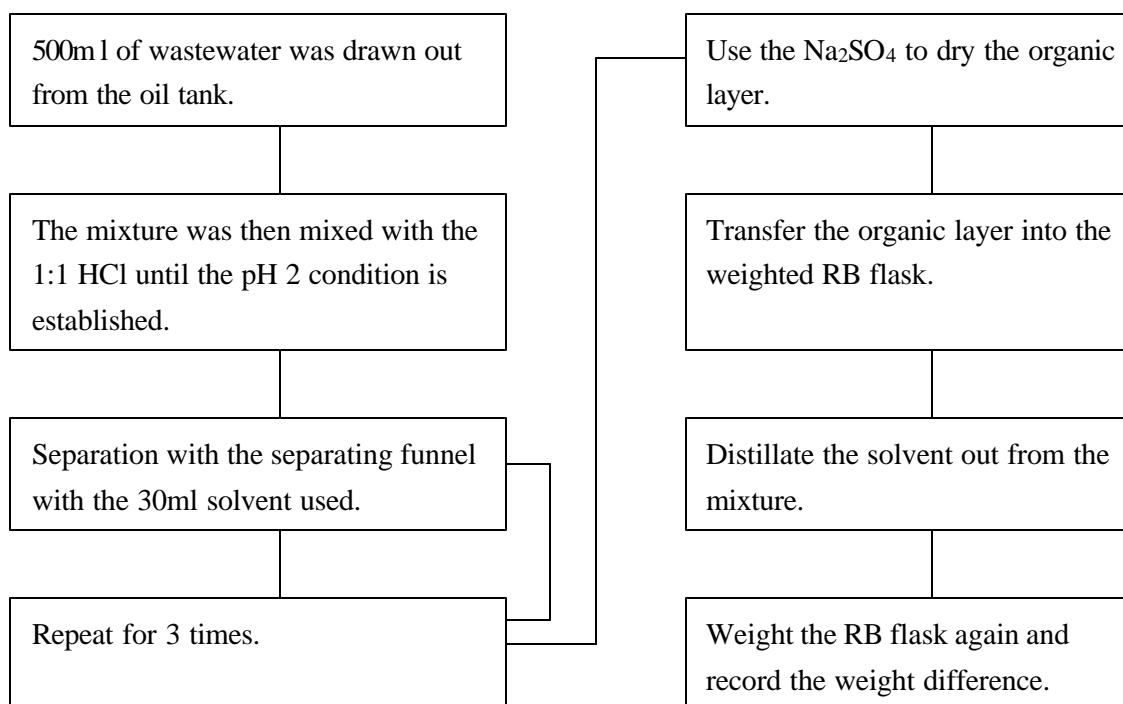


**Oil & Grease Test for the Histosol Op-GrzBio Product  
Report O&G**

**Experiment Condition:**

Acid used: 1:1 HCl  
Enzyme used: HISTOSOL OP-GRZBIO (OP-Bio10)  
Experiment Date: 14<sup>th</sup> to 29<sup>th</sup> Oct  
Experiment Method: APHA  
Experiment Temperature: Room Temperature  
Sample used: LG 7 wastewater  
Solvent used: 8:2 ; n-Hexane : Methyl-tert-butyl ether  
Technique included: Centrifugation, Distillation and Separation  
Condition enzymatic reaction: The oil tank was in running water and the **enzyme was inputting into the oil tank continuously**  
Condition for sample collection: The sample was collected at two time slogs:  
1) Between 13:00~13:30  
2) Between 18:00~18:30  
Dosage Method: 1<sup>st</sup> Day dosage method:  
-1L OP-Bio10 enzyme into 0.99m<sup>3</sup> oil tank  
2<sup>nd</sup> Day and onwards dosage method:  
-800ml OP-Bio10 into 4L water for 4 hours running  
Water running in the oil tank:  
-around 1m<sup>3</sup> / hr

**Procedure:**



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**Data Record and Calculation:**

This data is from the enzymes (OP-Bio10 & DX)

| Date     | Time  | Sample Tested Noon | Sample Tested Evening | Initial weight of the RB flask (g) | Final weight of the RB flask (g) | Net weight of the RB flask (mg) |
|----------|-------|--------------------|-----------------------|------------------------------------|----------------------------------|---------------------------------|
| 19th Oct | 12:00 | Blank 01_N         |                       | 113.1354                           | 113.3104                         | 175.0                           |
|          |       | Blank 01_N         |                       | 122.8852                           | 123.0644                         | 179.2                           |
| 20th Oct | 12:00 | Blank 02_N         |                       | 123.0644                           | 123.2544                         | 190.0                           |
|          | 19:00 |                    | Blank 02_E            | 114.5661                           | 114.7591                         | 193.0                           |
| 22nd Oct | 14:20 | Blank 03_N         |                       | 99.1230                            | 99.2640                          | 141.0                           |
|          | 18:30 |                    | Blank 03_E            | 104.2928                           | 104.3606                         | 67.8                            |
|          | 15:22 | OP-Bio10_N         |                       | 93.6228                            | 93.7328                          | 110.0                           |
|          | 16:28 | OP-Bio10_N         |                       | 96.2260                            | 96.3480                          | 122.0                           |
| 23rd Oct | 13:32 | Blank 04_N         |                       | 99.1303                            | 99.2956                          | 165.3                           |
|          | 14:35 | OP-Bio10_N         |                       | 104.2909                           | 104.5464                         | 255.5                           |
|          | 19:45 |                    | OP-Bio10_E            | 96.2585                            | 96.3275                          | 69.0                            |
| 24th Oct | 14:00 | OP-Bio10_N         |                       | 112.8136                           | 112.8740                         | 60.4                            |
|          | 18:00 |                    | OP-Bio10_E            | 117.6928                           | 117.7902                         | 97.4                            |
| 25th Oct | 12:13 | Blank 05_N         |                       | 93.6160                            | 93.7220                          | 106.0                           |
|          | 14:13 | OP-Bio10_N         |                       | 104.2980                           | 104.3470                         | 49.0                            |
| 26th Oct | 14:00 | OP-Bio10_N         |                       | 114.5778                           | 114.7918                         | 214.0                           |
|          | 18:20 |                    | OP-Bio10_E            | 115.9840                           | 116.0637                         | 79.7                            |
| 27th Oct | 18:20 |                    | OP-Bio10_E            | 115.9870                           | 116.0168                         | 29.8                            |

|                   |   |          |
|-------------------|---|----------|
| Blank for Noon    | = | 177.4 mg |
| Blank for Evening | = | 193.0 mg |

|                         |   |          |
|-------------------------|---|----------|
| Around up for the Blank | = | 185.2 mg |
|-------------------------|---|----------|

**mg of oil and grease per liter**

From the Blank :

$$\text{mg of oil and grease / L} = \frac{185.2 \times 1000}{500}$$

$$= 370.37 \text{ mg / L}$$

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**Calculation of the % of removal efficiency**

**Enzyme used: OP-Bio10**

First Day Dosage

Average Reading for the OP-Bio1 116.0 g

$$\begin{aligned} \text{\% of removal efficiency} &= \frac{185.2 - 116.0}{185.2} \times 100\% \\ &= 37.36 \text{ \%} \end{aligned}$$

Second Day Dosage

Average Reading for the OP-Bio1 75.6 g

$$\begin{aligned} \text{\% of removal efficiency} &= \frac{185.2 - 75.6}{185.2} \times 100\% \\ &= 59.18 \text{ \%} \end{aligned}$$

Third Day Dosage

Average Reading for the OP-Bio1 52.8 g

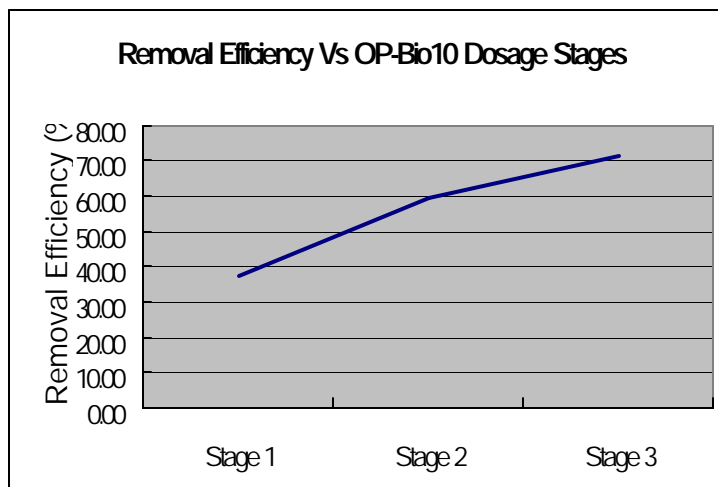
$$\begin{aligned} \text{\% of removal efficiency} &= \frac{185.2 - 52.8}{185.2} \times 100\% \\ &= 71.47 \text{ \%} \end{aligned}$$

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**Conclusion and Forecast:**

From the data, it is observed that the enzyme OP-Bio10 showed a continuous trend in oil removing ability. The trend is shown as:

| Dosage Period | Removal Efficiency |
|---------------|--------------------|
| Stage 1       | 37.36              |
| Stage 2       | 59.18              |
| Stage 3       | 71.47              |



From the graph, it shows that there is an increasing trend of oil removal efficiency. It demonstrates that the addition of the OP-Bio10 is effective in oil removal. And the effectiveness is increase continuously and can reach to around 70% after the third day addition.

**For pricing or additional information, contact:**

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