The Non-Toxic and Biodegradable Degreaser

Based on
Nanobiotechnology and
Green Chemistry

KITCHEN OIL CLEANER

Shepros Sdn. Bhd.

To keep your kitchen vent/range hood working effectively, it is important that you maintain them regularly by cleaning the filters and the exposed surfaces. Thought it might not be the ideal way to spend your afternoon, range hood cleaning is not a very difficult task if you use *Kitchen Oil Cleaner*. It is made of non-toxic and biodegradable plant based *Nano Alpha-10* ingredient through the application of nanobiotechnology and green chemistry.

Dangers of Dirty Kitchen Hoods

Kitchen Hoods are something that just about every household has but not everyone is aware of just how dangerous they can be if they are not properly maintained. There are two main dangers associated with kitchen hoods:

1. **Health Hazard from Microbial**

   A dirty kitchen hood is a prime environment for the growth of bacteria and mold in the kitchen ventilation system. The heat coming through the kitchen exhaust not only creates a warm environment but also quite moist. With the buildup of moisture, oil, fine food particles and dust that stuck in the filters, it can become a growing ground for bacteria and fungi.

2. **Kitchen Fire**

   This oily residue in all kitchen exhausts can be potential of fire hazard. When kitchen hood isn't cleaned periodically, accumulated oil residue will reach deeper throughout your kitchen exhaust system. This effectively lines the exhaust piping with fuel that can be ignited from small cooking flames.

   It is not uncommon for restaurant fires to be started in such a way when the kitchen exhaust hood and ventilation system have not been cleaned after months of heavy use. The chef may be stir frying a dish over a large flame and a mixture of the heat and a small fire perhaps from cooking off some alcohol in the pan will be enough to start an oil fire which burns extremely hot and is difficult to put out. Use *Kitchen Oil Cleaner* to help maintain your kitchen before it gets dirty enough to be a fire hazard.

KITCHEN OIL CLEANER

Kitchen Oil Cleaner is a high performance cleaner that cleans and degrease hard surface finishes.

Kitchen Oil Cleaner is specially formulated with ingredients which are non-toxic, low foaming, non-skin irritating, biodegradable and environmental friendly. It is made of powerful Nano Biotech Colloidal Micelles (NBCM) of *Nano Alpha 10* which is formulated using natural plant extracts and plant derivatives. NBCM has the power and capacity to break down almost all types of oils. It also offers disinfecting and sanitizing capabilities through NBCM's antimicrobial properties.

Kitchen Oil Cleaner does not contain petroleum distillates, soaps, chemical thickening agent, nitrate, enzyme, phosphate, alcohol, animal fatty acid, hydrocarbon toxic solvent, non-biodegradable surfactants and ozone depleting substances.

Kitchen Oil Cleaner effectively removes germs, dirt, contaminants, oils, grease and odor. It is specially formulated for deep cleansing for use on all kind of hard surfaces for kitchen hood system. It also prevents grime build up to make future cleaning easier. It is safe for use on surfaces like enamel, porcelain, ceramics, aluminum, stainless steel, chrome, plastic and glass.

Our Technology in Perfect Hood Cleaner

Nano Biotech Colloidal Micelles (NBCM)

SHEPROS combines the knowledge of nanotechnology and biotechnology in using the unique colloidal chemistry to generate a state of the art formulation that produces the innovative Nano Biotech Colloidal Micelles (NBCM). NBCM are mild but are amazingly powerful colloidal micelles made from non-toxic plant based extracts, plant derivatives and biodegradable surfactants.

NBCM are very fine molecules with spherical aggregate structure which remain in suspension indefinitely and are not affected by gravity when dispersed in a liquid colloid. It is surrounded by a cloud of tightly bound ions. The NBCM aggregates form in order to minimize the free energy of the solution. They are dynamic but equilibrium structures and able to rearrange in response to changing environmental conditions. They also undergo thermal fluctuations and Brownian motion. It works well with hard, soft, cold, hot, fresh and salt water.

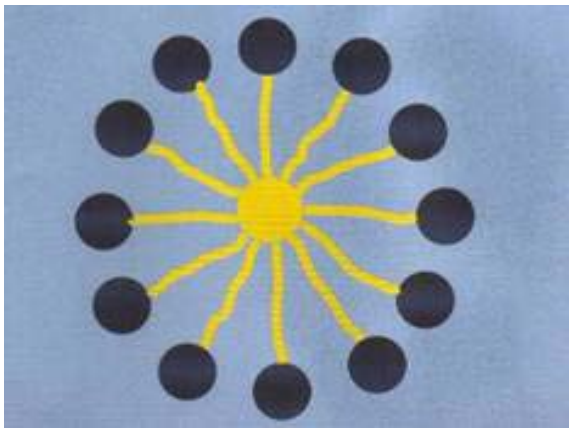


Illustration of Nano Biotech Colloidal Micelles.

The hydrophobic poles attract to each other forming interior micelles cluster and the hydrophilic poles form a powerful outer surface.

NBCM in colloidal chemistry can be explained as a sub-division of physical chemistry comprising of the phenomena characteristic of matter when one or more of its dimension lie in the range between 1 nanometer and 100 nanometer. In this nature of science, the dimension of NBCM is more important than the nature of the material. In the size range of nanometer, the surface area of NBCM is much greater than its volume that unusual phenomena of colloidal micelles will occur as following:

a. They do not settle out of the suspension of gravity.
b. They will be small enough to pass through the unreachable exterior areas of the plants.
c. They will move in at least one dimension randomly.
d. They will have tremendous wetting capacity.
e. They will reduce the surface tension in water or water solutions.
f. They have the velocity that will move endlessly without stopping.
g. They will have sterilizing effect by disrupting the DNA or RNA of the virus, prokaryotic cell of bacteria, and eukaryotic cell of algae, protozoa and fungi.

How do NBCM destroy bacteria?

A cell wall protects bacteria cell from the effects of osmotic pressure. NBCM destroy the peptidogylan layer of the bacteria cell walls, but not to human beings and animals which do not have cell wall. In the absence of unstable formed peptidogylan, growing bacteria cells will be weaken and destroy through to the following exposures:

1. **Inhibition of cell wall synthesis**

   Generally, a bacterium is in a hypotonic solution and water tries to move in to the bacterium from a higher water concentration to the lower water concentration. When the cells are less resistant to the effect of osmotic pressure; the underlying cytoplasmic membrane bulges through the weakened portions of cell wall as water moves into the cell, and eventually the lyses.

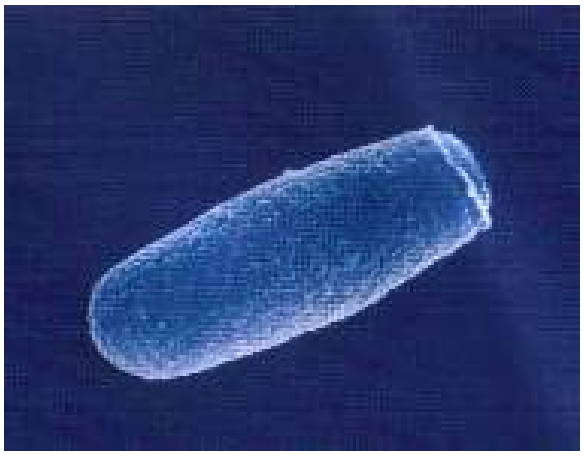
2. **Inhibition of metabolic pathways**

   A damaged cell wall will affect all the chemical reactions in metabolism of the bacterium. The unstable metabolic pathways will result in unstable enzyme activity, temperature and pH in the cell.

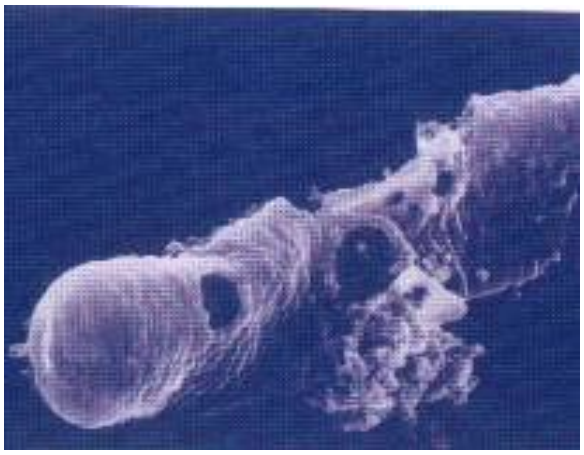
3. **Disruption of cytoplasmic membranes**

   The disruption of cytoplasmic membranes will severely damage the cytoplasm which is composed with primary 90% of water and proteins. The contents of cytoplasm such as nucleoid and ribosomes will be destroyed.

NBCM Aspects of Disinfectants in Bacteria



A scanning electron micrograph of bacteria cell before the inhibition of cell wall synthesis; inhibition of protein synthesis; and disruption of cytoplasmic membrane.



A scanning electron micrograph of bacteria cell bursts from osmotic pressure due to the integrity of peptidoglycan is not maintained. This is due to the followings:

- *Inhibition of cell wall synthesis where bacteria cell walls are destroyed, but not to animals which lack cell walls.*
- *Inhibition of metabolic pathways.*
- *Disruption of Cytoplasmic membranes.*

How do NBCM work in Cleaning and Degreasing?

NBCM cleaning are different from traditional cleaning technology which use the molecular attraction of cationic (positive ions) and anionic (negative ions). NBCM do not have any ionic groups and do not react with hard water ions. They have hydrophilic poles and hydrophobic poles. In a colloidal solution, if the amount of NBCM is increased, there will come to a point where they can no longer accumulate at the

surface. The NBCM molecules will find other ways of shielding their hydrophobic tails from water. The NBCM molecules will aggregate into a cluster in which the tails point inwards. The head groups will form a water soluble shell in the outer surface.

When NBCM are in contact with oil (hydrocarbon) molecules, the center of NBCM bonds to a similar hydrophobic oil (hydrocarbon). They surround and separate (emulsify) oil (hydrocarbon) molecules from each other and/or the surface to which they cling. Once the oil (hydrocarbon) is surrounded and separated through the disruption in the attraction to the other oil (hydrocarbon) molecules and/or to the surface, the oil (hydrocarbon) can be uplifted from the surface and rinsed or wiped away easily.

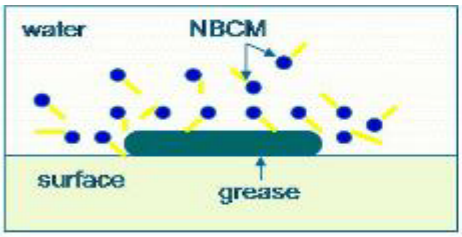


Figure 1.

NBCM attack the particle of grease.

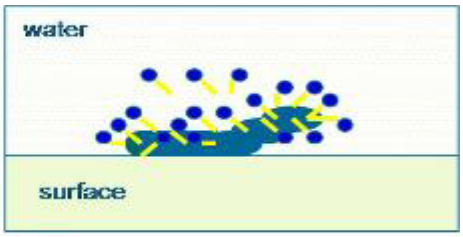


Figure 2.

NBCM surround the particle of grease.

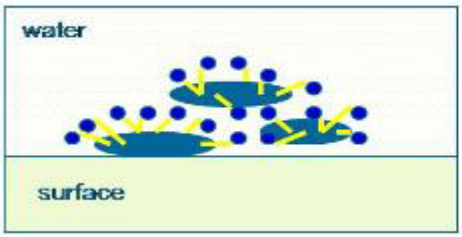


Figure 3.

NBCM break the particle of grease.

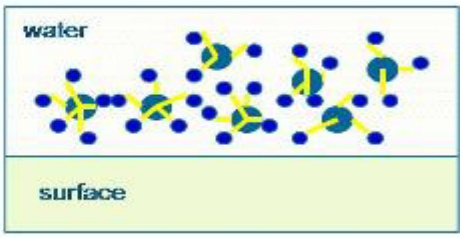


Figure 4.

The particles of grease come off to the surface & remain suspended in the water.

Cleaning Your Kitchen Hood with Kitchen Oil Cleaner

Kitchen hood fans remove the smoke, excess moisture and grease from cooking, so it is very important to follow a few kitchen hood cleaning tips to keep it in tiptop condition. Keeping your kitchen range hood vent working efficiently requires cleaning regularly, especially if you cook often. People wipe the outside of the kitchen hood but completely forget about the fan and filters. Sometimes dirt cakes the blades on the fan, so they do not work efficiently and this can cause the motor to either overheat or quit working. Here are some kitchen hood cleaning tips that turn a dirty job into one that is quick and easy with *Kitchen Oil Cleaner*.

First turn off the electricity supply of the kitchen hood and then follow the steps outlined below.

- Remove the metal grease trap and filter from your range hood and place them in a sink full of water containing *Kitchen Oil Cleaner*. Let the metal grease trap soak until all the built-up grease has dissolved. Use a non abrasive brush or sponge to scrub off the grease on both sides. Rinse it with clean water once the grease is cleaned.
- Clean the interior and exterior of your range hood with *Kitchen Oil Cleaner*. Spray it with *Kitchen Oil Cleaner* and mop it with sponge or cloth. Avoid hitting the light bulb or the light socket. Finally, mop the surfaces with clean water and wipe it clean.
- After cleaning is done, be sure the kitchen hood is dry before reinstalling.
- The activated charcoal filters in a circulating kitchen hood need replacing, as you cannot wash these. Charcoal loses its effectiveness when it is dirty, so it is important to replace them annually or more often, if you cook a lot. These activated charcoal filters are usually available in hardware stores or sometimes from the store where you bought your hood.
- These kitchen hood cleaning tips work great but you should also contact a vent-cleaning contractor to clean the vent leading from your hood to the outside. Do this annually, as grease builds up on the inside of the vent where you cannot reach it.

By following some of these kitchen hood cleaning tips your kitchen hood will look as good as when it was new.

Acute Toxicity Test of Nano Alpha 10

Test Method: OECD Guideline for Testing of Chemicals Method 203 Fish

Result: Not hazardous to the aquatic environment.

Pusat Teknologi Alam Sekitar dan Bioproses
Environment and Bioprocess Technology Centre
Bangunan 15, SIRIM Berhad, Shah Alam, Selangor Darul Ehsan.
Tel : 60-3-5544 6550 / 6598 Faks : 60-3-5544 6590

RESULTS SUMMARY

Company Name : Shemical International Sdn Bhd

Address : Lot 109A, Jalan Gebeng 1/6, Kaw. Perindustrian Gebeng 26080 Kuantan, Pahang (Attn : Mr. Ng)

Your Ref No.	
SIRIM Ref. No.	237/16/712
Job No.	J026/08
Report No.	R054/08
Date of Issue	17/03/08
No. of pages	11

Request : 96-hour Fish (Tilapia), Acute Toxicity Test of Nano Alpha 10

SAMPLE DESCRIPTION
One liquid sample coded as "Nano Alpha 10 " was received on 01 Feb 2008.

TEST METHOD
(1) *Fish acute toxicity test according to OECD Guidelines for Testing of Chemicals - Method 203 Fish, Acute Toxicity Test

RESULT:

Sample Code	Appearance	LC_{50} (96 hour) (v/v)
Nano Alpha 10	Brownish	880 mg/L (0.088%)

Note: Refer to Appendix A – R054-1/08 for details.

INFERENCE
The classification system for substances hazardous to the aquatic environment according to The Globally Harmonised System (GHS) of Classification and Labeling of Chemicals (2005) is shown below.

Toxicity Category (Acute toxicity for 96 hr LC50 for crustacea)	**Classification Limit**
Acute I	≤ 1 mg/l
Acute II	> 1 - ≤ 10 mg/l
Acute III	> 10 - ≤ 100 mg/l

Based on the criteria for the harmonized classification system for substances, the "Alpha Nano 10 " is classified as "Not hazardous to the aquatic environment" as the LC_{50} value is above 100 mg/l.
(The inferences expressed herein are outside the scope of accreditation)

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Designation: Researcher
Fax No: 03-55446590
Tel. No: 03-55446591

SIRIM Berhad
(No. Syarikat 367474 - V)
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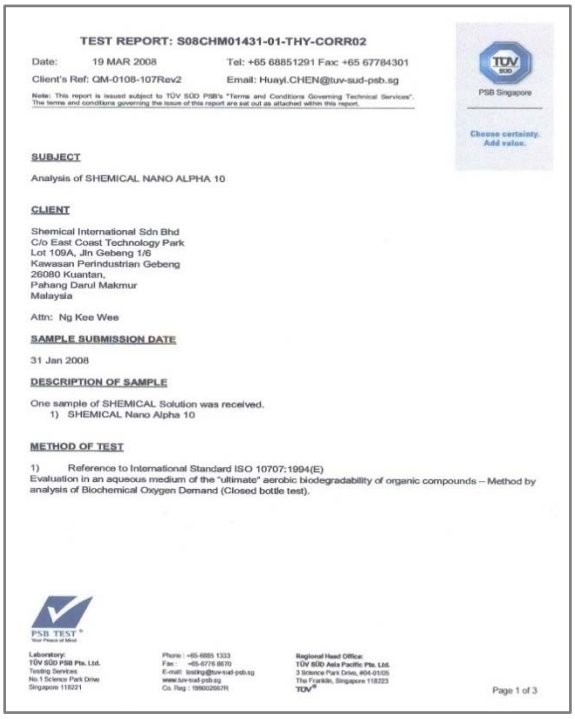
Seksyen 2, Peti Surat 7035
40911 Shah Alam
MALAYSIA
Tel: 60-3-5544 6000
Hotline: 60-3-5510 3535
Faks: 60-3-5510 8095
Website: www.sirim.my

Biodegradability Test of Nano Alpha 10

Test Method: Reference to International Standard ISO 10707:1994(E)

Result: Reach 96% of degradation at day 28 and it is readily biodegradable.



TEST REPORT: S08CHM01431-01-THY-CORR02

Date: 19 MAR 2008 Tel: +65 68851291 Fax: +65 67784301

Client's Ref: QM-0108-107Rev2 Email: Huayi.CHEN@tuv-sud-psb.sg

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PSB Singapore

Choose certainty. Add value.

SUBJECT

Analysis of SHEMICAL NANO ALPHA 10

CLIENT

Shemical International Sdn Bhd
C/o East Coast Technology Park
Lot 109A, Jln Gebeng 1/6
Kawasan Perindustrian Gebeng
26080 Kuantan,
Pahang Darul Makmur
Malaysia

Attn: Ng Kee Wee

SAMPLE SUBMISSION DATE

31 Jan 2008

DESCRIPTION OF SAMPLE

One sample of SHEMICAL Solution was received.
1) SHEMICAL Nano Alpha 10

METHOD OF TEST

1) Reference to International Standard ISO 10707:1994(E)
Evaluation in an aqueous medium of the "ultimate" aerobic biodegradability of organic compounds – Method by analysis of Biochemical Oxygen Demand (Closed bottle test).

PSB TEST

Laboratory: TÜV SÜD PSB Pte. Ltd. Testing Services No.1 Science Park Drive Singapore 118221

Phone : +65-6885 1333 Fax : +65-6776 8670 E-mail: testing@tuv-sud-psb.sg www.tuv-sud-psb.sg Co. Reg : 199002557R

Regional Head Office: TÜV SÜD Asia Pacific Pte. Ltd. 3 Science Park Drive, #04-01/05 The Franklin, Singapore 118223

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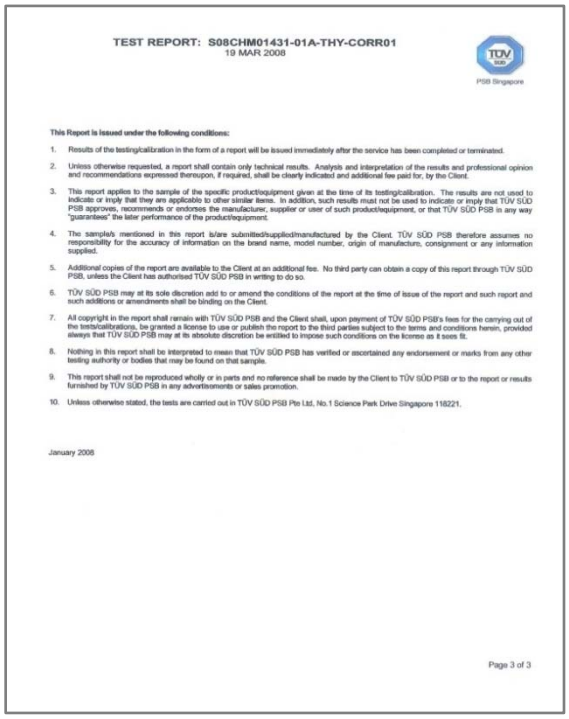

TEST REPORT: S08CHM01431-01A-THY-CORR01
19 MAR 2008

PSB Singapore

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January 2008

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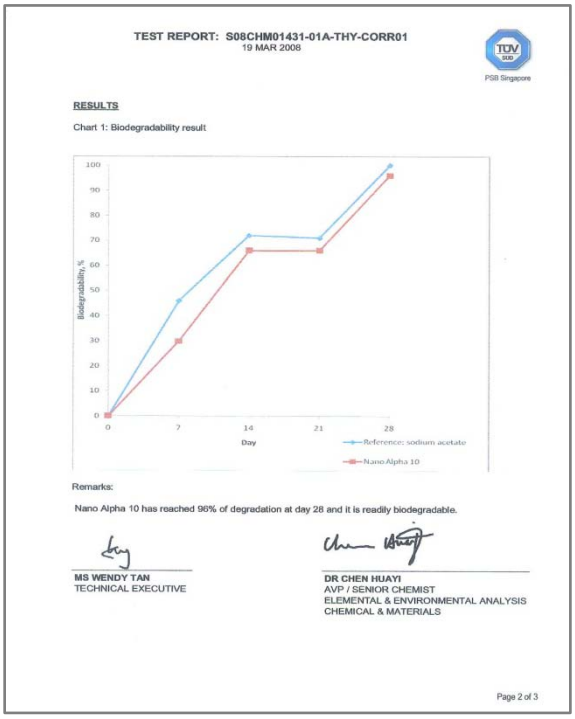

TEST REPORT: S08CHM01431-01A-THY-CORR01
19 MAR 2008

PSB Singapore

RESULTS

Chart 1: Biodegradability result

Remarks:

Nano Alpha 10 has reached 96% of degradation at day 28 and it is readily biodegradable.

MS WENDY TAN
TECHNICAL EXECUTIVE

DR CHEN HUAYI
AVP / SENIOR CHEMIST
ELEMENTAL & ENVIRONMENTAL ANALYSIS
CHEMICAL & MATERIALS

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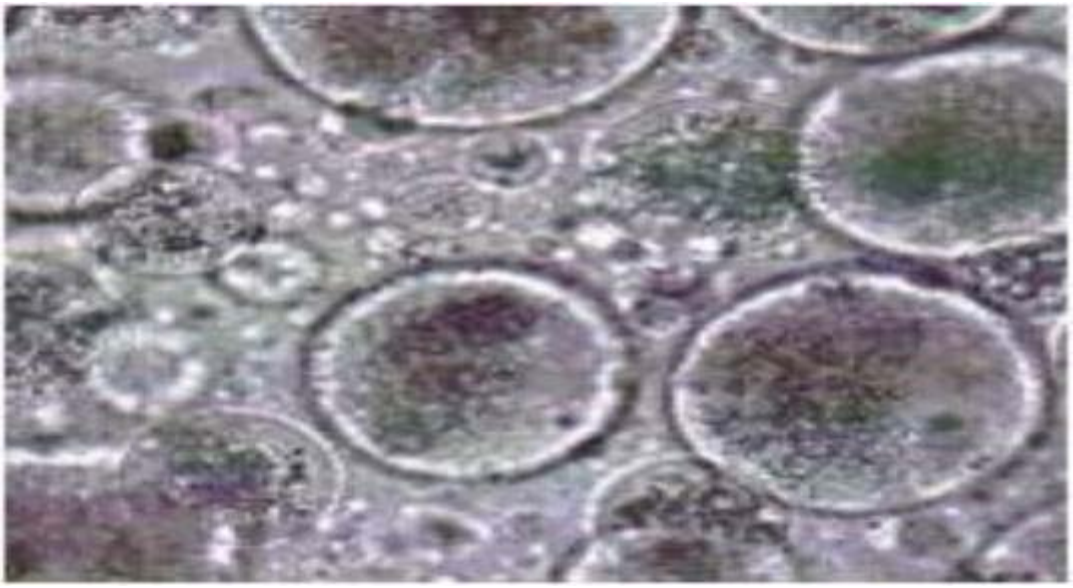
International Standard ISO 10707:1994(E)

Evaluation in an aqueous medium of the "ultimate" aerobic biodegradability of organic compounds –

Method by analysis of

Biochemical Oxygen Demand

(Closed bottle test)



Optical microscopy image of nano and micro emulsions of oil and NBCM cleaner after rinsing with water.