

CLAYMAX MOISTURE CONTENT AND HYDRATION

The appearance and properties of Claymax 200R often result in questions when it is received at a jobsite. Upon seeing the material, some engineers and contractors may conclude that it is damaged due to “premature hydration,” and should be rejected and replaced. However, this practice is not appropriate or warranted. In order to fully address this topic, a discussion of the Claymax manufacturing process and its physical properties is necessary.

Claymax was the first GCL, developed in the early 1980's. It is unreinforced, consisting of a layer of sodium bentonite between two nonwoven geotextiles. The bentonite is adhered to the textiles using moisture and compression, which requires that it be made with more water than other GCLs. Claymax rolls are typically manufactured at moisture contents between 40 and 50%. These values are much lower than fully hydrated bentonite, but higher than the typical moisture contents seen in reinforced GCLs such as Bentomat, whose moisture content ranges between 25 and 30%. The higher moisture of Claymax gives it a different appearance from Bentomat. Although the material may look and feel “wet”, it has not yet reached a state of complete hydration, where it would pose installation or performance problems. At moisture contents of 40 to 50%, the bentonite should appear wetted, but still retain the appearance of granular clay. At moisture contents approaching 100%, the clay will swell considerably, forming a viscous, homogeneous mass, that no longer appears granular. At this point, the bentonite will tend to be free-flowing when subjected to point loads and may not be suitable for use.

Upon manufacturing, Claymax rolls are individually wrapped in plastic and loaded onto trucks for shipment. During shipping, moisture present in the Claymax rolls has a tendency to wick outwards over time, resulting in higher moisture at the roll edges. This could result in clay hydration at the outer roll edges. This is a common occurrence - in almost all cases, only the outer few inches of the roll are hydrated. The vast majority of the roll is intact and the roll should be considered acceptable for use. After the GCL is deployed and covered, this water will be drained from the GCL over time as consolidation occurs. The end result will be a consistent water content throughout the full width of the GCL.

When assessing the physical condition of Claymax 200R, it should be examined to verify that: (1) The geotextiles have not been separated, torn, or otherwise damaged; and (2) there are no deep indentations when it is walked upon. If these conditions are met, then the Claymax should be considered acceptable.