

OIL SHALE IN ISRAEL - ALGINITE TO ALGANITE

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The geological reserves of oil shale in Israel are very significant and form a great potential energy resource of some 300 billion tons. Oil shale sequences exist in some 15% of the country's area in more than 30 deposits / fields located in the shallow subsurface, most of them in synclinal structures. The average oil yield grade is 12 to 27 gallons per ton. Host rocks are carbonates (mostly chalks), silicates and phosphate - carbonate-enriched sediments.

Some interesting findings on Israeli oil shales are:

- Domestic oil shales are determined as marinites; the organic matter is considered to be of the kerogen II type. In a recent study alginite was found to be the major constituent of the maceral types.
- Exploitation of oil shale and associated underlying bituminous phosphate lead in places to the generation of "fires" that are evolved in mined environments and in stockpiles of overburden material having low content of organic material. It is believed that the spontaneous heating episodes are generated by anhydrite - gypsum exothermic transformation boosted by meteoric waters introduced during rainy periods.
- Partial degradation of the kerogen in oil shale exposures that are located in extreme climate conditions. Summer temperatures may reach the oil window (~600-1200), in which some types of kerogen will release hydrocarbons. NMR and Fischer Essay results are coping with these observations.
- A unique byproduct of Israeli oil shale combustion is Alganite®. It is an oil shale ash fractions that attained relatively high absorption capacity and find uses especially as cat litter (export), dairy barns and poultry (domestic).