

PARAFFIN CONTROL

PROHIBITS WAX CRYSTALLIZATION, SOLUBILIZES PARAFFIN BACK INTO THE OIL

TECHNICAL DATA SHEET

PHYSICAL PROPERTIES

Product Name	Paraffin Control
Physical Form	Clear Liquid
Color	Colorless unless dyed
Specific Gravity (Water = 1)	1.03 +/- .01
Solubility in Water	100%
Viscosity at 32° F	9 CP
Boiling Point (°F)	>200° F
Pounds per Gallon	8.37
Ionic Activity	Non-ionic
pH	8.5 +/- .25

Complete information on health hazards, protective equipment, handling precautions, environmental hazards and disposal is listed in the current Paraffin Control Safety Data Sheet (SDS) for this product.

PROBLEM OVERVIEW

Paraffin problems can significantly affect well / lease profitability, causing troublesome operational issues damaging formations and decreasing production. Understanding the nature of paraffin, the conditions that lead to their becoming problems and solutions for controlling it are important. Controlling paraffin problems requires one to understand the conditions that lead to deposition and when total costs of not treating are considered, chemical solutions such as Paraffin Control are easy to use and economically attractive.

PRODUCT SUMMARY

Paraffin Control is a non-flammable, non-toxic, water-based, proprietary blend of non-ionic surfactants and treatment agents that has been blended and balanced to be specifically effective

on paraffin and paraffinic sludges in downhole and aboveground applications. It is a concentrated formula designed for versatile and economical application at light concentration working dilutions utilizing produced water or KCl water. Paraffin Control is a biodegradable product which contains no builders, caustic, petroleum distillate, d-Limonene, or hazardous chemicals.

Paraffin Control is designed to keep wax in the crude oil and prevents paraffin from crystallizing on tubulars, pumps, and flowlines. Not only is it extremely effective but it is also very safe to workers and the environment. Paraffin Control does **not** contain caustic, therefore does not have the common harmful side effects associated with caustic based products.

Paraffin Control works by creating micro-emulsions of oil and water, with the wax attached to the emulsion phase, which stays suspended in the oil. It should be noted that the water in the micro-emulsions is considerably less than the BS&W standards, thus the solution can be sent straight to the refinery. Additionally, by dispersing the paraffins back into the oil, the Paraffin Control treatment minimizes a potential waste stream while creating additional revenues through increased sales volume and decreased disposal expenses. In the current trend of waste reduction, environmentally sound practices, and the never ending pursuit to increase worker safety, Paraffin Control has proved to be a worthy solution for paraffin problems.

Paraffin Control is commercially available in 5-gallon units, 55-gallon drums, 275 and 330-gallon totes and bulk from Oklahoma City, Oklahoma and Houston, Texas.

PRODUCT BENEFITS

- Affordability; much less expensive than hot oiling
- Effective in eliminating permeability barriers caused by hot oiling, often resulting in production increases
- Paraffin Control does not allow the paraffin to plate out onto the production or distribution equipment
- The Paraffin Control treatment circulated in the well removes deposits from the well bore

and from the near bore formation that can increase production yields

- Continued use is effective in eliminating tank bottoms and high water cut
- Effective in chemical pigging for pipelines
- Simple to use

SUITABILITY OF PURPOSE

This material is made available for the use by professionals or persons having technical skills to be used at their own discretion and risk. Nothing herein is to be taken as a license to use Paraffin Control without the proper permits, approvals, etc. of the appropriate regulatory agencies, nor are the protocols provided as instructions for any site specific application of Paraffin Control. All Enviro Clean products should be used in compliance with all federal, state, and local rules and regulations.

MATERIAL REQUIREMENTS

For specific protocols and application rates, please refer to the available Product Usage Guide, product label, or consult with the manufacturer or authorized distributor for additional guidance.

GENERAL RULE OF THUMB (DOSAGE)

1. Determine total Bbls of fluid (water and oil) per day
2. Convert total Bbls into total number of gallons
3. Multiply total gallons by 0.0005 which equals the number of gallons of Paraffin Control concentrate needed per day; then multiply by 30 (number of days in a month) to determine total number of gallons required for treatment
4. Use that amount of concentrate with enough water (determined by end user) needed to get the solution downhole and circulate for 24-hours

GENERAL PROCEDURE FOR TREATMENT

For removing paraffin from perforations, downhole pump, flowlines and production equipment, batch treat the casing/tubing annulus with 5 to 10 gallons of Paraffin Control utilizing produced water. To dilute the solution downhole, immediately circulate well for 24 to 48 hours

utilizing the well's pumping equipment. After circulating, turn the well back down the flowline. Periodic maintenance treatments will aid in keeping new paraffin from re-depositing.

ALTERNATIVE PROCEDURES FOR TREATMENT

Alternative Downhole Treatment Method

Dilute Paraffin Control to a 1-2% solution in a 55 gallon drum. Continuously treat the well down the casing tubing annulus using a mounted chemical pump.

Formation Blockages

For paraffin blockages back in the formation, dilute Paraffin Control to a 5% solution and pump down the casing/tubing annulus with sufficient volume to cover all perforations. Displace through the perforations using the hydrostatic pressure of an additional 100 to 200 Bbls of formation water. After 24 – 48 hours, return the well to production.

Tank Bottoms / BS&W

For high BS&W in oil or for tank bottoms, pour 3 to 5 gallons of Paraffin Control into a 200 barrel tank, roll or circulate the tank, then let tank contents sit overnight.

Pipeline Treatment

For pipeline treatment, dilute Paraffin Control to an 8% solution. Utilize a metering pump to inject solution into line at 250 to 500 parts per million (ppm) as oil is pumped through the line.

Application for Production Wells Containing Packers

Treating wells with packers in them can be difficult, but not impossible. The most viable option is to pump down the tubing, displacing the product into the formation and allowing it to sit overnight before flowing or swabbing it back.

For most wells, it is recommended that 500 gallons or more of a 3% solution of Paraffin Control be used. The solution is put into the hole and then chased with 10 to 20 Barrels of formation water. If it is possible, it is best to avoid over-displacement of all of the solution downhole. This will leave some of the product in

the bottom of the hole allowing it to effectively clean some of the perforations that may be partially plugged. The overburden of the water will cause the product to slowly work its way into the perforations during the shut down period.

After 24 hours, you can open the well back to the flow line. It is important to note that this process/treatment will in all likelihood temporarily kill the well since you are pumping into it. Therefore, unless the well builds pressure quickly, it will be required to swab the treatment fluids back before it will kick off.

Note: Utilizing formation water to mix the 3% solution should eliminate the possibility of water damaging the formation if the formation is water sensitive.