

# What is a Synthetic? Depends on Whom You Ask.

# FYI

## Get what you pay for

When it comes to dust suppressants and soil stabilizers, you have to be word smart.

Just as words like rich, intelligent, natural and “lite” carry with them a range of meanings colored by perspective, so too does the word synthetic. That is why everyone buying a dust suppressant or soil stabilizer whose manufacturer uses the word “synthetic” in its description, needs to understand what kind of synthetic they are buying – and what that means in terms of performance and environmental safety.

## Gold standard – synthetic as defined by the EPA

The EPA has set forth a series of parameters and the preferred test methodology to measure whether a base fluid qualifies as a synthetic (see chart below). These are the most stringent and well-defined qualifiers in terms of PAH content, oil sheen, toxicity, and biodegradability.

**TAKEAWAY:** A dust suppressant that is called a synthetic fluid as defined by the EPA is one that delivers the highest level of environmental protection *and* performance.

## Confusion in the marketplace

Some manufacturers market dust suppressants they call synthetic fluids, implying that these products are as environmentally sound as those which meet the EPA definition of synthetic. They are not.

Here’s where the confusion lies: These products are called synthetic-fluids based on *performance* criteria established by the American Petroleum Institute. These criteria were established as a grading system for how well a base oil works as an *engine oil*. EPA criteria, on the other hand, were established specifically to ensure the environmental safety of products which are exposed to and released into our environment.

Marketers, counting on naivety on the part of consumers, have claimed that their synthetic fluids, based on the criteria used for motor oil performance, are virtually the same as those that meet EPA standards.

**TAKEAWAY:** Dust-suppressant products deemed synthetic fluids because they meet the standards set by the automotive lubrication market are not as green as those that meet the EPA definition.

## Meeting the EPA Definition of a Synthetic Fluid

What is Being Measured	Recommended Method *	Standard Limits
PAH Content	EPA 1654A (GC/MS)	< 10 ppm (0.001% wt)
Oil-Sheen Free	Static Sheen Test (Appendix 1 of Subpart A CFR 435)	pass
Sediment Toxicity	Modified ASTM E1367-92, Lepthocheirus	≥ results of C16 - C18 Internal olefin
Biodegradability	Modified ISO 11734, 275 day anaerobic	≥ results of C16 - C18 Internal olefin

*Only Midwest offers products that meet EPA standards. They include EnviroKleen®, EK35®, Arena Rx® and Diamond Doctor®, all with binders that deliver longer-lasting performance, enhance surface strength, and reduce life-cycle costs. Other products in the market are economy-priced binder-less dust suppressants that are used for short-term dust control.*

*\*These are methods recommended by the EPA.*



## Synthetic Organic Dust Control®

The new kid on the block, Synthetic Organic Dust Control® is a category of dust suppressants and stabilization products that use the EPA-defined synthetic base fluids. Dust suppressant and soil stabilization products in this category are specifically manufactured with environmental soundness as a primary design criterion in addition to performance. Midwest's synthetic organic products were developed in our own lab using the most environmentally sound, 100% active fluids available in the market.

## Chemistry lesson

Totally separate from dust control or any other market, synthetic as defined by "The Condensed Chemical Dictionary" means:

"Creation of a substance which either duplicates a natural product or is a unique material not found in nature, by means of one or more chemical reactions or (for elements) by a nuclear change. High temperatures and pressures as well as a catalyst are usually required."

Ronald Hoffman, Ph.D. Chemistry, Harvard University, amplifies that definition to:

"A synthetic material is a substance, pure or a mixture that has undergone at least one major chemical transformation (reaction) in its manufacturing process. A simple physical separation, purification or transformation (e.g. freezing, boiling) does not constitute a synthesis. A synthetic material is the product of an intended chemical reaction."

So how do EPA and API standards measure up to these definitions? The methodologies used in both start with crude oil.

- End products that meet EPA standards have been hydro-isomerized. Molecules are subjected to great heat and pressure, which blow them apart to form an entirely new substance that no longer has a petroleum base.
- End products that are synthetic only by the inferred automotive lubrication market have simply gone through a process that physically separates the fluid from the oil. No chemical change has taken place. That means that the separated "synthetic fluid" is still petroleum based and, therefore, not as environmentally sound.

## About Midwest

Midwest is the world leader in environmentally sound, dust-control technology for every application where fugitive dust is a problem. We bring our customers more solutions, documentation and support than any other manufacturer. On a daily basis, we challenge ourselves to become even more accessible problem-solvers so we can set a new industry standard for proactive and responsive service. Pushing the envelope is part of our corporate DNA, and we strive, always, to develop cutting-edge processes, products and services; stay on top of the learning curve, and educate our customers for our mutual success.

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