

Technical Information

WATER QUALITY GUIDELINES

Water quality for use with refractory products is difficult to specify in scientific terms without ruling out useable water or using water that is detrimental to the processes required for optimum properties of refractory specialties, such as mortars and castables. Resco Products, Inc recommends use of water that is clean, fresh, and drinkable. This statement is designed to prevent the use of brackish water that will affect setting times of cements and, in some cases, service temperature limits of refractory specialties. ASTM C-862 states, "Potable water is used only if soluble constituents do not affect castable properties significantly. However, filtered, deionized, or distilled water is preferred and should be used in referee tests." Setting acceptable upper limits on chemical species that may be present in water is as difficult as specifying what dissolved species are harmful to refractory specialties' properties. Few studies have been done to determine these upper limits because of the variety of both potential dissolved species and available products from many different refractory producers.

Given the difficulty in setting specific water quality standards based on scientific data discussed above, the following guidelines should be observed:

1. Water should have a pH between 5.5 and 8.5.
2. TDS (Total Dissolved Solids) should be less than about 1500 ppm. In particular, dissolved salts such as sodium, potassium, or calcium nitrates, sulfates, or chlorides should be avoided or minimized.
3. No oils, greases, nor other organic chemicals (gasoline, kerosene, toluene, ketones, etc.) should be visible or detectable by odor or taste.
4. For products that will be mixed and stored for several days or more, such as mortars, no significant quantities of microorganisms should be present in the water to prevent growth that can interfere with the proper application of the product. This caution is especially important in hot summer months when bacterial or fungal growth rates are significantly increased due to heat.