TECH

TECH INFORMATION FROM MAHLE CLEVITE INC.

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BEARING APPEARANCE

We are occasionally asked about variations in the appearance of bearings especially after they have been in storage for a period of time. These questions generally pertain to plated TriMetal™ bearings.

BACKGROUND

Composition of the final thin flash plating on a tri-metal bearing can vary depending on the manufacturer and each type will have a slightly different color. Most tri-metal bearings have an electroplated overlay on their running surface consisting of an alloy of lead, tin and copper. After the overlay is applied the bearings are “Flash Plated” all with pure tin to improve corrosion resistance during storage. Clevite® H-series performance bearings utilize the same lead-tin-copper overlay but are not flash plated. Clevite discovered years ago that race engine builders used abrasive means to remove the flash plating and decided that to prevent the damage done by those means it made sense to eliminate the flash plating process. Because of that, H-series bearings are a medium to dark brown color with an exposed steel back. There is also another overlay system used for TriMetal bearings, which employs an alloy of lead and indium. These lead-indium bearings, referred to as V-series, are generally not flash plated and their steel back remains bare.

APPEARANCE

As mentioned above, the color of the bearing surface will vary depending on the plating system used. Except for some special high performance competition bearings, all Clevite® TriMetal™ bearings use a lead-tin-copper overlay with tin flash plating. Tin flash provides a uniformly bright appearance and does a very good job protecting the bearings from corrosion as they sit on the shelf.

STAINING

Under certain conditions isolated areas of some bearings may actually blacken in time. This condition is referred to as staining and is the result of oxidation of copper from the lead-tin-copper overlay. Since the flash plate layer is applied all over the bearing shell, it is purposely kept very thin to prevent excessive build up on the steel back which may cause interference with bearing seating and retention. Although this thin flash plate layer initially provides a uniform appearance and inhibits the formation of copper oxide, prolonged storage may eventually lead to some blackening in isolated areas. These areas most frequently occur along edges and on the OD near the parting lines.

WASH STAINS

H-series Clevite bearings, as we mentioned above, are not flash plated. We've mentioned they are a medium to dark brown in color, but didn't mention the color may exhibit dark areas, mottled areas and stains. These stains are a result of the washing and drying process utilized after the overlay had been applied by electro-plating. The bearings are processed in vertical stacks and as they dry, moisture tends to collect and dry last on the edges causing darker stains. The top and bottom bearing in the stack will sometimes be stained more too. None of this has any effect on the bearing's size or its performance. We only mention it because customers ask about the unusual appearance of the H-series bearings.

PERPORMANCE

Bearings, which display pitting or a build-up of deposits on their surface which is detectable by touch have been subjected to corrosive attack from exposure to moisture and should not be used. A general "rule of thumb" is if wiping the bearing surface with a piece of newspaper removes the rough pits or deposits, the bearing is OK to use. Large distributors and large race teams should always strive to rotate their bearing inventory so that the first in are the first out.