Technical Bulletin

UCON™ Trident™ and 40 CFR 435: Static Sheen Test

UCON™ Trident™ passes the Static Sheen Test.

> ***Title 40: Protection of Environment PART 435—OIL AND GAS EXTRACTION POINT SOURCE CATEGORY Subpart A—Offshore Subcategory Appendix 1 to Subpart A of Part 435—Static Sheen Test***
>
> ***1. Scope and Application: This method is to be used as a compliance test for the "no discharge of free oil" requirement for discharges of drilling fluids, drill cuttings, produced sand, and well treatment, completion and workover fluids. "Free oil" refers to any oil contained in a waste stream that when discharged will cause a film or sheen upon or a discoloration of the surface of the receiving water.***
>
> ***2. Summary of Method: 15-mL samples of drilling fluids or well treatment, completion, and workover fluids, and 15-g samples (wet weight basis) of drill cuttings or produced sand are introduced into ambient seawater in a container having an air-to-liquid interface area of 1000 cm2 (155.5 in2). Samples are dispersed within the container and observations made no more than one hour later to ascertain if these materials cause a sheen, iridescence, gloss, or increased reflectance on the surface of the test seawater. The occurrence of any of these visual observations will constitute a demonstration that the tested material contains "free oil," and therefore results in a prohibition of its discharge into receiving waters.***

The components of UCON™ Trident™ dissolve in water, do not form a sheen, and will not form residual "free-oil". Pictures showing UCON Trident going into water are shown in Figure 1.

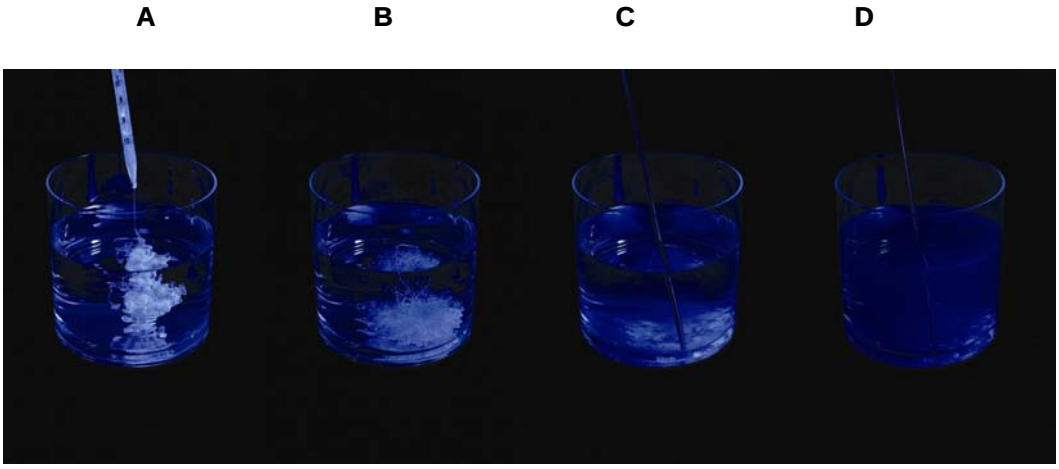

Figure1: UCON™ Trident™ doped with a black-light sensitive dye A) being dropped into water, B) sinking to the bottom of still water, C) before any agitation, and D) after simple agitation of the water.

The Static Sheen test has been performed on UCON™ Trident™ fluids and they do pass. Sheen testing is performed on all routine testing of Trident hydraulic fluids.

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Independent lab results of Appendix 1 to Subpart A of 40 CFR 435 of various commercially available Hydraulic fluids

The EPA's Static Sheen test was performed on samples of new, unused, virgin fluid of commercially available hydraulic fluids that claim to be environmentally friendly.

> ***8.6 Detection of a "silvery" or "metallic" sheen or gloss, increased reflectivity, visual color, iridescence, or an oil slick on the water surface of the test container surface shall constitute a demonstration of "free oil." These visual observations include patches, streaks, or sheets of such altered surface characteristics. If the free oil content of the sample approaches or exceeds 10%, the water surface of the test container may lack color, a sheen, or iridescence, due to the increased thickness of the film; thus, the observation for an oil slick is required. The surface of the test container shall not be disturbed in any manner that reduces the size of any sheen or slick that may be present.***

	UCON™ Trident™ AW-46	Vegetable oil based hydraulic fluid	Synthetic ester based hydraulic fluid	White-oil based hydraulic fluid	Petroleum based hydraulic fluid
Silvery or metallic sheen	NO	NO	NO	NO	NO
Increased reflectivity	NO	NO	**YES**	**YES**	NO
Visual Color	NO	NO	NO	NO	NO
Iridescence	NO	NO	NO	NO	NO
Oil Slick exceeding 10% of surface area	NO	**YES**	**YES**	**YES**	**YES**
Appendix 1 to Subpart A of 40CFR435 result	**PASS**	**FAIL**	**FAIL**	**FAIL**	**FAIL**

Hydraulic fluids that generate an oil slick exceeding 10% of surface area act as a carrier for materials that make the silvery or metallic sheen, increased reflectivity, visual color, and iridescence as the fluid is used in a hydraulic system.