

After the coal is mined and sized it is then ground down by ball mills and then separated from the waste by gravity in a medium of water. The coal floats and the waste sinks with the subsequent coal again sized and separated into the finished product.

During the process fine coal particles are generated which require further processing to recover these fine coal particles. This is normally achieved by a flotation process where a flotation agent is added to promote the separation of the coal from the waste. Again the coal floats and the waste sinks.

The fine coal is then recovered by sedimentation and then by filtration or centrifugation. Flocculants are used in the sedimentation process to promote solid liquid separation and subsequent rapid settlement in the thickeners so by producing clean water from the overflow of the thickeners for recycling back to the preparation plant. The fine coal, which settles, is subsequently recovered by filtration/centrifugation as the fine grade coal product. Again during the filtration/centrifugation process flocculant is added to enhance the separation process.

When processing brown coal, or coal with high clay content, it is sometimes necessary to use a coagulant prior to the addition of a flocculant for settlement applications so as to achieve efficient solids capture and an acceptable overflow clarity.

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A: Settlement/Clarification of fine coal slurry in the thickening vessels.

B: Enhancing solid-liquid separation of the fine coal

C: Settlement/ Clarification of wasted slurry (tailings) in the thickening vessels.

D: Enhancing solid-liquid separation of the tailings.

