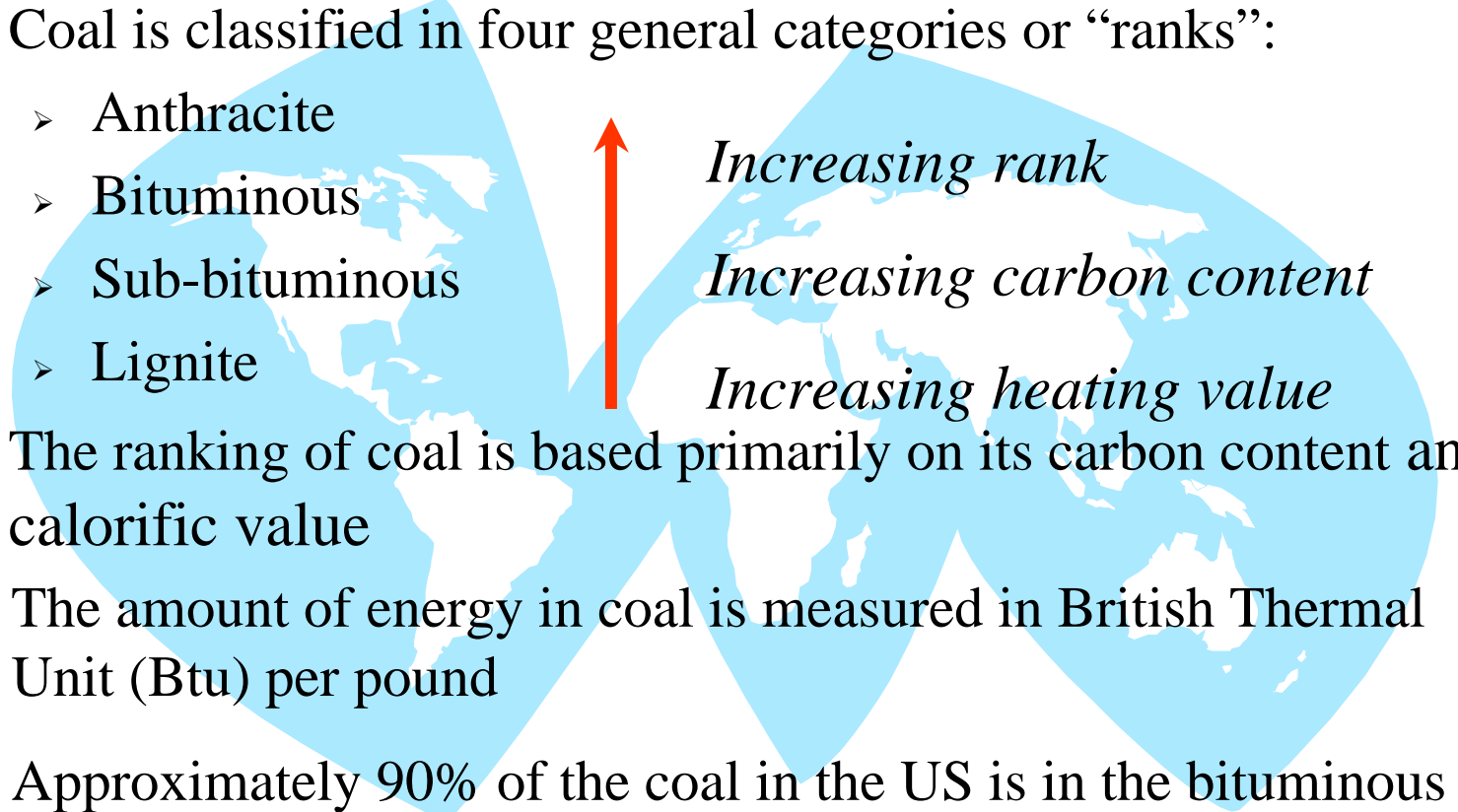




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Introduction
to
Coal Mining

TYPES OF COAL

- Coal is classified in four general categories or “ranks”:
 - Anthracite
 - Bituminous
 - Sub-bituminous
 - Lignite
 - The ranking of coal is based primarily on its carbon content and calorific value
 - The amount of energy in coal is measured in British Thermal Unit (Btu) per pound
 - Approximately 90% of the coal in the US is in the bituminous or sub-bituminous category
- 



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UNDERGROUND MINING METHODS

- Underground mining is typically employed where surface mining is not economical
- Major underground coal mining methods include:
 - Room-and-Pillar
 - Longwall
 - Shortwall
 - Conventional
- Depending on the mining method, underground mining recovers 45 - 60% of a reserve deposit by continuous miner methods and approximately 70% by longwall mining methods
- Total annual US production from underground mining is 40%



LONGWALL MINING

- Two parallel sets of entries are excavated in the coal seam
- These entries are connected at their far ends by another set of entries to form a block of coal, referred to as the “longwall”
- Typically, the block of coal is 1,000 feet wide and over one mile long
- A rotating shearer or plow traverses across the block cutting the coal
- Hydraulic roof supports advance with the shearer or plow while the roof behind the supports is allowed to fall



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SURFACE MINING

- Surface mining methods are generally more productive than underground mining methods
- 90% of the coal mined west of the Mississippi River is produced by surface mines
- 40% of the coal mined east of the Mississippi River is produced by surface mines
- Productivity from western surface mines in 2005 was 21.30 tons per total employee-hour, compared to 3.27 tons per total employee-hour from eastern surface mines



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COAL PREPARATION

- Underground mined coal is typically transported by belt conveyors to a preparation plant located on the surface
- Surface mined coal is typically hauled by trucks to the preparation plant
- Purpose of coal preparation is to improve the quality of the run-of-mine coal to make it suitable for marketing
- Type of coal preparation primarily depends on:
 - The inherent quality of the coal
 - Customer specifications



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For a complete copy of Weir International, Inc.'s *Introduction to Coal Mining* brochure, please contact us at weir@weirintl.com.