

ETHANOL

EDGE

Phibro
EthanolPerformanceGroup

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CHLORINE DIOXIDE THREATENS HIGHER LEVEL BLENDS

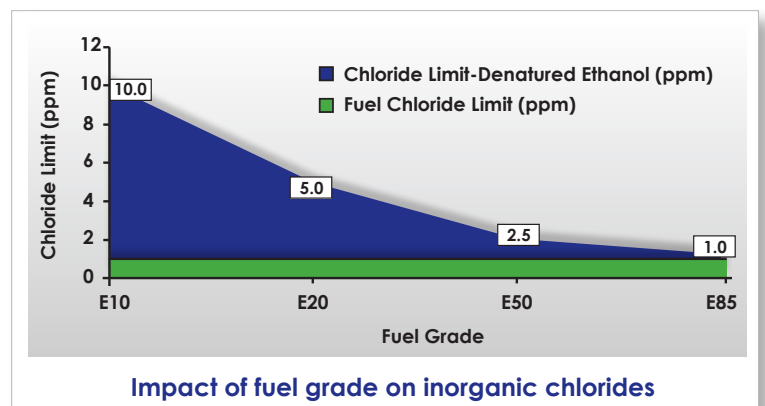
As the ethanol industry works to increase the blend wall, we must be careful to look for unintended consequences. Plants need to understand how they can control and prevent specific, undesirable contaminants from entering their finished product.

One such contaminant can be created by using process aids that add chlorides to ethanol. The presence of higher chloride levels in our nations fuel supply could greatly damage efforts under way to increase the acceptable amount of ethanol blended into fuel. When higher amounts of ethanol are blended, the chloride concentrations increase, possibly resulting in higher level blends being out of specification.

Judy LaZonby, an expert in the application of industrial biocides and chlorine dioxide from The MicroStar Lab, Crystal Lake, Ill., suggests that when ethanol plants are considering the use of older chlorine dioxide technology as an antimicrobial in the fermentation phase, they risk contributing unexpected amounts of chloride ions. LaZonby states that generating chlorine dioxide in the fermenters by using sodium chlorite could open the door to increasing inorganic chlorides in the ethanol. This occurs when unreacted chlorite ions

convert to chlorine dioxide in the beer well after sulfuric acid is added to minimize mineral scale. The additional chlorine dioxide and chlorine that are formed will break down to chloride ions and end up in the ethanol.

Current ASTM specs tightly regulate the amount of inorganic chlorides permitted in E10 to 1 ppm. E85 has the same limit of 1 ppm. Regulations on chloride limits in denatured fuel alcohol are 10 ppm, thus making all ethanol blends consistent with the 1 ppm limit in E10, but inconsistent with the E85 limits. A recent RFA industry survey shows while nearly all plants are producing E98 with chloride levels at or below the amount allowed to produce E10, nearly 10% of the plants are producing product that is out of compliance with the limits of higher blends such as E85.



BLENDER PUMPS

Industry trade groups and major producers are actively working to increase the utilization of ethanol through higher blends dispensed through blender pumps. As these pumps will use one source of ethanol to mix with gasoline to dispense different grades of ethanol from E10 through E85, all denatured alcohol used will need to meet the current E85 chloride limit of 1 ppm. This means that in practice, the 10 ppm limit on denatured alcohol has been reduced to 1 ppm and any alcohol with unacceptable levels of chloride will be rejected from use in blender pumps.

While the automobile industry has been supportive of E85 in flex fuel equipped cars and trucks, ethanol containing excess levels of chlorides may be problematic for OEMs and car manufacturers due to higher warranty costs from corrosion failure of fuel pumps and fuel injectors. Chloride ions are

the ultimate breakdown product of chlorine dioxide via oxidation and are commonly known to contribute to corrosion. Chloride concentrations as low as 1 ppm in fuel can cause fuel system corrosion in high temperature areas near the engine. The aggressive nature of the chloride ion is the reason these limits are so low.

UNINTENDED CONSEQUENCES

While much of the increase in ethanol production has come from advanced process technology and the use of process aids, we must be careful not to fall victim to the carryover of chemical by-products that present unintended consequences. By increasing production via tools that could negatively affect the end product and ultimately the marketplace, we could be working against ourselves.

For more information on this topic, please contact your Phibro representative or call 800-223-0434.

NEWS

JILL MOLINE APPOINTED SR. FERMENTATION SPECIALIST

Jill Moline has joined Phibro's Ethanol Performance Group as a senior fermentations specialist for the field services group. Moline will work with Phibro's technical team to help customers identify contaminations and optimize fermentation processes. Moline was most recently the process quality manager at VeraSun Energy Inc.

KENT HOLZER APPOINTED MANAGER OF FIELD SERVICES

Kent Holzer has joined Phibro's Ethanol Performance Group as the manager of the field Services team. Holzer and his team will be responsible for supporting Phibro's sales organization by advising on fermentation and antimicrobial issues. Holzer comes to Phibro's EPG from VeraSun Energy where he was a plant manager at their Janesville, Minn. ethanol plant.

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