

SOLBERG® VERSAGARD™ AS-100 PERFORMANCE ON ETHANOL AND ANOTHER POLAR SOLVENTS

Date: 12/05/2021

Abstract:

Several tests on different polar solvents have been carried out in AUXQUIMIA, S.A.U. facilities with SOLBERG® VERSAGARD™ AS-100 to evaluate performance of this product in different fuels.



1- INTRODUCTION

SOLBERG® VERSAGARD™ AS-100 is a new Fluorine Free Pseudoplastic firefighting foam concentrate developed by Perimeter. This product has obtained certifications according to different European Standards EN 1568-1/2/3/4:2018 with the highest classification. It has been certified according to IMO MSC1.Circ.1312 and it has been tested under LASTFIRE protocol with good results in all cases.

2- TESTS AND RESULTS

2.1. European Standard

According to the European Standard for polar solvents EN 1568-4, the reference fuels to obtain the corresponding certification are acetone and isopropyl alcohol where the results have been Class IA in both fuels for fresh and sea water. An internal test on ethanol in fresh water has been carried out in AUXQUIMIA S.A.U. facilities under this standard EN 1568-4:2018, with the best Classification, Class IA.

| EN 1568-4:2018 | |
|-----------------------|----------|
| Water | FW |
| Fuels | Ethanol |
| Expansion index | 7.4 |
| 25% Drainage time | 0:58:49 |
| 90% Control, min:s | 0:51 |
| Extinguishment, min:s | 1:07 |
| Burnback 25%, h:min:s | 0:34:23 |
| | Class IA |



2.2. UL-162 Standard

2.2.1 UL-162 Standard Topside fire test



UL Topside fire tests in fresh and sea water, according to UL-162, have been carried out in AUXQUIMIA S.A.U. facilities, under Remote Witnessed Testing by UL inspector, on Heptane and different polar solvents (Isopropyl alcohol, Methanol and Ethanol) to obtain the corresponding UL Listing for this product. The table below shows the results obtained in the UL tests carried out on different polar solvents, since the scope of this report is the evaluation of SOLBERG® VERSAGARD™ AS-100 performance on polar solvents, especially on ethanol.

| UL | | | | | | |
|-----------------------|------------------|------------------|-----------------|-----------------|-----------------|-----------------|
| Water | TAP WATER | SEA WATER | TAP WATER | SEA WATER | TAP WATER | SEA WATER |
| Date | 5/6/2021 | 5/7/2021 | 5/7/2021 | 5/7/2021 | 5/7/2021 | 5/7/2021 |
| Fuels | IPA | IPA | METHANOL | METHANOL | ETHANOL | ETHANOL |
| Flow rate | 22.4 l/min=6 gal | 22.4 l/min=6 gal | 11.4l/min=3 gal | 11.4l/min=3 gal | 11.4l/min=3 gal | 11.4l/min=3 gal |
| Application rate | 0.12 gpm/sqft | 0.12 gpm/sqft | 0.06 gpm/sqft | 0.06 gpm/sqft | 0.06 gpm/sqft | 0.06 gpm/sqft |
| Nozzle | MARK | MARK | UNI | UNI | UNI | UNI |
| Expansion index | | | | | | |
| 25% Drainage time | | | | | | |
| Temperatures | 18-16-14.3 | ?-18-? | 16-16-15 | 15-17.4-18 | 18-17-14 | 17-18-17 |
| 90% Control, min:s | 1:38 | 1:43 | 1:12 | 0:52 | 1:30 | 1:36 |
| 99% Control, min:s | | | 2:21 | 1:19 | 2:49 | 2:41 |
| Extinguishment, min:s | 3:05 | 3:10 | 2:55 | 2:42 | 3:11 | 3:35 |
| Torch 1 | OK | OK | OK | OK | OK | OK |
| Torch 2 | OK | OK | OK | OK | OK | OK |
| Burnback, 5 min | Foam Closed | Foam Closed | Foam Closed | Foam Closed | Foam Closed | Foam Closed |
| | Pass | Pass | Pass | Pass | Pass | Pass |



2.2.2. Sprinkler Test

Green Bay R&D Team carried out a Sprinkler Test on IPA with this product. Good extinguishment time and good behavior on burnback test have been shown.

| UL-162 | Sprinkler test |
|-----------------------------|-----------------------|
| Water | FW |
| Fuel | IPA |
| Sprinkler heads, type | 11.2K pendant |
| T ^a air, °C | 4.5 |
| T ^a fuel, °C | 15 |
| T ^a solution, °C | 16.7 |
| Flow rate lpm/gpm | 757/200 |
| Foam application rate | 4 gpm/ft ² |
| Time preburn | 15s |
| Foam application time | 5 min. |
| 90% Control, min:s | 2:35 |
| Extinguishment time, min:s | 3:04 |
| Torch 1 | OK |
| Torch 2 | OK |
| Burnback at 5 min. | Foam blanket closed |



3- CONCLUSION

SOLBERG® VERSAGARD™ AS-100 in solution at 3% shows very good performance and foam stability in the fuels tested.

