# SAG* TP-325

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## Description

SAG TP-325 silicone antifoam is based on a unique organosilicone structure, making it a new generation of antifoams for diesel fuel. SAG TP-325 silicone antifoam contains only 9.4% silicon.

## Key Features and Benefits

- Enables longer storage stability for diesel fuels
- Permits fast and virtually complete filling of fuel tanks
- Helps maintain high performance in wet diesel fuel
- Minimizes silica deposits on fuel injection
- Provides excellent durability in wet and dry diesel fuels
- Requires low silicon level (one-half that of current state-of-the-art antifoam)
- Requires low usage levels – 5 ppm
- Quick foam knockdown
- Insoluble in water
- Halogen free

## Typical Physical Properties

| | |
|---|---|
| Appearance | Clear to slightly yellow |
| Form | Liquid |
| Apparent Specific Gravity at 20°C | 1.03 |
| Viscosity at 25°C, cSt | 400 |
| Refractive Index at 25°C | 1.4450 |
| Flash Point, Pensky-Martens Closed Cup, °C (°F) | 103 (218) |
| Freezing Point, °C (°F) | <-32 (<-26) |

## Potential Applications

SAG TP-325 silicone antifoam is an excellent candidate for use in diesel additive packages (DAPs) and helps achieve cost-effective foam control of diesel fuels.

**Processing Recommendations**

In every case tested, SAG TP-325 silicone antifoam exhibited superior performance – at half the concentration – to the com petitive state-of-the-art antifoam, especially in wet diesel fuel.

The performance of SAG TP-325 silicone antifoam and a competitive state-of-the-art antifoam was evaluated in various diesel fuels. The antifoams were incorporated in different DAPs at varying levels. These DAPs were added at 200 ppm to par ticularly highand low-foaming commercial diesel fuels and allowed to stand overnight in order to simulate typical use conditions. The studies were conducted according to the DHYCCA (Direction Française d'Hydrocarbures) test, which consists of injecting the diesel fuel at 1.5 bar into a graduated cylinder and mea suring the collapse time.

The antifoams were evaluated in both "dry" diesel (50 ppm water) and "wet" diesel (1000 ppm water). The final concentration of SAG TP-325 silicone antifoam was 7.5 ppm for high-foaming and 5 ppm for low-foaming diesel fuel. The competitive antifoam concentration, based on supplier-recommended addition rates, was 15 ppm and 10 ppm, respectively. Results of the eight-week test are summarized in Table 1 (high-foaming) and Table 2 (low-foaming).

Relative defoam times are shown in Figures 1 and 2 for high-foaming diesel fuel and in Figures 3 and 4 for low-foaming diesel.

**Table 1: Antifoam Performance in High-Foaming Diesel Fuel**

| Test Sample | Antifoam Level, ppm | Defoam Time, sec | | Defoam Time (at 8 wks) Relative to Control, % |
|---|---|---|---|---|
| | | Initial | After 8 wks | |
| Dry Diesel Fuel[1] | | | | |
| Control (Neat Diesel) | — | 62 | 78 | — |
| With SAG TP-325 silicone antifoam | 7.5 | 8 | 9 | 11 |
| With State-of-the-Art AF | 15 | 10 | 11 | 14 |
| Wet Diesel Fuel[2] | | | | |
| Control (Neat Diesel) | — | 56 | 78 | — |
| With SAG TP-325 silicone antifoam | 7.5 | 5 | 9 | 11 |
| With State-of-the-Art AF | 15 | 19 | 31 | 40 |

(1) 50 ppm water
(2) 1000 ppm water

**Table 2: Antifoam Performance in Low-Foaming Diesel Fuel**

| Test Sample | Antifoam Level, ppm | Defoam Time, sec | | Defoam Time (at 8 wks) Relative to Control, % |
|---|---|---|---|---|
| | | Initial | After 8 wks | |
| Dry Diesel Fuel(1) | | | | |
| Control (Neat Diesel) | — | 27 | 37 | — |
| With SAG TP-325 silicone antifoam | 5 | 8 | 9 | 11 |
| With State-of-the-Art AF | 10 | 10 | 11 | 14 |
| Wet Diesel Fuel(2) | | | | |
| Control (Neat Diesel) | — | 27 | 33 | — |
| With SAG TP-325 silicone antifoam | 5 | 3 | 4 | 12 |
| With State-of-the-Art AF | 10 | 7 | 12 | 32 |

(1) 50 ppm water

(2) 1000 ppm water

Figure 1: Relative Defoam Time of Antifoams as Measured in Dry High-Foaming Neat Diesel Fuel

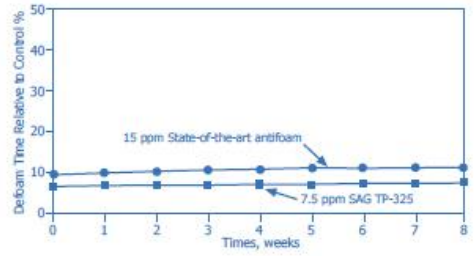



Figure 3: Relative Defoam Time of Antifoams as Measured in Dry Low-Foaming Neat Diesel Fuel

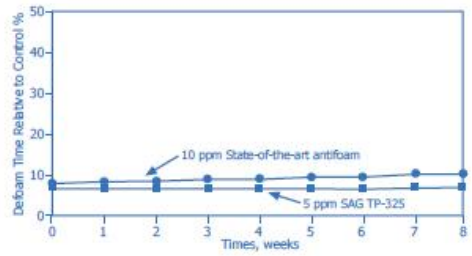



Figure 2: Relative Defoam Time of Antifoams as Measured in Wet High-Foaming Neat Diesel Fuel

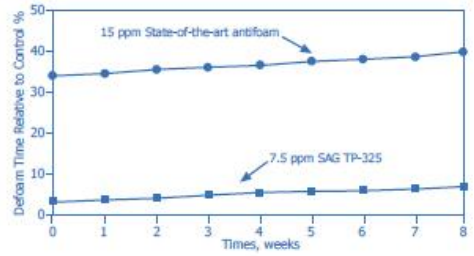
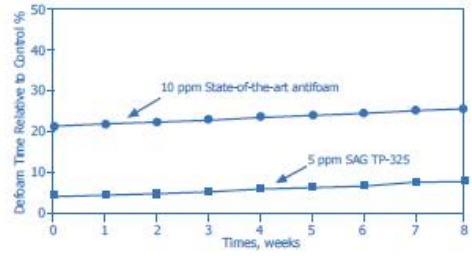



Figure 4: Relative Defoam Time of Antifoams as Measured in Wet Low-Foaming Neat Diesel Fuel




**Critical Antifoam Concentration**

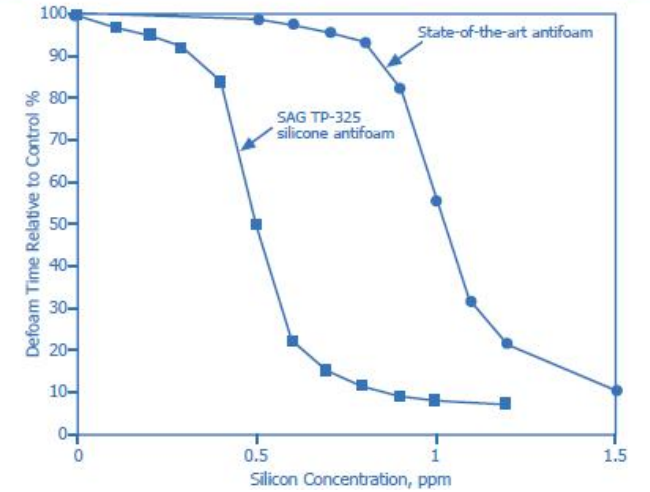
Antifoam performance may be lost below a certain critical concentration; it will depend on the diesel fuel and the DAP.

Figure 5 shows the effect of low silicon concentrations for SAG TP-325 silicone antifoam measured in a typical diesel fuel. The critical concentration corresponds to the sharp change in the curve and occurs at

around 0.4-0.5 ppm silicon for TP-325 silicone antifoam compared to 0.9-1.0 ppm for the typical diesel fuel antifoam.

The results are expressed as a percentage of the defoam time for the control (neat diesel fuel).

Figure 5: Relative Defoam Times of Antifoams vs. Silicon Concentration in a Typical Diesel Fuel




**Availability**

SAG TP-325 silicone antifoam is available in 200-kg drums. Alternate packaging is available upon request.

**Patent Status**

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

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