. (2021) | | Late Cretaceous Gurpi formation, Zagros Basin | | Marl, limestone | | Chlorite-smectite, chlorite-vermiculite, kaolinite | |  | |  |
| 45 | Arostegi et al. (2011) | | Late Cretaceous-Paleocene Tremp-Graus basin (South Pyrenees, Spain | | Carbonate rock | | Palygorskite, kaolinite, smectite, illite | | carbonate tidal flats as sabkha | |  |
| 46 | Roy Choudhury et al. (2024) | | Maastrichtian Kallankurichchi Formation, Cauvery Basin, India | | limestone | | Berthierine | | Shallow marine | | Marked Transgression |
| 47 | Amorosi (1997) | | Review of glauconite from Cretaceous to Tertiary | | glauconite | | Fluvial, lacustrine, shallow marine to deep marine | |  | |  |
| 48 | Houten and Arthur (1989) | | Review of Phanerozoic oolitic ironstone | | | | Chamosite | | Shallow marine | |  |
|
| 49 | Wilson and Pittman (1977) | | Review of Mesozoic authigenic clay mineral | | | | Kaolinite, illite, smectite, mixed-layer illite/smectite | |  | | Pore lining. Pore-filling, Replacement and Fracture-filling |
| 50 | Searl (1994) | | Early Jurassic Broadford Beds, Scotland | | sandstone | | berthierine | | shallow marine | | hydrothermal |
|
| 51 | Chen et al. (2021) | | Early Jurassic Raasay Ironstone Formation, Hebrides Basin, UK | | Oolitic ironstone | | chamosite | | shallow marine | | Toarcian ocean anoxic event |
|
| 52 | Clement et al. (2020) | | Early Jurassic Ferguson Hill Member, Sunrise Formation, west-central Nevada, USA | | Oolitic ironstone | | Chamosite / berthierine | | shallow carbonate ramp | | formed condensed section within TST |
|
| 53 | Howard (1985); Macquaker et al. (1996) | | Early Jurassic Cleveland Ironstone Formation, NE Yorkshine | | Oolitic ironstone | | chamosite, berthierine | |  | |  |
|
| 54 | Myers (1989) | | Early Jurassic Cleveland Ironstone Formation, NE England | | Oolitic ironstone | | Chamosite | |  | | enriched in Al, Th and depleted in K, Si |
|
| 55 | Polgári et al. (2010) | | Early Jurassic Transdanubian Range, Úrkút basin, Hungary | | chert-ironstone | | celadonite, glauconite | | submarine environment below photic zone | |  |
|
| 56 | Young (1994) | | Early Jurassic Blea Wyke Sandstone Formation, UK | | Oolitic ironstone | | berthierine | |  | | condensed section |
|
| 57 | Ehrenberg et al. (1993) | | Mid Jurassic Garn Formation of Haltenbanken, Norwegian | | sandstone | | kaolinite | | near-shore marine and fluvial , fan delta | |  |
| 58 | Burkhalter (1995) | | Mid Jurassic Central & Northern Jura Mountain, Switzerland | | Oolitic ironstone | | chamosite | | Weakly agitated and episodic storm environment | |  |
|
| 59 | Kozłowska and Maliszewska (2015) | | Jurassic Holy Cross Mountains, Poland | | clayey siderites, sideritic sand stones | | berthierine, kaolinite | | shoreface and deltaic environ ments | |  |
| 60 | Knox (1970) | | Mid Jurassic Winter Gill ironstone, Yorkshine, England | | Oolitic ironstone | | chamosite | |  | | condensed sequence |
|
| 61 | Macquaker et al. (1996) | | Jurassic Dunlin Formation, Onshore, UK | | Oolitic ironstone | | Glaucony, berthierine, chamosite | | Shallow marine | | MFS |
|
| 62 | Powell and Rathbone (1983) | | Mid Jurassic Eller Beck Formation, Yorkshire basin | | Oolitic ironstone | | chamosite | | marine | | Related to transgression |
| 63 | Préat et al. (2000) | | Mid Jurassic Bayeux Formation, France | | Oolitic ironstone | | glauconite | | marine ramp succession, deep marine | | condensed section |
|
| 64 | Williams (2002) | | Mid Jurassic Hackness Rock Member, NE England | | sandy limestone | | berthierine | | Shallow-marine | | condensed section |
|
| 65 | Rahiminejad and Zand-Moghadam (2018) | | Jurassic Badamu Formation, SE Central Iran | | Oolitic ironstone | | chamosite | | shoreface zone, shallow marine | | iron derived from lateritic weathering of laterite-bauxite |
|
| 66 | Ramajo and Aurell (2008) | | Jurassic N Iberian Basin, Spain | | Oolitic ironstone | | glauconite | | carbonate platform | |  |
|
| 67 | Talbot (1974) | | Late Jurassic Westbury Ironstone, England | | Oolitic ironstone, Iron rich quartz sand | | chamosite | | nearshore subtidal | | Alteration of Fe rich sedimentary rock |
|
| 68 | Taylor and Curtis (1995) | | Jurassic Pecten Ironstone, Frodingham ironstone, Lias group, UK | | Oolitic ironstone | | berthierine, minor glauconite | | Oxygenated shallow and high energy depositional condition | |  |
|
| 69 | Bansal et al. (2021) | | Jurassic Jhumara Formation,Kutch Basin | | Oolitic ironstone | | chamosite | | littoral setting with high- energy condition | |  |
|
| 70 | Yapp (1998) | | Jurassic Israel; Lorraine, France; northwest Switzerland; northwestern Alberta, Canada | | Oolitic ironstone | | kaolinite | |  | |  |
|
| 71 | Ryan and Hillier (2002) | | Jurassic Sundance Formation, Wyoming | | sandstone | | Berthierine / chamosite, glauconite, smectite, kaolinite, illite | | shallow marine | |  |
|
| 72 | Bettison-Varga and Mackinnon (1997); Bettison‐Varga et al. (1991) | | Jurassic Point Sal ophiolite, central California | | Altered basalt | | Chlorite-smectite | | marine | | Submarine hydrothermal alteration |
| 73 | April (1981); Vergo and April (1982) | | Jurassic East Berlin Formation, Connecticut Valley | | Gray mudstone | | Chlorite-smectite | | lacustrine | | alkaline, magnesium-rich pore waters leads formation of mixed layer clay |
| 74 | Jadoul et al. (1998) | | Late Triassic Zhamure Formation, Ferruginous Oolitic Formation, Tibet | | Oolitic ironstone | | chamosite | | subtidal ramp, offshore | | MFS marked by Callovian FOF |
|
| 75 | Iijima and Matsumoto (1982) | | Late Triassic Ishikari Group, Kokawa Group, Saragai Group,Ohmine Coal-bearing Formation,Japan | | carbonaceous, claystones and siltstones of the coal measures | | berthierine, chamosite  (Triassic) | | freshwater environment | |  |
| 76 | Damyanov and Vassileva (2001) | | Mid Triassic Kremikovtsi sedimentary exhalative siderite iron formation, Western Balkan, Bulgaria | | limestone | | berthierine, chamosite, illite-smectite, kaolinite | | marine | | Hydrothermal-epigenetic phyllosilicates |
|
| 77 | Chowns and Ashley (2018) | | Phanerozoic ironstone review | | Ironstone | | berthierine, chamosite | | shallow shelf environments | |  |
|
| 78 | Maynard (1986) | | Review of phanerozoic oolitic ironstone | | | | berthierine, chamosite | |  | |  |
|
| 79 | Camprubí and Canet (2009) | | Pena Colorada magnetite-bearing ore deposit, Mexico | | sandstone | | berthierine, chamosite | | marine | | SEDEX type deposit |
|
| 80 | Garzanti et al. (1989) | | Mesozoic Zanskar, India | | Iron oolite | | Stilpnomelane, chamosite, glauconite | | marine | | glauconite is replaced by stilpnomelane |
| 81 | Perri et al. (2008) | | Mesozoic Longobucco Group, Sila Unit, North Calabria | | Mudstone, sandstone | | Kaolinite, illite, chlorite | | Shallow marine to deep marine | | Source of K+ is hydrothermal |

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| Paleozoic |
| Glauconite |

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| 1 | Bozkaya et al. (2011) | Paleozoic-Triassic Ç1ğl1 Group, Hazro area | Sandy limestone, sandstone, dolomitic marl | Glauconite | Shallow marine (shelf), medium shelf and deep water |  |
| 2 | Cairncross et al. (1990) | Permian/ Witbank Coalfield, South Africa | mudstone and siltstone | Glauconite | shallow marine |  |
| 3 | Ketzer et al. (2003) | Permian/ Rio Bonito Formation | - | Glauconite | shoreface |  |
| 4 | Godek and Beauchamp (2011) | Permian/ Wordian-Capitanian (Trold Fiord), Sverdrup Basin | sandstone | Glauconite | inner-outer shelf |  |
| 5 | Reid et al. (2007) | Permian/ Upper Raanes and Great Bear Cape Formations | limestone, sandstone and siltstone | Glauconite | inner to outer ramp (<100m) |  |
| 6 | Dustira et al. (2013) | Permian/ KappStarostin Formation | sandstone | Glauconite | outer shelf |  |
| 7 | Morton and Long (1980) | Carboniferous/ Barnett Formation, Marble Falls Formation, Llano region, central Texas | shale, limestone | Glauconite | Deep water (Barnett Formation)  Shallow water (Marble Falls Formation)  Loucks and Ruppel (2007) | -  - |
| 8 | Hower (1961) | Pennsylvanian/ Morrow Formation | sandy shale | Glauconite | Marine  Cather et al. (2021) |  |
| 9 | Thompson and Hower (1975) | Carboniferous/ Canadian Arctic Loc.#3 | sandstones, shales | Glauconite |  |  |
| 10 | Wang et al. (2011) | Late Carboniferous-Early Permian /Amushan Formation | limestone | Glauconite | Marine  Yin et al. (2016) |  |
| 11 | Eickmann et al. (2009) | Devonian/ pillow basalts of Variscanorogens, Germany | - | Glauconite, berthierine, chamosite |  |  |
| 12 | Engalychev and Panova (2011) | Devonian Arukula Formation, Estonia | sandstone | Glauconite | -  -  - | -  - |
| 13 | Morton and Long (1980) | Devonian/ Stribling Formation, Houy Formation | shale and limestones | Glauconite |  |  |
| 14 | Ball (1941)  Grant et al. (1984) | Silurian/ Brassfield Formation | limestone | Glauconite | Marine  Ettensohn et al. (2013) |  |
| 15 | Thompson and Hower (1975)  Ershova (2008) | Ordovician/ Latorpian Regional Stage | limestone, sandstone | Glauconite | deep-water, fan-delta below storm wave base  Novack-Gottshall and Miller (2003) |  |
| 16 | Egenhoff et al. (2010) | Early Ordovician/ Bjørkåsholmen Formation, Norway and Sweden | limestone | Glauconite | Shallow marine | - |
| 17 | Viira et al. (2006) | Early Ordovician/Leetse Formation, Toila Formation | sandstone, limestone | Glauconite | shallow marine |  |
| 18 | Kim and Lee, (2000) | Early Ordovician/Dongjeom Formation | sandstone | Glauconite | peritidal, shallow marine(5-10m) | Kim and Lee, (2000) |
| 19 | Eriksson et al. (2012) | Middle Ordovician/ Darriwilian-‘Täljsten’ interval, Sweden | - | Glauconite | Marine (shelf) |  |
| 20 | Lee and Paik (1997) | Ordovician/Mungok Formation | limestones | Glauconite | shallow marine |  |
| 21 | Peters and Gaines (2012a) | Ordovician/ Au Train Formation | sandstones | Glauconite | shallow marine |  |
| 22 | Young (1992) | Review of Oolitic ironstone Ordovician Gondwana | | Glauconite |  | condensed section associated with MFS |
| 24 | Kaya and Friedman (1997) | Ordovician/ Antelope Valley Limestone, USA | lime mudstone | Glauconite | middle shelf |  |
| 25 | Odin and Matter (1981) | Ordovician of Estonia | sandstones, shales, limestones | Glauconite | -  - | -  - |
| 26 | Hower (1961) | Ordovician/ Tyner Formation, Seratopyge sandstone | limestone | Glauconite |  | Hower (1961) |
| 27 | Lumiste et al. (2021) | Ordovician Kallavere Formation, Baltic Paleobasin, Estonia | Glauconitic sandstone | Glauconite |  |  |
| 28 | Denny et al. (2017) | Ordovician- Cambrian Illinois Basin/USA | Glauconitic sandstone | Glauconite |  |  |
| 29 | Harding and Ekdale (2018) | Cambrian Epicontinetal sea /USA | Glauconitic sandstone | Glauconite | Offshore | Allochthonous glauconite with autochthonous burrows |
| 30 | Hower (1961) Thompson and Hower (1975) | Cambrian/ Tonto Formation, Mt. Whyte Formation, GrosVentre Formation, Murray Shale | sandstone, shale | Glauconite |  |  |
| 31 | Środoń et al. (2023) Ivanovskaya et al. (2023) | Ediacaran-Cambrian basins, Baltica | Glauconitic sandstone | Glauconite |  |  |
| 32 | Ball (1941)  Grant et al. (1984)  Hower (1961) | Upper Cambrian/ Bonneterre Formation, Davis Formation | limestone | Glauconite |  |  |
| 33 | Gomez and Astini (2015) | Early to Middle Cambrian/ Soldano and Juan Pobre Members, Argentine Precordillera | - | Glauconite | -  - | -  - |
| 34 | Baqri et al., (1994) | Cambrian/ Kussak Formation | shale and sandstone | Glauconite | Marine Ghazi et al. (2020) |  |
| 35 | Brasier (1980) | Cambrian/ Forteau Formation, Fucoid beds (NW Scotland), Bastion Formation, Lancara/Vegadeo Formation, Pedroche Formation, Carterat Grey Schist (Normandy), Comley Formation, Home Farm and Wood members (Nuneaton, Warwickshire) | shales, sandstones, limestones | Glauconite | Marine Skovsted et al. (2017) |  |
| 36 | Chafetz and Reid (2000)  Chafetz (2007) | Cambro-Ordovician/Riley Formation, Wilberns Formation | sandstones | Glauconite | shallow marine (<10m) |  |
| 37 | Odom (1976)  Rolf et al. (1977) | Cambrian/ Deadwood Formation,Franconia Formation | sandstone | Glauconite | near shore, shallow water environment |  |
| 38 | Berg-Madsen (1983) | Cambrian/ *Acrothelegranulata* Conglomerate of Sweden and *Exsulans* Limestone Formation | siltstone and limestone | Glauconite | shallow marine (<50 m) |  |
| 39 | Chen et al. (1988) | Cambrian and Ordovician of Xiaoyangqiao (Unclassified) | sandstone | Glauconite | shallow marine |  |
| 40 | Korkutis (1981) | Cambrian/Lontova Formation | sandstone | Glauconite | shallow marine |  |
| 41 | Long and Yip (2009) | Cambrian/Bradore Formation | sandstone | Glauconite | shallow shelf |  |
| 42 | Eoff (2014) | Cambrian/Lone Rock and Mazomanie Formation | sandstone | Glauconite | inner to middle shelf |  |
| 43 | Kordi et al. (2011) | Cambrian-Ordovician/SW Sinai | sandstone | Glauconite | subtidal |  |
| 43 | Longuépée and Cousineau (2006) | Cambrian/AnseMaranda Formation | sandstone | Glauconite | middle-outer shelf |  |
| 44 | Ivanovskaya and Geptner (2004) | Lower Cambrian/Virbalis Formation | sandstones, siltstones mudstones | Glauconite |  |  |
| 45 | Matheson et al. (2022) | Review of Paleozoic ironstone |  | Glauconite, chamosite |  |  |
| Celadonite | | | | | | |
| 1 | Furnes et al. (1982) | Middle Permian; Peralkaline, ultrapotassic syenite dykes, Sunnfjord, West Norway | ultrapotassic syenite | Celadonite | Marine | Overgrow K-feldspar, phlogopite, labuntsovite, Carbonate and eckermannite; Sm |
| 2 | Loveland and Bendelow (1984) | Lower Carboniferous; Nercwys soil on weathered basalt, Lake District, England; Skagerrak LIP | basalt | Celadonite | Marine? | Crystallization at a late stage of the basalt intrusion (hydrothermal alteration?) |
| 3 | Lumiste et al. (2021) Liivamägi et al. (2018) | Ordovician; Paleosol on Ediacaran flood basalts and basaltic and felsic tuff; Ediacaran Volyn-Brest volcanics, East European Craton | basalt | Aluminoceladonite | Non-marine | Paleozoic thermal diagenetic (palaeosol); low temperatures High-Mg environment |
| 4 | Środoń et al. (2013) | Silurian; Dolomitic section (Bentonite and carbonate rock); Dniester gorge, Podolia | Bentonite and carbonate rock | Aluminoceladonite | Non-marine | Diagenesis; Ediacaran hydrothermal alteration event |
| 5 | French et al. (1977) | Paleozoic; Andesite and Tuffisite; Western Ochils, Stirlingshire | Andesite and Tuffisite | Celadonite | Non-marine? | Low- temperature hydrothermal origin (K-rich hydrothermal; fluid) |
| 6 | Li et al. (2020) | Lower Carboniferous; forearc basalt; Diyanmiao ophiolite zone, central Inner Mongolia, North China | basalt | Celadonite | Marine | Replaces Olivine |
| 7 | Yun et al. (2016) | Late Carboniferous; Andesite, Santanghu Basin, Island arc magmatism | andesite | Celadonite | Possibly marine? | Hydrothermal alteration |
| Other minerals | | | | | | |

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| 1 | Hecht et al. (1999) | Early Paleozoic Gopfersgrun Fichtelgebirge, Germany | dolomite | talc | marine | Hydrothermal alteration of carbonate rock |
| 2 | Grenne and Slack (2019) | Early Paleozoic Volcanogenic massive sulfide (VMS) deposits, Løkken area Norway | Silicate iron formation | nontronite, greenalite, stilpnomelane | marine |  |
| 3 | Wang et al. (2022) | Late Permian Lopingian Xuanwei and Longtan Formations, eastern Yunnan, SW China | sandstone, coal seam | berthierine, chamosite, kaolinite, illite-smectite | marine-continental transitional facies |  |
| 4 | Yan et al. (2005) | Mid Permian Chihsia Formation of South China | sepiolite-bearing limestones | sepiolite | Marine, carbonate platform, shelfal sublittoral | high Mg concentrations in seawater |
| 5 | Rasmussen et al. (1998) | Permian Attwood Formation, Overlook gold deposit, Washington | Iron rich metasediments | Greenalite, minnesotaite, talc |  | Iron silicates formed after hydrothermal alteration of an oxide-rich volcanogenic sulfide |
| 6 | Dill et al. (2011) | Carboniferous to Permian | Basaltic andesite | saponite |  | Hydrothermal alteration |
| 7 | Savko et al. (2021) | Upper Carboniferous Melikhovo-Shchebekino deposit, Yakovlevo Mine | bauxite | berthierine | humid tropical climate |  |
| 8 | Canet et al. (2014) | Carboniferous -Devonian Mazatán deposits, NW Mexico | siltstone | berthierine | marine |  |
| 9 | Moore and Hughes (2000) | Carboniferous- Ordovician Neda Formation, Illinois, Usolive Hill Clay Bed, Kentucky | flint clay | berthierine, kaolinite |  |  |
| 10 | Abad et al. (2010) | Carboniferous- Late Devonian St. Mary’s Basin, Nova Scotia, Canada | sandstone | berthierine, kaolinite, chlorite-smectite mixed layer | fluviatile and lacustrine |  |
| 11 | Schultz (1966) | Lower Carboniferous Tynagh Iron Formatio,  Ireland | Cherty ironstone | minnesotaite | marine |  |
| 12 | Andreeva and Chatalov (2011) | Devonian well R-119 Kardam, Bulgaria | oolitic ironstone | berthierine, chamosite | shallow-water carbonate-dominated marine environment |  |
| 13 | Nimis et al. (2004) | Devonian Ivanovka deposit | Basalt | saponite |  |  |
| 14 | French et al. (2012) | Devonian Lungtan Formation, Meishan section, China | shale | berthierine, illite, chlorite, kaolinite, and mixed layer illite /smectite | hypersaline, lacustrine |  |
| 15 | Khalifa and Morad (2015) | Devonian Aouinet Ouenine Formation, Ghadamis Basin, western Libya | sandstone | kaolinite | shorefrace |  |
| 16 | Ali Khoudja et al. (2020) | Devonian Berkine Basin | Siegenian sandstones | berthierine, illite, kaolinite | tidal deposit |  |
| 17 | Abad et al. (2012) | Devonian-Silurian Arisaig Group, Nova Scotia, Canada | shale | illite–smectite and chlorite– smectite mixed-layers, kaolinite | Shallow marine | Low grade metamophism |
| 18 | Lu et al. (1994) | Silurian Rose Hill Formation, Central Appalachians, USA | sandstone | berthierine | marine | berthierine as pore filling, and intergrowth in cement |
| 19 | Bozkaya et al. (2011) | Silurian-Triassic Hazro area | Sandstone, dolostone | kaolinite, illite—smectite (I—S), illite and glauconite | shallow shelf environments within the passive continental marginal basins |  |
| 20 | Mameli et al. (2008) | Ordovician South European Variscan chain | Oolitic ironstone | Chamosite, stilpnomelane | marine |  |
| 21 | Wilson and Pittman (1977) | Review of Paleozoic authigenic clay mineral | | Kaolinite, illite, smectite, mixed-layer illite/smectite |  | Pore lining. Pore-filling, Replacement and Fracture-filling |
| 22 | Van Houten and Arthur (1989) | Review of Phanerozoic oolitic ironstone | | Chamosite | Shallow marine |  |
| 23 | Young and Taylor, (1989) | Phanerozoic oolitic ironstone review | | Berthierine, kaolinite, glauconite |  |  |
| 24 | Van Houten et al. (1984) | Phanerozoic oolitic ironstone review | | Chamosite, kaolinite, Iron oxide) | shallow sea ,intracratonic basin,foredeeps, low energy delta, lagoonal coast | condensed deposit formed at the end of Transgression |
| 25 | Velde (1989) | Phanerozoic ironstone review | | berthierine, berthierine/chamosite |  |  |
| 26 | Siehi and Thein (1989) | Phanerozoic oolitic ironstone review | | Berthierine / chamosite | shallow marine to deltaic, lacustrine, fluviatile and pedogenic |  |
| 27 | Mücke and Farshad (2005) | Phanerozoic ironstone review, 38 localities among 8 countries (U.K., Czech Republic, Germany, France, Luxembourg, Egypt, Nigeria, U.S.A. | ooidal ironstone | chamosite, kaolinite |  |  |
| 28 | Bhattacharyya and Kakimoto (1982) | Review of Phanerozoic oolitic ironstone | | chamosite, kaolinite |  |  |
| 29 | Callen (1984) | Review of phanerozoic Palygorskite-Sepiolite Group | | Palygorskite-Sepiolite | epicontinental and inland seas and lakes, open oceans | Early diagenesis or hydrothermal alteration |
| 30 | Cai et al. (2019) | Mid Permian Lengshuixi, Laohuangqian, and Erya, South China | limestone | talc, Mg-smectite, sepiolite | Deep marine carbonate ramp |  |
| Precambrian | | | | | | |
| Glauconite | | | | | | |
| 1 | Li Mingrong et al. (1996) | Neoproterozoic/Jingeryu Formation | - | Glauconite | - |  |
| 2 | Lo (1980) | Upper Proterozoic to Early Phaerozoic/ Pestrotsvel Formation | limestone | Glauconite | - |  |

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| 3 | Zaitseva et al. (2020) | Upper Riphean 100-800 Ma UK Formation, Russia | sandstone and siltstone | Glauconite | - |  |
| 4 | Ivanovskaya et al. (2014) Ivanovskaya et al. (2006) | Middle Riphean (1300-1100 Ma) Arymas Formation, Khaipakh Formation, Russia | sandstone, siltstone | Glauconite | - |  |
| 5 | Ivanovskaya et al. (2012) | Upper Proterozoic/ Anabar and Olenak uplifts, Siberia | sandstone | Glauconite | - |  |
| 6 | Anderson et al. (2013) | Neoproterozoic/ Bonahaven Formation, Scotland | sandstone | Glauconite | tidal flat |  |
| 7 | Misi et al. (2014) | Neoproterozoic / Rocinha Formation, Vazante Group, Brazil | sandstone | Glauconite | marine |  |
| 8 | Day et al. (2004) | Neoproterozoic/ Keele Formation, Mackenzie Mountains (NW Canada) | sandstone and siltstone | Glauconite | shallow marine |  |
| 9 | Bandopadhyay (2007) | Neoproterozoic/ Penganga Group, India | sandstone | Glauconite | shallow marine |  |
| 10 | Guimaraes et al. (2000) | Neoproterozoic/ Paranoa Group | sandstone | Glauconite | shallow marine |  |
| 11 | Sarkar et al. (2014) | Neoproterozoic/ Bhander Limestone, Vindhyan basin | impure limestone | Glauconite | shallow marine |  |
| 12 | Kale and Peshwa (1995) | Neo-Proterozoic/ Rabanpali Formation | sandstone | Glauconite | shallow marine |  |
| 13 | Mandal et al. (2022) | Neoproterozoic Lower Bhander Sandstone, Vindhyan Supergroup | sandstone | glauconite | shallow epeiric sea | Evolve to highly evolve |
| 14 | Dasgupta et al. (1990) | (Middle Proterozoic)/ Ramgiri Formation, Ramagundam Sandstone, (Palaeoproterozoic) Pandikunta Limestone | sandstone | Glauconite | intertidal shoal bar, estuarine, fluvial |  |
| 15 | Reynolds (1963) | Upper Proterozoic/ Northern Rocky Mountains | impure limestone | Glauconite | shallow marine |  |
| 16 | Gulbrandsen et al. (1963) | Mesoproterozoic Belt Series, Montana, USA | sandstone | Glauconite | shallow marine |  |
| 17 | Guimaraes et al. (2000) | Meso-Proterozoic/ Paranoa Group | sandstones | Glauconite | shallow marine |  |
| 18 | Rawlley (1994) | Mesoproterozoic/ Rewa Group | sandstone | Glauconite | shallow marine |  |
| 19 | Mandal et al. (2020) | Mesoproterozoic Lower Quartzite, Vindhyan Supergroup | sandstone | Glauconite | storm-influenced, shallow subtidal | Mg rich |
| 20 | Tang et al. (2017) | Mesoproterozoic Tieling Formation in North China | stromatolitic limestone with interbeded dolostone | Glauconite | Mid shelf to upper slope |  |
| 21 | Conrad et al. (2011) | Mesoproterozoic 1. Chanda Limestone, 2. Raipur Group, Chhattisgarh basin, 3. Chandarpur Group, 4. Paleoproteropzoic Somanpalli Group, India | sandstone | Glauconite | shallow marine |  |
| 22 | Xu (2010) | Paleoproterozoic/ Majiahe Formation | sandstone | Glauconite | shallow marine |  |
| 23 | Zhou et al. (2009) | Mesoproterozoic/ Tieling Formation China | impure limestone | Glauconite | subtidal, intertidal flat |  |
| 24 | Drits et al. (2010) | Paleoproterozoic/ Yusmastakh Formation, Anabar uplift | impure dolomite | Glauconite | shallow marine |  |
| 25 | Banerjee et al. (2008) | Paleoproterozoic/ Kheinjua Formation and Deoland Formation, Chitrakut Formation, Semri Group | sandstone | Glauconite | inner shelf |  |
| 26 | Bhattacharyya et al. (1986) | Paleoproterozoic/ Semri Formation | dolomite | Glauconite | shallow marine |  |
| 27 | Richards and Gee, (1985) | Paleoproterozoic/ Yelma Formation and Wandiwarra member of Chiall Formation | dolomite and sandstone | Glauconite | shallow marine |  |
| 28 | Banerjee et al. (2016) | Review of glauconite from Precambrian to Holocene | | | Lacustrine, lagoon,near shore, inner shelf, middle shelf, outer shelf, continental slope, basin plain |  |

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| Celadonite | | | | | | |
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| 1 | Kalsbeek and Jepsen (1984)  Upton et al. (2005) | Late Proterozoic; Metabasalt; Zig-Zag Dal continental flood basalt Formation, eastern North Greenland | basalt | Celadonite | Non-marine | Low-grade regional metamorphism |
| 2 | Sustavov et al. (2019) | Neoproterozoic; Chromitite (Brecciated zone); Southern Sarany chromium deposit, Urals | Chromitite | Celadonite | Non-marine | Hydrothermal process, Fill intergranular spaces and occur as cement and vein |
| 3 | Zi et al. (2019)  Pirajno et al. (2006) | Neoproterozoic; Keene tholeiitic basalt, large igneous province, Northwest Officer Basin, Australia | Basalt | Celadonite | Marine | Low- temperature hydrothermal activity at Sea floor; Interstitial space and amygdales fill, replaces pyroxene and/or olivine) |
| 4 | Li et al. (2019) | Mesoproterozoic; celadonite-bearing sandy conglomerate (volcano-sedimentary rock); Dagushi Formation, Xiong'er Group, China | celadonite-bearing sandy conglomerate | Celadonite | Non-marine | Fluvial and lacustrine facies |
| 5 | Vasyukova and Williams-Jones (2019) | Mid-Proterozoic; Large peralkaline Strange Lake pluton, pegmatite and granite | pegmatite and granite | Celadonite | Non-marine | Hydrothermal alteration; Replaces arfvedsonite in pegmatite |
| 6 | Savko (2006)  Savko et al. (2021) | Paleoproterozoic; Sub alkaline type BIF, Kursk magnetic anomaly (KMA), Russia | alkaline type BIF | Celadonite | Marine | Very low- temperature metamorphism; Occupy cleavage fractures and replaces tetraferribiotite, carbonate |
| 7 | Ramanaidou et al. (1996)  Ramanaidou (2009) | Proterozoic; Metamorphosed BIF, Minas Gerais, Brazil | BIF | Celadonite | Marine? | Hydrothermal alteration |
| 8 | Das et al. (2021) | Mesoarchean; Cr-bearing quartzite (volcaniclastic input); Singhbhum Craton, Ghutrigaon, India | Cr-bearing quartzite | Celadonite | Marine | Progressive metamorphism (greenschist facies); Lamellar appearance, oriented parallel to banding |
| Others | | | | | | |
| 1 | Kennedy et al. (2006) | Neoproterozoic claystone | claystone | Kaolinite, smectite, illite |  |  |
| 2 | Tosca et al. (2011) | Neoproterozoic Fifteenmile Group,Yukon and Akademikerbreen Group, Svalbard | Stromatolitic carbonate | talc | Carbonate platform margin | Occur as nodule and as primary porosity, associated with microbial influence |
| 3 | Noack et al. (1989) | Neoproterozoic Schisto-Calcaire Group, Congo | Occur as granules in siliceous matrix | talc | marine | direct precipitation of stevensite or sepiolite in shallow marine, alteration from the stevensite (or sepiolite) during diagenesis. |
| 4 | Huang et al. (2013)  Han et al. (2022) | Neoproterozoic Doushantuo Formation of the Yangtze Gorges area (YGA), China | Shale and shaly limestone | saponite | Restricted evaporitic lagoon |  |
| 5 | Wang et al. (2022) | review of proterozoic ironstone | | Berthierine / chamosite, kaolinite, glauconite ,illite | shallow marine redox condition |  |
| 6 | Ivanovskaya et al. (2017) | Upper Proterozoic Riphean TottaFormation, Olenek and Anabar uplifts (East Siberia), Srednii Peninsula (Murmansk coast) | sandstone | Glauconite - illite |  |  |
| Cambrian Rovno Horizon, Podolian Dniester area (Ukraine) | silty sandstone | berthierine |  |  |
| 7 | Peters and Gaines (2012a) | Heath Steele Belt, Bathurst Mining Camp | Iron formation | Stilpnomelane, greenalite |  | Hydrothermal sedimentation |
| 8 | Klein (1973) | Proterozoic Sokoman Formation, Labrador Trough | Precambrian iron formation | greenalite, stilpnomelane, and minnesotaite |  | Diagenetic origin, low grade metamorphism |
| 9 | Baker (1985) | Proterozoic Ösjöberg and Sirsjöberg iron-ore mines, Hjulsjö, W. Bergslagen, Sweden | Iron ore | greenalite, stilpnomelane, and minnesotaite |  |  |
| 10 | Ma et al. (2021) | Mesoproterozoic Xiamaling Formation, North China | siltstone | glauconite-berthierine | marine | green house condition and enhanced reverse weathering |
| 11 | Tang et al. (2017) | Mesoproterozoic Xiamaling Formation, North China | Sandstone, shale, siltstone | Glauconite, chamosite, berthierine | marine |  |
| 12 | Chen et al. (2002) | Paleoproterozoic Dashiqiao Formation, Liaohe Group, eastern Liaoning Province, China | Carbonate rock | talc | marine evaporation lagoon | hydrothermal alteration and metasomatic fluid are controlling factors |
| 13 | Mohanty and Mishra (2023) | Paleoproterozoic Chilpi Group, Bastar, India | Iron rich band | greenalite, chamosite, kaolinite, illite | shallow water depositional environment |  |
| 14 | Keeling et al. (2000) | Paleoproterozoic Gawler Craton, Uley Graphite Mine near Port Lincoln on southern Eyre Peninsula, South Australia, | weathered metamorphic rock | nontronite | low-temperature hydrothermal alteration of primary minerals, biotite, and amphibole | Nontronite is observed filling fracture and void spaces, and coating plagioclase grains |
| 15 | Pickard (2003) | Paleoproterozoic Dales Gorge Member, Western Australia | mudrock | Stilpnomelane, talc | Deep marine |  |
| 16 | Wang et al. (2015) | Paleoproterozoic Yuanjiacun banded iron formation (BIF), Lüliang area, North China Craton (NCC) | BIF | stilpnomelane | Shallow water high energy condition | Related with Great Oxfordian Event (GOE) |
| 17 | Pickard (2003) | Paleoproterozoic Kuruman and Griquatown Iron Formation, Northern Cape Province, South Africa | stilpnomelane-rich tuffaceous mudstone in BIF | Stilpnomelane | Shallow marine to delta |  |
| 18 | Lempart-Drozd et al. (2022) | Proterozoic Biwabik Iron Formation, Minnesota, USA | BIF | Minnesotaite, greenalite |  |  |
| 19 | Blake (1965) | Proterozoic Trommald iron-formation in the Cuyuna district, Minnesota | Iron Formation | stilpnomelane, minnesotaite |  | Low grade regional metamorphism |
| 20 | Klein (1973) | Precambrian Iron formation | BIF | greenalite, stilpnomelane, minnesotaite |  |  |
| 21 | Muhling and Rasmussen (2020) | Precambrian Joffre Member, Brockman Iron Formation | BIF | greenalite | deep-marine to shallow-water shelf | Related with Great oxidation event, submarine volcanic source |
| 22 | Bansal et al. (2020) | Precambrian Rabanpalli Formation, Bhima basin | sandstone | Glauconite,Chamosite | shallow shelf | High K2O |
| 23 | Fonteneau et al. (2019) | Precambrian Biwabik Iron Formation in Minnesota, U.S.A (GIF); Pilbara Region in Western Australia (BIF) | BIF | Minnesotaite, stilpnomelane and talc |  |  |
| 24 | Bekker et al. (2010) | Precambrian iron formation review | BIF | Stilpnomelane, greenalite, chamosite | marine |  |
| 25 | Floran and Papike (1978) | Precambrian Gunflint iron formation, Minnesota | Iron formation | Minnesotaite, stilpnomelane, greenalite | marine |  |
| 26 | Hassler et al. (2019; Haugaard et al. (2016); Krapež et al. (2003); Miyano (1982) | Neoarchean to PaleoproterozoicBrockman Iron Formation Hamersley Group Western Australia | stilpnomelane-rich tuffaceous mudstone in BIF | Stilpnomelane |  | hydrothermal sediments |
| 27 | Rasmussen et al. (2013) Klein (2005) | Archean-Paleopreoterozoic Brockman Iron Formation (Hamersley Group), Western Australia | BIF, chert, mudrock | Stilpnomelane, greenalite | marine |  |
| 28 | Rasmussen et al. (2021) | Early Precambrian Transvaal Supergroup/ South Africa | BIF | Greenalite | Carbonate platform |  |
| 29 | Woltz et al. (2023) | Review of Precambrian organic walled microfossil in shale | | Berthierine / chamosite, kaolinite, glauconite, illite | lacustrine, delta to shallow marine | fossil preservation |
| 30 | Konhauser et al. (2017) | Review of Late Archean-Paleoproterozoic Iron Formation | | | greenalite, minnesotaite, stilpnomelane, chamosite | additional review information available at Bekker et al. (2010) |

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