

EDITOR'S PAGE

ABOUT TECHNICAL TERMS OF OIL SHALE AND SHALE OIL

Oil shale and shale oil terminology contains a lot of contradictions. Scientists and specialists worldwide have long debated about the use of proper terms but no harmonized terminology has been managed to establish as yet. Below new terms to replace the currently used “shale”, “shale oil” and “shale gases” will be proposed.

Oil shale (in German *Ölschiefer*) is a sedimentary rock rich in organic matter that can be industrially processed into oil. It is just one of the names of the rock. The alternative names in different languages refer to the burnability (combustibility) of the shale (in Estonian *põlevkivi*, in Russian *gorjutchii slanets*, in German *Brennschiefer*). Considering that the name of this rock is determined by the way of utilizing it for oil processing, it is more rational to call it oil shale.

The characteristic feature of oil shale is the presence of kerogen (organic matter) from which oil is obtained by thermal treatment in the absence of oxygen. Shale oil is the main product of oil shale thermal treatment or processing (sometimes also called retorting). The term “shale tar” for this product of oil shale processing has become obsolete. Utilization of oil shale is technically and economically feasible only if can at least 20% of its kerogen be converted into oil by thermal processing. If oil yield is less, one can but talk about some kind of low-kerogen rock and not true oil shale.

A number of rocks and sediments contain raw oil in their porous structure. The technical name of this oil is tight oil. Unfortunately, more often tight oil is called shale oil, which has caused a lot of confusion among researchers and specialists concerned and in the oil shale industry as a whole. In the oil shale industry the term “shale oil” has been used for many centuries. Earth materials containing oil are called oil-bearing rocks (oil-bearing sediments), which also include oil sands (tar sands). Therefore, the term “tight oil” should be used to describe this oil and the term “oil-bearing shale or rock” should be used to define these shales. Tight oil in these rocks and sediments is natural raw oil. Even if the oil is obtained from shale-like sediments by thermal treatment or heating (e.g. direct heating with steam in the case of oil sands), it is not shale oil.

Analogously, many rocks contain gases, e.g. coalbed methane, potash mine gas, phosphate rock radon, etc. The general name for these gases is tight gas. Nowadays interest is focused on the gas which is present in the

shale pores. This is a well-known shale gas, which is one of raw tight gases. Gaseous non-condensable products released upon oil shale thermal processing (retorting) should be called retorting gases and not shale gases.

Those interested can also see the following:

1. Urov, K., Sumberg, A. Characteristics of Oil Shales and Shale-Like Rocks of Known Deposits and Outcrops. Monograph. *Oil Shale*, 1999, **16**(3), 1–64.
2. Reinsalu, E. *Digital Mining Dictionary: English-Estonian, German, Finnish, Russian*. Tallinn University of Technology, 2014. <http://digi.lib.ttu.ee/i/?1529>
3. Reinsalu, E. 30 Years of the Journal Oil Shale. *Oil Shale*, 2014, **31**(4), 313–314.

Enno REINSALU

Professor Emeritus, Chartered Mining Engineer
Tallinn University of Technology

Indrek AARNA

Head of Department of Research and Development
Eesti Energia