

**Q: What are BioBreak Biopolymer technology?**

A: Emulsion Breakers are divided into two (2) main categories: Direct Emulsion Breakers where water droplets are dispersed in the oil phase and Reverse Emulsion Breakers where oil droplets are dispersed in water phase. BioBreak Biopolymer technology is a suite of products based on naturally occurring polymer materials. There is a total of three (3) different BioBreak polymers. These are: **NX OILFLOC REB-30**, **NX WATERFLOC REB-36** and **NX WATERFLOC REB-37**. These products are water-based, not regulated for transportation purposes as they are not categorized Dangerous Goods for transportation.

**Q: How do BioBreak Biopolymers function?**

A: BioBreak Biopolymer technology suite **NX OILFLOC REB-30**, **NX WATERFLOC REB-36** and **NX WATERFLOC REB-37** has the objective to reduce oil (hydrocarbons) in water. They are predominately Reverse Emulsion Breakers and can reduce the oil (hydrocarbons) in water to below 10 ppm and in some cases below 3 ppm with no solid's formation.

**Q: How are the differences between the BioBreak Biopolymer products?**

A: BioBreak Biopolymers **NX OILFLOC REB-30**, **NX WATERFLOC REB-36** and **NX WATERFLOC REB-37** have different molecular weights and molecular architecture. This enables different uses and applications. The **NX OILFLOC REB-30** material is usually used for the bulk oil remove from water and **NX WATERFLOC REB-36/REB-37** as a polisher.

**Q: Where can the BioBreak Biopolymers be applied?**

A: BioBreak Biopolymers, especially the **NX OILFLOC REB-30** biopolymer, is usually added directly to the emulsion that comes from the production wells (Water/Oil primary treatment stage). It can be added on its own or combined with a direct (oil phase) emulsion breaker. The combination minimizes water contents in oil (hydrocarbons) as direct emulsions as well as minimized oil (hydrocarbons) in water as reverse emulsions. Applications can vary but they can be applying in wells with high water cut, production manifold, the inlet of 3-Phase Separators, Free Water Knock Out (FWKOS), Heater Treaters or Gun Barrels. The injection can also be carries out inside these vessels. In refining processes, the **NX OILFLOC REB-30** biopolymer can be applied in the wash water used for the crude oil desalination process. This allows excellent water quality, interface and helps to improve the resolution of the emulsion, with the chemistry applied at the inlet of the Desalter Unit. The other BioBreak products are used in the secondary treatment stages. The BioBreak products are usually used between 1-10 ppm and their general use is indicted below:

- **NX OilFloc REB-30:** (Primary Treatment): Downhole, Wellhead, Manifold, Gun Barrel/FWKO, Desalter Wash Water
- **NX WaterFloc REB-36:** (Secondary Treatment): Inlet of Skimming Tank / Flotation Unit / Filter
- **NX WaterFloc REB-37:** (Secondary Treatment): Inlet of Skimming Tank / Flotation Unit / Filter

**Q: Are sample kits of BioBreak Biopolymers available and what's the quantity of sample in each kit?**

A: The standard BioBreak Biopolymer sample kit is 15 ml per sample. These are used at 1-20 ppm. Hence, 15 ml is considerable volume. Likely the sample will not be entirely used in the lab for several months.

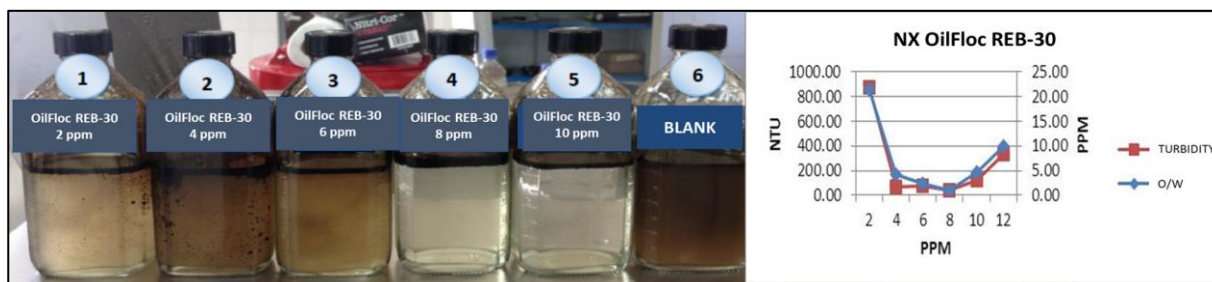
The BioBreak Biopolymer materials are extremely powerful. For lab testing it needs to be diluted to 1 % as these operate on average at 5 ppm. Hence, for a sample volume of 100 ml, you need to add 50 µl of a 1% solution of BioBreak to have 5 ppm in the mixture. Let me know if this makes sense. This dilution is only for lab testing because the µl volume required of the concentrate would be 100x lower and very difficult to inject in lab. Therefore, proper dilution. This not the case for actual process applications where the products are used as received.

**Q: How do I request a BioBreak sample kit?**

To request a BioBreak sample kit, send an email to: [info@nxchemical.com](mailto:info@nxchemical.com)

**Procedure Used to Evaluate BioBreak Biopolymers Through Bottle test and/or Jar Test:**

Using bottle tests or jar tests, an evaluation of the dosing curve for each of the biopolymers can be implemented, using the following example: Prepare a 1% solution of each biopolymer, add doses of 2, 4, 6, 8, 10, 12 ppm, leaving one blank and writing down in the form described in the figure below:



**Q: Using BioBreak Biopolymer products, how low can the hydrocarbon content be in the treated water?**

A: After using the BioBreak Biopolymer products, the residual hydrocarbon (oil) content in the water can be as low as 5-10 ppm.

**Q: Can you specify applications for BioBreak Biopolymer technology?**

A: Any application where there is a need to remove oil from water. BioBreak Biopolymers can reduce the oil content in water by 1 order of magnitude. This can be massive for savings and also environmental protection as the materials are consider Green Chemistry. BioBreak Biopolymer also do not form sludge in vessels and it is very easy to inject. The materials do not have the injectability problems that current technology present.

Reducing oil content in water is crucial to various industries where water is used as a resource or discharged as effluent. Key industries where there's a need to further reduce oil content in water are:

- **Wastewater:** Various industrial processes generate wastewaters that need careful oil content reduction.
- **Oil and Gas:** Despite being the source of much of the world's oil, the industry requires strict measures to minimize oil contamination in water, both during extraction processes and in wastewater management. BioBreak biopolymers are used in both Onshore and Offshore applications and Refining Processes.
- **Petrochemicals:** Similar to the oil and gas industry, petrochemical plants deal with various hydrocarbons and must ensure minimal oil contamination in water resources.
- **Manufacturing:** Industries such as metalworking, automotive, and electronics manufacturing often use oils and lubricants in their processes, leading to potential contamination of water sources if not managed properly.
- **Marine:** Shipbuilding, ports, and offshore industries produce oily wastewater, either from operations or accidental spills, necessitating effective oil-water separation technologies.

- **Food Processing:** Food processing plants generate oily wastewater from cleaning processes, cooking, and production, requiring efficient oil removal to meet regulatory and water quality standards.
- **Mining:** Mining activities can introduce oils and lubricants into water bodies, which can have detrimental effects on aquatic ecosystems. Effective oil removal is necessary to mitigate environmental impacts.
- **Power Generation:** Power plants, particularly those using fossil fuels like coal or oil, may produce oily wastewater through various processes, including cooling and cleaning systems.
- **Chemical Industry:** Chemical manufacturing processes may involve oils or oily substances, leading to the potential contamination of water resources if not properly managed.
- **Textile Industry:** Textile manufacturing often involves the use of oils and dyes, which can contaminate water if not adequately treated before discharge.
- **Agriculture:** Agricultural activities, such as pesticide and fertilizer application, can lead to oil contamination in waterways, especially when runoff occurs.

**Q: What are the benefits of using the BioBreak Biopolymer technology?**

A: Using the BioBreak Biopolymer technology has the following benefits:

- Lower residual hydrocarbon content in the water
- Fast water-oil phase separation
- No solids or sludge formation in process equipment leading to minimal or no hydrocarbon losses
- Simple to handle and inject into the process or pipeline
- Sustainable and environmentally responsible biopolymer-based materials

**Q: Where is the BioBreak Biopolymer technology produced?**

A: The BioBreak Biopolymer technology is produced in Texas, USA

**Q: What is the delivery lead-time for BioBreak Biopolymer technology?**

A: The BioBreak Biopolymer technology has a lead-time of 2-3 weeks delivery

**Q: What are the packaging options for BioBreak Biopolymer technology?**

A: The packaging options are: 55-gallon drums, 330-gallon totes or 5,000-gallon truckloads.

**Q: What are the Incoterms for the BioBreak Biopolymer technology?**

A: Ex Works, Texas USA. However, shipping can be organized and added to the invoice if necessary.

**NX Chemical Contacts**

NX Chemical  
25003 Pitkin Road, Ste A100  
The Woodlands, Texas 77386 (USA)  
T USA: +1 (832) 510 8191 | T Brasil: +55 (11) 972 004829  
[www.nxchemical.com](http://www.nxchemical.com)

Contact Email: [info@nxchemical.com](mailto:info@nxchemical.com) | Orders Email: [orders@nxchemical.com](mailto:orders@nxchemical.com)

---

**NX Chemical**