TECHNICAL BULLETIN
No 106 August 2006

MOTORCYCLE OILS AND API RATINGS

There is a little confusion in the marketplace about what specifications are OK for use in motorcycles that use wet clutch systems.

Unfortunately, it is again one of those areas where blanket comments are made with little understanding of reality, some of which is propagated by the manufacturers themselves.

Using Honda as an example, they have been known to say that oils of an API rating of higher than SG are not to be used because of the potential for wet clutch slippage.

What they are talking about is friction modifiers. But what is wrong with that statement? Simply that some API SG oils were also friction modified, and in fact, more aggressively than some of the API SH oils and above that Honda were concerned about.

There was also the concern that later specifications may not have provide the wear protection due to lack of zinc. Again, this may have been true in some cases but not all.

That brings us to the latest "blanket" statements regarding API SM.

To reiterate. The maximum phosphorus (which impacts zinc) levels in the API SM specification ONLY applies to 0W-20, 0W-30, 5W-20, 5W-30 and 10W-30 oils. Any oils outside that range are not limited and it is up to the individual oil company as to how they formulate their end products. Hence a blanket statement about API SM oils does not apply.

If an oil meets ACEA A2/B2, A3/B3 or A3/B4 then it will be the same zinc and phosphorus level it has always been. To confuse the issue some more, ACEA C1, C2 and C3 oils will be no good for motorcycles due to low zinc and/or friction, ACEA A1/B1 and A5/B5 oils will be no good on friction and ILSAC GF-2, GF-3 and GF-4 oils will be no good on friction or wear protection! An ACEA A3/B4/C3 oil is also no good because the C3 takes precedence over the other specifications.

Hence, all API SM oils are not necessarily no good for motorbikes. Conversely all API SG, SH, SJ or SL oils cannot be considered as always being suitable for motorbikes! As well as the zinc levels, the types of anti wear chemistries that may be used to achieve API SM can cause slippage issues with wet clutches. Engines do not see a difference in the friction properties, but the clutches do. This is why HPR 10, 15 and 30 are not currently recommended for bikes with wet clutches due to doubt in what the clutch sees. Current HPR 5 is out due to a lower zinc content (ACEA C3), but that will be addressed in the fourth quarter of 2006 when a new, more traditional blend becomes available.

JASO MA is the wet clutch, non-friction modified specification that is the standard. Many of our oils may be able to meet that specification, but not all are tested against it.

Please refer to Technical Bulletin 92 for a list of currently recommended Penrite products for motorcycles with wet clutches. This has a mix of API SM, SL, SJ and SG products.