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May 13,2004

Oil Analysis of GM Genuine Parts compressor oil

(Universal oil VG46)

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I. Purpose

The evaluation has,been done to check the performance of the mixture between GM parts oil and Refrigerant Activator agent which provided by Arctic Distributors.

Miscibility. Compatibi1ity and Lubricity test had been conducted with mixture of lubricant and Refrigerant Activator agent (for HFC).

2. Result

(1) Table. 1 shows the miscibility data of new oil and 10% mixture of Refrigerant Activator agent (for HFC). The miscibility with R l34a of mixture oil shows no significant difference from that of pure oil, indicate that Refrigerant Activator (HFC) does not effect to the miscibility of compressor oil.

(2) Table. 2 show the chemical stability test result of pure compressor oil and mixture oil under the condition of R 134a atmosphere. After 14 days aging at 175 degree C, mixture oil show clear appearance, but light yellow color, and no sedimentation found. Also there are no significant changes on every metal surface appearance. The TAY (Total Acid Number) after SGT of mixture was slightly higher than new oil, but we believe it will be acceptable range for practical use.

Other tests such as compatibility with organic materials used in individual automotive A/C were not conducted in this evaluation, and have to be done by A/C manufacturer for practical use.

(3) Table. 3 show the lubricity data of pure compressor oil and mixture in R I 34a atmosphere. The lubricity of mixture oil shows slightly lower Falex (Fe/Fe) value than that of pure oil. We believe that it will be acceptable range for practical use, but it should be necessary that the further evaluation with actual compressor parts or driving test for individual compressor design have to be done by compressor manufacture for practical use.

2. Sample

(1) Refrigerant : R I34a

(2) Lubricant : R I 34a Air compressor oil (GM Universal Air conditioning oil YG46)

(3) Additive agent: IceCOLD Catalyst (for HFC)

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3. Result

(1) Table.1 Miscibility

Sample	*AIC* oil VG46	I 0% Refrigerant Activator
Two Phase ,Sep. Temp		
(Upper) 3% oil in R134a, °°C	76	79
7% oil in R I 34a, ℃	71	72
(Lower)AII concentration, ℃	less than -40	less than -40

(2) Chemical Stability

Method: Sealed Glass Tube

Condition: Temperature l75°CX I 4 days, R134A/Sample=1g/4cc Catalyses: Fe, Cu, Al, 300ppm water

Table 2: Sealed Tube Test result

Sample	A/C oil VG46, N=3	I 0% Refrigerant Activator, N=3
Sample appearance	Clear Slightly light yellow	Clear Light yellow
Metal Catalyses	Fe: good, Cu: good, Al: good	Fe: good, Cu: good, Al: good
TAY (Total Acid No.)	AVE. 0.07 mgKOW/g	AVE. 0.1 1 mgKOH/g

(3) Lubricity

Method: Falex (Fe/Fe), Seizure load test

Test driving: 2001b X I min X 290 rpm, R.T. Table

3: Lubricity

Sample	*AIC* oil VG46, N=3	10% Refrigerant Activator, N=3
Seizure load	980	970

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