

Highly Efficient and Low Cost UMP Surfactant for Crude Oil Transportation



Patent

- IP 2015001156
- MY-152725
- IP2020005674

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Product Background

Heavy crude oils have a large share of the world's potentially recoverable oil reserves. They are characterized by API gravity below 22.3° and possess extremely high viscosity, generally from 1,000 to more than 100,000 mPa.s. Transportation of heavy crude oils through pipelines is highly complex operation, which is still one of the major challenges for petroleum industry, especially in offshore environment (low temperature conditions). Petroleum industries used to avoid production of heavy crude oil reserves due to economic aspects and technical complexities involved with their transportation. However, to meet globally increasing demand of energy, they have started exploration and exploitation of heavy crude oils. In this invention, suitable surfactant (NS-19-02) has been formulated in the laboratory and characterized using standard analytical instruments. Further the formulated surfactant has been utilized to prepare o/w emulsions of heavy crude oils collected from different oil fields. The formulated surfactant characterized as environmentally friendly, economically competitive and technically visible.

Novelty/ Originality/ Inventiveness

1. The novelty of this invention is the replacement of Oleic Acid by Sunflower Oil, and PEG which cause the reduction of both the Particulate Matter (PM) and Nitrogen Oxides (NO_x).
2. The technology is economically competitive due to introduction of a new raw material compared to conventional raw materials.



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 Patent PI 2019006769

Benefits/Usefulness/ Applicability

- Environmentally friendly
- Economically competitive
- Technically visible
- 30% reduction in cost of fuel
- 60% reduction in emissions
- 95% more efficient than the pre-processed oil

Status of Innovation

- ❖ The product ready for commercialization
- ❖ The product (UMP Surfactant) has secured an International Industrial Grant Total RM850,000.00
- ❖ UMP and The Industry (EUT) are signed MOA for more Research Fund

Achievement/Award

- GOLD MEDAL, ITEX 2020
- Secured International Industrial Grant amount, RM 850,000.00
- MOA Signed for commercialization
- MOA Signed for Collaboration between UMP and EUT

State of the Art/ Methods



Product Image and Product Characteristics/Results



Marketability & Commercialisation

- UMP in a Process to Sell 2 of its IP to International Industry for Commercialization and Production in a mass volume

Environmental Impact

- ❖ UMP surfactant NS-19-02 is environment friendly surfactant, highly efficient surfactant of low high performance for crude oil transportation
- ❖ Economically competitive (RM30/Liter)
- ❖ 30% reduction in cost fuel
- ❖ 60% reduction in emissions

Cost Analysis

Diesel RM/L	Consumption Litre/day	Fuel Bill RM/day	Fuel Bill RM/Mon	Fuel Bill RM/Year	Savings Switching to New Fuel
2.10	200000	420000	12600000	151200000	
1.40	200000	280000	8400000	100800000	50400000
1.800	200000	360000	10800000	129600000	
0.95	200000	190000	5700000	68400000	18000000

Collaboration/Industrial Partner



EASTERN UNITY
TECHNOLOGY

