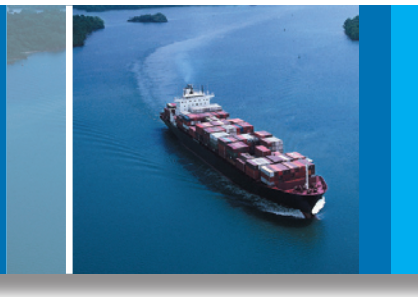
Chevron

Global Marine Products

TEXACO Chevron CALTEX

Our Family of Brands

7 Marine Lubricants Information Bulletin



Lubricant Compatibility

Often when switching from one supplier to another, the question arises whether lubricants in use and in storage can safely be mixed with lubricants from the new supplier. Some oils are incompatible because of differences in additive chemistry. If these oils are mixed, insoluble material may form and be deposited in the oil system.

There have been cases where grease-like substances plugged lines and filters in circulating systems, resulting in equipment shutdown. Analysis of these substances showed that they were derived from oil additives. Incompatibility can exist between two different Chevron products or between a Chevron product and that of a competitor.

Cause of incompatibility

In rare cases, an adverse reaction may occur between two oils at certain working conditions in a system. Most often the cause of incompatibility is the neutralization of an acidic additive in one oil by an alkaline additive in the other oil.

During the reaction, a soap forms (usually a calcium soap) that can precipitate a grease-like gel that interferes with lubrication and oil flow. However, mixed oils may not always lead to incompatibility issues.

They can exist without precipitation or reaction in an operating system for an indefinite period, provided no water is present.

Incompatibility reactions are not reversible. Removing water by drying the system and the oil does not remove the formed gel or eliminate the soap.

Chevron product compatibility

Chevron products containing acidic additives are classified in List A of Table 1. Products shown in List B of the table contain alkaline additives. The products in both lists are compatible with other products in the same list; however, products in List A are not compatible with products in List B and visa versa.

Products shown in List C contain no acidic or alkaline additives and are compatible with the products shown in Lists A and B.

TABLE 1: COMPATIBILITY LISTS

LIST A	LIST B	LIST C
Oils containing acidic additives	**Oils containing alkaline additives**	**Oils not containing either**
Regal R&O	Taro DP/XL	Compressor Oil EP VDL
Regal EP	Taro Special (HT) 70	Capella® WF
Rando® HDZ	Taro Special HT LS 40	Capella HFC 55
Meropa®	Veritas® 800 Marine	Refrigeration Oil Low Temp
Pinnacle Marine Gear 220	Delo® 1000 Marine	LPG Compressor Oil
Cetus PAO	Ursa® Marine	Uncompounded (steam) cylinder oils
Cetus DE	Delo 6170 CFO	
Compounded stern tube oils	Ursa Extra Duty 40	
Texatherm® 46	Delo SHP	

Changing from alkaline acidic

Small amounts of the alkaline-type compounding from the oils in List B mixed with the oils in List A can cause:

- Stable emulsions to form when water contamination occurs
- Grease-like, oil insoluble deposits that may block filters and small oil passages

For example, the last effect is a concern in a turbo charger system where Regal® R&O or Cetus® PAO replaces an engine oil. This incompatibility can be prevented by flushing the circulating system thoroughly with a straight mineral oil. The flushing procedure will dilute the concentration of the alkaline compound to below 10 ppm of calcium in the final operating charge of oil. This requires at least one 100% volume flush with the straight mineral oil after the alkaline oil is drained from the system. Only one full system flush is required if the holdup of oil in the system after draining can be verified to be less than 3% of the system capacity.

Changing from acidic to alkaline

The amount of acidic material that reacts with alkaline compounds in change is so small that the volume of precipitate is negligible. Furthermore, the alkaline compounds are detergents, and therefore can keep a small amount of reaction material in suspension. Therefore, changing an oil system from oils in List A to oils in List B does not ordinarily require intermediate flushing. However, in all cases where the type of oil is changed, the system should be completely drained.

Chevron lubricants with competitive products

Chevron lubricants are fully compatible with equivalent competitive lubricants recommended for the same application.

For example, all Chevron two-stroke cylinder oils such as Taro® Special HT 70 are fully compatible with the equivalent cylinder oils marketed by ExxonMobil®, BPCastrol®, etc. The same is applicable to medium-speed engine oils, hydraulic oils, turbine oils and gear oils from various companies.

This implies that the oils in use can safely be topped up with the recommended Chevron lubricants, provided that the normal top-up procedures are being followed (not more than 10% fresh oil added at a time). Unused equivalent lubricant from different suppliers, as shown in vessel lube charts, can normally be mixed in any ratio.

However, it is important to note that compatibility problems may occur when different types of oils from one or more suppliers are mixed. For example, if a hydraulic oil is mixed with a medium-speed engine oil from a different supplier, it can be expected that in the presence of some water, insoluble reaction products will form. These kinds of product mixtures should always be avoided.

Synthetics

In general, product mixtures of various synthetic lubricants should always be avoided, because various types of synthetics are not always compatible.

The compatibility of some common types of synthetic lubricants with mineral oil based lubricants is listed below.

Synthetic Lubricant Type	Compatibility with Mineral Oil
Alkylbenzenes	Excellent
Polyalphaolefins	Excellent
Diesters	Good
Polyglycols	Poor
Phosphate Esters	Fair
Polyolesters	Fair

Summary

- Equivalent products from various suppliers can be mixed without problem.
- Mixing different types of products from the same or different suppliers should be avoided.
- Product mixtures of various types of synthetic products should always be avoided. ■