

Marine Dispersant Finasol[®] OSR52 Effectiveness, toxicity and biodegradability



This datasheet provides a summary of key facts about Finasol OSR52.

Name	Finasol OSR52* (sometimes referred to as Finasol or Finasol 52) <small>*Registered trademark by TOTAL S.A.</small>
Supplying company	TOTAL Fluides SAS

Dispersant product approval

Development of dispersant regulations by competent national authorities or appropriate government regulators forms a critical part of national oil spill contingency planning processes, in alignment with the International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990 (OPRC Convention).

Dispersant product approval requirements outline which dispersants are approved for use and how dispersants can be added to a list of approved dispersants

by meeting the requirements of specific laboratory-based tests.

The tests are designed to screen out least effective or more toxic dispersants and as such can only be used for comparative purposes and not for assessment of actual impacts or efficiency at sea where mixing and especially exposure conditions (as well as organisms types and life stages) would be very different.

During a response, field efficiency may be evaluated by a test application of dispersant.



Regulatory approval of dispersant products and authorization for their use

Further information on regulatory approval and authorisation can be found in the IPIECA-IOGP report on the subject: bit.ly/DispersantAA

Effectiveness

A dispersant should meet or exceed a threshold for effectiveness (or 'efficacy'). It is necessary for a dispersant to possess a minimum level of effectiveness to enhance the rate of natural dispersion when applied at sea.

A range of laboratory based tests are used globally that have been designed to allow for the assessment of good vs poor performance: IFP (>60%) in France, WSL (LR448, >60%) in UK and SFT in USA/ Canada (>45%).

These tests are designed to assess dispersant efficacy under specific conditions described in national regulations. None of the laboratory test methods can simulate the complex mixing scenarios and energies encountered in the marine environment. Therefore, results from laboratory tests typically expressed as 'percentage effectiveness', should not be extrapolated to the amount of oil likely to be dispersed in real world incidents. The tests will, however, provide data on the relative effectiveness of different dispersants under the parameters of that test.

	UK	USA	FRANCE	AUSTRALIA
Efficacy pass level	>60% Dispersants must achieve a minimum efficiency of 60%. Effectiveness of ~72% in temperatures as low as 0°C	≥45% A dispersant must attain an effectiveness value of 45% or greater (compared to the control) in order to be added to the US EPA NCP Schedule	>60% Dispersants must achieve a minimum efficiency of 60%	>50% Dispersants must achieve a minimum efficiency of 50% when tested by the Mackay dispersant performance test
Efficacy achieved	Pass Finasol passed the LR448 approval test. Manufacturer declared data of 92% efficiency reported by Total Fluides from LR448 testing	Pass Finasol is 52.1% effective (Average of two crude oils. Prudhoe; 32.5% and South Louisiana; 71.6%) ¹ . Effectiveness of ~72% in temperatures as low as 0°C ²	Pass Finasol passed the IFP approval test, i.e. has a minimum efficacy of 60%	Pass Finasol effectiveness 53% (Q cut) on reference oil, 21% on IFO180 and 5% on HFO380

¹Regulatory approval using the Baffled Flask Test

www.epa.gov/emergency-response/national-contingency-plan-product-schedule-toxicity-and-effectiveness-summaries

²The test procedure was adapted from the Ohmsett dispersant effectiveness test protocol developed between 2000 and 2003 by MAR Inc. and SL Ross and documented in "Dispersant Effectiveness Testing on Alaskan Oils in Cold Water" (SL Ross Environmental Research & MAR Incorporated, 2003).

Toxicity

Toxicity testing

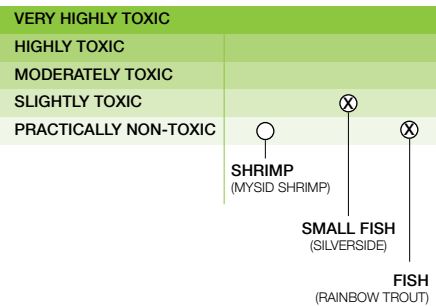
A dispersant should not exceed a maximum toxicity threshold to marine life. Care needs to be taken when considering dispersant toxicity versus the toxicity of the dispersed oil (dispersant plus oil) since it is the toxicity of the oil that accounts for the largest contribution. When evaluating toxicity for inclusion onto a list of approved products the maximum toxicity threshold of a candidate dispersant is usually set at either:

- a) a level where the oil and dispersant mixture is no more toxic than the oil alone at the same exposure levels; or
- b) if the dispersant is tested alone, at a level which is significantly less toxic than a reference oil.

This testing can only evaluate the relative toxicity of different candidate dispersants under artificial laboratory conditions and is not intended to predict actual environmental impacts in the field where the exposure regime experienced by marine organisms will be much different.

Finasol toxicity to shrimp and fish⁴

⁴NOAA's *Chemical Aquatic Fate and Effect (CAFE)* database analysis on a wider range of test species (Dec 2015)



UK	USA																		
Pass	Slightly to moderately toxic = Pass ⁴																		
Sea Test passed ³	Finasol only = slightly to moderately toxic Finasol and No.2 fuel oil = moderately toxic No.2 fuel oil only = moderately toxic Reference toxicant DDS = slightly to moderately toxic																		
FRANCE	AUSTRALIA																		
Pass	Pass																		
Finasol is approved for France using the standard NF.T.z90-349 method which requires the toxicity of Finasol to shrimp to be at least 10 times lower than the toxicity of a reference toxicant (Noramium DA50).	Finasol meets the Australian Maritime Safety Authority eco-toxicity acceptability criteria for Oil Spill Control Agent product listing under the Australian National Plan. ⁵																		
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³Test procedure exposes shrimps to a mixture of oil (i.e. a lightly weathered Kuwait crude oil) and dispersant. The mixture is 1 part of dispersant to 10 parts of oil. The dispersant will be approved based on nominal concentrations if the dispersant and oil mixture causes no more mortality than that caused by mechanically dispersed oil alone. Results are shown as a pass or fail. Kuwait Crude is used as the reference oil for toxicity testing.

⁵January 2014 test date

Biodegradability

A dispersant should be readily biodegradable and not contain persistent harmful constituents. This may require additional information to be provided as part of the product approval process.

UK and USA	FRANCE	INDONESIA
No requirement for testing	>50% = Pass ⁶	>60% = Pass ⁷

⁶For France, biodegradability of the dispersant should be at least 50%. CEDRE tests show a 63% pass rate within 28 days.

⁷Using US EPA protocol (OPPTS 835.3160 Biodegradability in Sea Water) showed results of 62.34% (60% threshold) – categorised as a “well biodegradable substance in the marine environment”