

## BL 2161 Oil Storage Tank Bottom Sludge Cleaner

BL 2161 is a unique blend of hydrocarbon dispersants, penetrants and surfactants that soften, disperse and condition oil tank bottom sludges. The conditioned oil tank bottom sludge then can be easily removed for disposal or for recycling back into the hydrocarbon refining process.

### Technology

Oil storage tank bottom sludges can vary greatly, depending on the types of hydrocarbons that have been stored in the oil storage tank since its last cleaning. Most sludges consist of degraded oil, polymerized paraffins and asphaltenes, gums, varnishes, water, biomass, and many inorganics (iron-rust, sand, scale, mud, etc.) that can cause serious scale and plugging problems.

The resulting oil tank sludge causes many headaches - in the oil storage tank, in the oil transfer pipelines, in rail, ship and truck tankers, holding tanks and in any precombustion system equipment - filters, burner tips, etc.

BL 2161 acts as universal fuel oil conditioner by penetrating and dispersing into the heavy hydrocarbons reducing their viscosity; emulsifying water content higher than 1 % (by weight of the fuel oil); penetrating and dispersing any biomass (fungi and bacteria) deposits; coating and conditioning the inorganics and organic sludge particles making them nonadherent to each other and the tank surfaces, as well as filming the oil storage tank inner surfaces to prevent redeposition and corrosive attack during the cleaning procedure.

### Advantages

1. Dramatically reduces sludge and deposit buildup if used regularly
2. Promotes longer fuel oil stability, less fuel oil degradation
3. Improves fuel oil viscosity control
4. Promotes better oil storage tank corrosion control
5. Reduction in man-hours and personnel necessary to clean tanks and lines
6. Increased tank safety and more effective, efficient cleaning and disposal
7. Increased oil storage tank capacity with bottom sludge removal
8. Reduced oxidation and polymerization of the oil's hydrocarbons

9. Less potential biomass (fungi and bacteria) growth with removal of water
10. Potential recovery of conditioned fuel

### Product Characteristics

Density at 25 <sup>o</sup> C	0.90 g/mL
Approximate volume per kg	1111 mL
Flash point (TCC)	58 <sup>o</sup> C

### Procedure For Chemical Cleaning of Fuel Oil Storage Tanks

All plant safety procedures must be followed!

- 1) Lower the fuel oil to the sludge surface in the fuel oil storage tank.
- 2) Add BL 2161 directly to the fuel oil tank's oil surface. This allows the chemical conditioners in BL 2161 to penetrate and loosen the hard crust and soften the oily sludge mass. The dosage rate of BL 2161 is 2.0 gallons per 10,000 gallons of oil (2.0 litres of BL 2161 per 10 cubic meters of oil).
- 3) Add enough clean light fuel oil (No.1 Kerosene) to distribute the BL 2161 over the top of the sludge mass. Add enough clean light fuel oil to just cover the surface of the bottom sludge mass but not more than a 2-inch layer (5 centimetres), as it will dilute the BL 2161 effects.
- 4) Allow BL 2161 emulsifying and penetrating properties to work for a minimum of 12 hours. Overnight is a good time to allow this process to occur, as no direct supervision needs to be done during this time period.
- 5) Add enough clean light fuel oil (No.1 kerosene) to bring the fuel oil level in the oil storage tank to 10 - 25 % of the maximum operating height. \*For a more dense, hard sludge or large volume of sludge, after doing steps 6) and 7) add more clean light fuel oil (No. 1 kerosene) to bring the fuel oil level in the storage tank to 30 - 50 % of the maximum operating height.
- 6) If steam coils or other methods of heating the waste fuel oil in the storage tank are available, use the heat (up to 35 ° C or 100 °F) to assist in the mixing (of the oily sludge mass, BL 2161 and clean light fuel oil). The heat will also assist in the speeding up the solvent-dispersant reactions.
- 7) Recirculate the contents of the storage tank for a minimum of 12 hours (24 hours if possible) to allow maximum sludge dispersion and emulsification of the water, as well as better fuel stabilisation.

- 8) Filtration of the treated oily sludge/light fuel oil mixture needs to be done while it is being recirculated. Proper filtration will remove the inorganic particulate matter (iron-rust, sand, scale, mud, etc.) as well as many of the organic contaminants (gums, waxes, varnishes, asphaltenes, etc.) that can plug fuel systems or further degrade the oil.
- 9) The conditioned oil can now be disposed of to the proper waste steam or fill the fuel tank to the top with clean fuel oil and put back into service for rerefining. In severe cases of sludge and water buildup, the cleaning of the oil storage tank may have to be repeated several times to completely solubilize and emulsify all of the bottom sludge.

To prevent further oily sludge buildup in the fuel oil storage tank, a preventive maintenance fuel oil treatment programme can be initiated using Buckman products. This fuel oil treatment programme when used continuously or intermittently will help to prevent sludge buildup and keep the oil storage tank to be used at its maximum capacity.

\* Each bottom sludge will have its own best economical amount of light oil addition. The larger volumes of light oil (No. 1 kerosene) are needed for large, dense, viscous bottom sludge that will be filtered and recycled back into the hydrocarbon stream for further refining. Laboratory tests should be conducted to determine the most cost effective amount of light oil needed to make the bottom sludge easily pumpable. The light fuel oil figures of 10 - 25 % and 30 - 50 % of the maximum operating height have proven to be typical addition ranges, for dense, hard bottom sludge with up to 2 % bottom water, in oil tanks that have not been cleaned for many years.

### **Packaging and Handling**

BL 2161 is an organic liquid packed in nonreturnable drums and returnable semibulk containers. Materials of construction suitable for handling and storing BL 2161 include ferrous metals, Penton, polypropylene, Teflon. In the concentrated form, BL 2161 can have an adverse effect on natural rubber, PVC, acrylics, and certain other plastics.

Improper handling on this product can be injurious to workers. Observe all safety precautions shown on the label and in the Material Safety Data Sheet.

Recommendations given in this bulletin are based on tests believed to be reliable. However, the use of the product is beyond the control of Buckman Laboratories, and no guarantees, expressed or implied, are made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe practice. The buyer must assume all responsibility, including injury or damage, resulting from misuse of the product as such, or in combination with other material. This bulletin is not to be taken as a license to operate under or recommendation to infringe any patent.

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