UpperCut® FAQs

Can we process UpperCut through our crude unit?

UpperCut is 100% organic and can be easily processed through the refinery rerun or crude slop system. The additive is an amide based formulation. The formulation components are similar to chemistry presently used in most refineries. UpperCut will have the same processing profile as common corrosion inhibitors and dispersants already used in most refinery processes.

UpperCut is a form of diethanol amide. There is no "free" amine in the product. The molecular functionality is similar to other products of use in the refinery, such as corrosion inhibitors.

UpperCut has similar distillation properties as gas oil. The nitrogen will process like other nitrogen containing hydrocarbons, and will be removed by (gas oil) hydrotreating. UpperCut is widely considered excellent feedstock for refinery operations.

Information related to decomposition temperatures and byproducts is listed below:

Proprietary Amide

1. Composition: Amides are the product of fatty acids and alkanol amines. There is no ammonia in the product.
2. Initial Boiling Point: >212°F
3. Decomposition Temperature: >530°F
4. Decomposition Products – In the absence of oxygen under normal processing conditions, the product will decompose to alkyl analogs and nitrous oxides. UpperCut does not contain any sulfur compounds

How can we monitor the progress of an UpperCut wash in diesel?

Lab testing with two separate samples was performed on resid by dissolving it in pure diesel and then dissolving it in diesel containing UpperCut. The diesel started with a density of 0.82 g/ml with no change in density after dissolving a portion of the resid. The diesel alone dissolved approximately 10% of the resid sample under test conditions. The diesel containing UpperCut (2%) started with a density of 0.83 g/ml and finished with a density of 0.90 g/ml, dissolving approximately 92% of the resid sample.

Monitoring the density of the solution as the wash progresses is recommended. It is presumed that the diesel alone would have dissolved more of the resid, and would have gained density if the contact time were longer, but these results were dramatic, and needed no more time to show the dissolution difference between pure diesel and the diesel/ UpperCut solution.

What is the metals content of UpperCut?

UpperCut contains no metals (e.g. phosphorus). The boiling point of UpperCut is greater than 530°F. UpperCut does not contain any phosphates, silicates, or chelating agents.

How will the nitrogen in UpperCut impact post use processing?

My concern is the diethanolamine in the UpperCut chemical. We will be putting our slop from circulation into our gas oil tank and running it back as FCC feed. I'm concerned what this will do in the FCC unit.

Our UpperCut product contains the amide form of diethanol amine. There is no "free" amine in the product.

*We have a limit on feed nitrogen to sulfur ratio of 35 ppm/(100*wt%S). The feed sulfur normally runs about 4,000 ppm, and normally the total feed nitrogen is 0.1 wt%. I will expect the gas oil tank to have at least 17,000 bbl of product in it, including the 8,000 bbl of slop from the LCO flush with chemical. Based on my calculations, the chemical cannot add more than 0.04 wt% nitrogen to avoid exceeding the ratio limit. Please let me know if the nitrogen will stay below this limit.*

Nitrogen content in UpperCut is 3.5% bw, UpperCut is about 8#/gal, Diesel is about 7#/gal. Therefore:
99 Gallons of Diesel = 693#, 1 Gallon UpperCut = 8.2#, Therefore: 100 Gallons of Solution = 701.2#

@2% in diesel = 0.0117 x 0.035 x 701.2 = 0.287# Nitrogen in the solution: 0.287#/701.2# = 409ppm (0.000409) = (0.04 wt. %)

For heat exchangers, when would we use UpperCut instead of Super Q®?

For exchanger cleaning, Super Q is tied to a vapor phase RTI patent and solely injected with steam for in situ cleaning to restore duty in one work shift. However, some equipment cannot be steamed due to the concern of stress cracking and corrosion on certain metallurgies. There are also instances of a cutter stock pre-wash for decontamination preparation. UpperCut is the best product offering for assisting with these heat exchanger train cleaning needs. For petroleum storage tanks, always use UpperCut when you are injecting cutter to thin out the material in the tank. Follow that with RTI's Tidal Wave® chemistry for a final degreasing and prep for entry.