

Solstice® Performance Fluid



**Exceptional Cleaning Power
For Demanding Applications**

Honeywell

Solvents allow for quick and efficient cleaning and are ideal in many applications. Under strict regulatory pressure the use of many solvents has been limited or eliminated completely. Several factors such as Volatile Organic Compound (VOC) status, flammability, toxicity and looming pressure of GWP regulations have driven a need for a new solvent that can meet today's regulatory demand.

In response, Honeywell is introducing Solstice® Performance Fluid, which has the cleaning benefits of the past while satisfying today's and possible future regulations.

Honeywell's new Solstice Performance Fluid delivers across the four dimensions that are most important to users:

PERFORMANCE | COST EFFECTIVENESS | SUSTAINABILITY | SAFETY

USES

Solstice Performance Fluids and blends have been identified and tested for efficacy using the following delivery methods:

AEROSOL
VAPOR
IMMERSION
LINE FLUSHING

Potential applications are:

PRECISION CLEANING
ELECTRONICS CLEANING
MEDICAL DEVICE
CLEANING
AEROSPACE
METAL AND PLASTIC
PARTS CLEANING
OXYGEN AND PROCESS
LINE FLUSHING
TEXTILE CLEANING



PERFORMANCE

Solstice Performance Fluid exhibits excellent solvency for a wide variety of solutes including hydrocarbon oils, silicone oils, silicone greases, fluorinated oils, mineral oils, acrylics, liquid RMA fluxes, hydraulic fluids and others. As an indication of the high degree of solvency, mineral oil can be dissolved in Solstice Performance Fluid at a level of at least 50% by weight and will remain completely dissolved even at temperatures as low as -30°C. The same results are observed with a high-viscosity silicone oil, a cutting oil and a silicone grease. Another measure of solvency is KB value. The KB value of Solstice Performance Fluid is 25, which is very similar to the KB value of the benchmark solvent, CFC-113. Like CFC-113, Solstice Performance Fluid is an effective cleaner but does not harm most substrates. Solstice Performance Fluid also exhibits very low surface tension, which contributes to good surface wetting and superior cleaning of intricate parts.

Solstice Performance Fluid is thermally and hydrolytically stable. In one experiment, samples of Solstice Performance Fluid, in the presence of water and metals, were stored at 150°C for two weeks. There was no observed effect on the metals and analysis showed no indication of breakdown of the Solstice Performance Fluid. Also, samples stored in steel cylinders for several years have been analyzed and found to be in specification.

Solstice Performance Fluid is compatible with many commonly used plastics and elastomers. When completely submerged in Solstice Performance Fluid for 2 weeks, plastics including ABS, HDPE, PTFE, PVC and others showed little to no deterioration. After a similar 2 week submersion test, fluoroelastomers, polyurethanes and neoprene elastomers showed excellent performance. Solstice Performance Fluid is also compatible with many metals, including stainless steel, aluminum, cold rolled steel, copper, galvanized steel and tinplate aerosol cans.

This combination of properties – solvency, compatibility and wetting – makes Solstice Performance Fluid an extremely versatile solvent with broad utility as a cleaning solvent for precision parts, electronics, medical devices, etc., and as a carrier fluid for depositing coatings, adhesives and lubricants.



Precision metal parts, delivery lines and sensitive electronics can all be effectively and safely cleaned with Solstice Performance Fluid.

Honeywell Solstice® Performance Fluid

COST EFFECTIVE

Honeywell Solstice Performance Fluid will be more cost-effective compared to other currently available cleaning solutions:

- Low solvent loss due to:
 - High heat of vaporization, low surface tension; improved wetting characteristics & reduced drag-out loss
 - Recovery potential—distillation and carbon recovery
- Reduced energy requirements for processing
- Excellent solvency, not a high-cost filler
 - Reduces or eliminates need for blending
- No post-process residue removal
- Potential drop-in alternative in aerosol cleaners

SUSTAINABILITY

Honeywell Solstice Performance Fluid is a promising replacement for solvents currently in use, with the potential to make significant contributions to reductions in greenhouse gas emissions.

When substituted for HCFC-225, HCFC-141b, HFC-4310mee, HFC-365mfc, and HFE-7100 the use of Solstice Performance Fluid can yield substantial improvements in environmental impact. With a global warming potential (GWP) of 1, its widespread adoption could save about 18 million metric tons per year of CO₂ equivalent emissions, comparable to eliminating carbon dioxide emissions from more than 3 million cars every year.

(Source: GHG Equivalencies Calculator:
<http://www.epa.gov/cleanenergy/energy-resources/calculator.html>)

Additionally, Solstice Performance Fluid has been classified as a non-VOC by the U.S. EPA, which means that incineration equipment to control ground-level ozone and smog formation will not be required, yielding potentially significant capital savings.

SAFETY

Solstice Performance Fluid is non-flammable as shown by no flash point or vapor flame limits, requiring no specific explosion proofing unlike some other solvents. Honeywell has made significant progress towards completing risk assessments for use and commercialization of Solstice Performance Fluid. A Workplace Environmental Exposure Level (WEEL) of 800 PPM (8-hour time weighted average) has been assigned to the solvent.



Honeywell Fluorine Products
101 Columbia Road
Morristown, NJ 07962-1053
Phone: 1-800-631-8138
www.honeywell-solvents.com

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