

Liquid Assets: Nonflammable Carrier Fluids Improve Facility Safety

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Industry:

Medical Device

Published:

MicroCare Resources



Silicone-fluid lubricants are commonly used to coat disposable needles.



The need to dilute the concentrated polydimethylsiloxane lubricants used on medical devices is a global issue. Flammable solvents work well but incur substantial risks. A nonflammable choice can improve coating quality and eliminates a serious flammability problem for most medical device makers.

Silicone-fluid lubricants are commonly used to coat medical devices. This includes disposable needles that are used for delivering medication or withdrawing fluids, and for suturing in medical procedures. The lubricious coating on the needle surface reduces drag forces. This allows the needle to go through the skin more easily, ultimately making it less painful for the patient.

Many medical grade silicone fluid polydimethylsiloxane lubricants are provided in concentrated form. So, medical device manufacturers need a carrier fluid to dilute the concentrated silicone lubricant. The carrier fluid allows a very thin film of silicone to be applied to an article by dipping or spraying.

The Ideal Carrier Fluid

The ideal carrier fluid must have good solubility. This allows the silicone oil to dilute and naturally disperse in the carrier. The user can then apply the dilution to a surface by spraying or dipping. The carrier fluid should also be fast drying so when it evaporates, a thin, consistent film of silicone remains as a uniform coating on the treated part.

Nonflammability For Plant Safety

Nonflammable carrier fluid options are a preferred method of application, providing low risk of fire, especially important for high-volume production facilities. While original nonflammable carrier options were low-risk, they were regulated out of production due to environmental issues. The rapidly changing regulatory landscape has made it increasingly difficult to specify nonflammable carrier fluids. Nonflammable options all but disappeared from the market and many medical device manufacturers considered flammable options to replace them.

Both aliphatic and aromatic hydrocarbons are two commonly used flammable carrier fluid options. But these are difficult to use especially in high-volume production facilities because of the flammability risk. In an environment that is already prone to static discharge, it takes just one spark to start a fire due to flammable carrier fluids' vapors. The engineering controls required to mitigate risks associated with handling flammable liquids are very expensive, and often difficult for health and safety officers to support.

Regulatory Compliant Options

With increased focus on changing health and safety concerns, the tide is turning away from flammable options due to their high-risk factors. A nonflammable formula is available from MicroCare Medical that provides a safe, reliable and ideal drop-in replacement to the widely used flammable carriers such as hexane or toluene. Suitable for use in the European Union and US and meeting all REACH requirements, the MicroCare Universal Carrier Fluid is a custom-blended carrier fluid with good solubility and excellent materials compatibility that has been optimized to dilute and apply medical grade polydimethylsiloxane lubricants to medical devices.



Nonflammable carrier fluid dilutes lubricant then dries quickly after application.

About the Author:

Jay Tourigny is Senior Vice President at MicroCare which offers precision cleaning, lubricating and debinding solutions. He has been in the industry more than 30 years and holds a BS from The Massachusetts College of Liberal Arts. Tourigny holds numerous U.S. patents for cleaning-related products that are used on a daily basis in medical, fiber optic and precision cleaning applications. For more information, visit microcare.com.



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