

Text: Types of Coal

Read the text

Coal is a combustible sedimentary rock formed from the remains of ancient vegetation that accumulated in swampy environments millions of years ago. Over time, through the geological processes of heat and pressure, this plant material underwent physical and chemical changes in a process called coalification. The degree of coalification, also known as the coal's rank, determines its properties and quality. The main types of coal, in order of increasing rank, carbon content, and energy value, are: peat, lignite, sub-bituminous coal, bituminous coal, and anthracite.

Peat, although not technically coal, is the first stage in its formation. It is a soft, organic material consisting of partially decayed plant matter with high moisture content (up to 90%). Its carbon content is low (less than 60%), and it is rarely used as a fuel in its natural state due to its low heating value and high emissions. However, when dried, it can be used for domestic heating in some regions.

Lignite, or brown coal, is the lowest rank of true coal. It is brownish-black, has a crumbly texture, and still retains visible plant structures. Its moisture content is high (25-35%), and its carbon content ranges from 60-70%. Lignite has a relatively low heating value and is primarily used for electricity generation in power plants located near the mines to minimize transportation costs of this bulky fuel. It is also a source for producing synthetic natural gas.

Sub-bituminous coal is a dull black coal with a higher heating value than lignite. It contains 20-30% moisture and 70-80% carbon. This type of coal has a lower sulfur content than bituminous coal, which makes burning it somewhat cleaner. It is mainly used for electricity generation and industrial heat.

Bituminous coal, or soft coal, is the most abundant and widely used type of coal. It is dense, black, and often banded with layers of shiny and dull material. Its carbon content is high (77-87%), and it has a moisture content below 20%. Bituminous coal has a high heating value and is a primary fuel for electricity production and in the steel industry, where it is converted into coke for iron ore smelting in blast furnaces. It is also a key raw material in various chemical industries.

Anthracite, or hard coal, is the highest rank of coal. It is jet-black, has a brilliant metallic luster, and is very hard. It contains over 87% carbon and has a very low moisture content (less than 15%). Anthracite burns with a short, blue, smokeless flame and provides the highest heating value of all coal types. Due to its relative scarcity and high cost, its use is more specialized, often for residential and commercial space heating, water filtration, and in some metallurgical applications.

Vocabulary List: "Types of Coal"

1. Combustible [kəm'bləstəbl] – Горючий, воспламеняющийся.
2. Sedimentary rock [ˌsedɪ'mentri rɒk] – Осадочная порода.
3. Remains [rɪ'meɪnz] – Останки, остатки.
4. Ancient vegetation [ˈeɪnfənt ˌvedʒɪ'teɪʃn] – Древняя растительность.
5. To accumulate [ə'kju:mjəleɪt] – Накапливаться, скапливаться.
6. Swampy [ˈswɒmpi] – Болотистый, топкий.
7. Coalification [ˌkəʊlɪfɪ'keɪʃn] – Углефикация, процесс превращения в уголь.
8. Rank (of coal) [ræŋk] – Сорт, степень углефикации угля.
9. Carbon content [ˈkɑ:bən 'kɒntent] – Содержание углерода.
10. Energy value / Heating value [ˈenədʒi 'vælju:] / [ˈhi:tɪŋ 'vælju:] – Энергетическая ценность / Теплотворная способность.
11. Peat [pi:t] – Торф.
12. Lignite (Brown coal) [ˈlɪɡnaɪt] – Лигнит (бурый уголь).
13. Sub-bituminous coal [ˌsʌbbɪ'tju:mɪnəs kəʊl] – Суббитуминозный уголь.
14. Bituminous coal (Soft coal) [bɪ'tju:mɪnəs kəʊl] – Битуминозный уголь (каменный уголь).
15. Anthracite (Hard coal) [ˈænthrəsaɪt] – Антрацит.
16. Partially decayed [ˈpɑ:ʃəli dɪ'keɪd] – Частично разложившийся.
17. Moisture content [ˈmɔɪstʃə 'kɒntent] – Влажность, содержание влаги.
18. Heating value / Calorific value – Теплотворная способность / калорийность.
19. Emissions [ɪ'mɪʃnz] – Выбросы.
20. Crumbly texture [ˈkrʌmbli 'tekstʃə] – Рассыпчатая / рыхлая структура.
21. Electricity generation [ɪˌlek'trɪsəti ˌdʒenə'reɪʃn] – Производство электроэнергии.
22. Mined-mouth plant [ˈmaɪnd maʊθ plɑ:nt] – Пришахтная электростанция (расположенная у устья шахты).
23. Bulkiness [ˈbʌlkɪnəs] – Громоздкость, большой объём.
24. Sulfur content [ˈsʌlfə 'kɒntent] – Содержание серы.
25. Abundant [ə'bʌndənt] – Обильный, распространённый.
26. Banded [ˈbændɪd] – Полосатый, слоистый.
27. Coke [kəʊk] – Кокс.
28. Smelting [ˈsmeltɪŋ] – Плавка, выплавка.
29. Blast furnace [blɑ:st 'fʊ:zɪs] – Доменная печь.
30. Raw material [rɔ: mə'tɪəriəl] – Сырьё, исходный материал.
31. Metallic luster [mə'tælɪk 'lʌstə] – Металлический блеск.
32. Scarcity [ˈskeəsəti] – Редкость, дефицит.
33. Water filtration [ˈwɔ:tə fɪl'treɪʃn] – Фильтрация воды.
34. Metallurgical applications [ˌmetə'lɜ:dʒɪkl ˌæplɪ'keɪʃnz] – Металлургическое применение

Word Families & Collocations:

- To undergo changes – подвергаться изменениям.
- In order of increasing/decreasing... – в порядке возрастания/убывания...
- A primary fuel for... – основное топливо для...
- High/Low energy density – высокая/низкая энергетическая плотность.
- Specialized use – специализированное применение.
- Industrial heat – промышленное тепло.
- Residential heating – отопление жилых помещений.
- Commercial space heating – отопление коммерческих помещений.

Fill in the Informational Table: Types of Coal

Type / Characteristic	Peat (Pre-Coal)	Lignite (Brown Coal)	Sub-bituminous Coal	Bituminous Coal (Soft Coal)	Anthracite (Hard Coal)
Rank / Stage					
Appearance & Texture					
Moisture Content					
Carbon Content					
Heating Value					
Primary Uses					
Key Features					

Answer the questions.

1. What rank of coal is mined in Khakasia?
2. What types of coal mining are used in Khakasia?
3. What are some ecological problems connected with coal mining are used in Khakasia?
4. What are some other useful minerals extracted in Khakasia?

