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Wankel rotary engine lubricating oil composition

Summary
The present invention discloses a Wankel rotary engine lubricating oil composition, the use of poly internal olefins and trimethylolpropane ester compound as a base oil, with a variety of complex additives, including detergents, dispersants, oxidation preservatives, anti foaming agents, antioxidants, reinforcing agents, additives, rust inhibitors, friction modifiers. The present invention has an excellent clean dispersion, viscosity-temperature characteristics, TBN retention, acid neutralizing capacity, can inhibit the formation of sludge and other polar substances; good resistance to high temperature oxidation, nitration resistance, anti-wear, shear and Save Mount corrosion resistance, to better protect the engine components subjected to wear; good cold starting, low ash, no corrosion of moving parts, is conducive to the engine damping, noise reduction, energy saving, low emission.

Claim (1)
Wankel rotary engine lubricating oil composition, characterized in that: the use of poly-olefin, and trimethylol propane ester compound as a base oil, with a variety of additives composite mass percentage of the components:

The sum of the percentages by mass of the components is 100%; mass ratio of the base oil is 45% to 55% of a poly internal olefins and 55% to 45% trimethylolpropane ester compound; detergent is a mass ratio of 45% to 55% overbased synthetic calcium sulfonate and 55% to 45% of the low base value synthesis calcium sulfonate complex; dispersant mass ratio is 25% to 35% of the low nitrogen polyisobutylene succinimide T155,25% ~ 35% diene succinimide and 50% to 30% nitrogen borated polyisobutylene succinimide complex double; mass percentage of the sum of the three components is 100%; reinforcing agent is a mass ratio of 45% to 55 % sulfide alkylphenol calcium TI 15A and 55% to 45% nitrogen polyisobutylene succinimide complex; antioxidant preservative is a mass ratio of 45% to 55% of parathion and double-octyl alkaline zinc T203 55% to 45% zinc parathion secondary base compound; rust inhibitor is a mass ratio of 45% to 55% benzotriazole and 55% to 45% of the alkenyl succinic acid half ester compound; defoamer mass ratio of 45% to 55% of phenyl methyl silicone oil and chlorine 55% to 45% ethyl silicone compound; the mass ratio of the antioxidant is a hydroxy diphenylamine and 55% to 45% sulfur 45% to 55% benzimidazole compound; aid is a molybdenum dithiocarbamate; friction modifiers are phosphonates.

Wankel rotary engine lubricating oil composition

Technical Field
[0001] The present invention belongs to the rotary engine lubricating oil fields, in particular the Wankel rotary engine lubricating oil compositions.

Background technique
[0002] Wankel rotary engine belongs to a non-rotary piston four-stroke internal combustion engine. Although it is shaped by the shell contains a Ξ angle rotor is placed at an intermediate composition. Between the inside of the cylinder is always divided into Ξ studios, some studios are shipped rotor movement; sequentially placed in different positions inside the cylinder linear completion, compression, power (combustion) and four exhaust process. Different as the internal combustion, driven by expansion of the gas pressure between the rotor and the housing bi rotor. And ordinary internal combustion engines must be the same as the rotor successively formed four working process in its studios. When the rotor angular Ξ placed in Tuen round housing, location, the studio will not rotate along with the expansion of the internal pressure of the housing of the rotor changes in volume. Even where the air-fuel mixture ignition, combustion and expansion pressure of the gas is only in the middle of the rotor, no rotation. Yun is the inside of the cylinder housing is designed to be runner shape, and partial and installed in Tuen, together with the reasons for the rotor shaft components. Per revolution of the rotor, the studio twice the volume change, thus completing the four working process of the engine.

[0003] Meanwhile, the engine rotor apex as the engine casing circumference Nan circular housing and exercise, may remain in place around the engine housing in Tuen, Tuen a partial contact of the output shaft gear of the track. Ξ rotor angular trajectory with a gear mechanism to determine the phase. Phase comprises a gear mounted on the inner ring and the inner rotor mounted partial Tuen, the external gear shaft. If the inner rotor has gear teeth S and rotor shaft speed ratio is set to 1: 3; and partial Tun, compared to the shaft, a longer period of rotation of the rotor. When the revolution of the rotor, partial Tuen shaft Ξ circle. When the engine speed is 9000 rev / min, rotor speed of 3000 rev / min. Therefore, the requirements of transport category engine oil has excellent detergency dispersing ability, viscosity - temperature characteristics, TBN retention, acid neutralizing capacity, good resistance to high temperature oxidation, nitration resistance, anti-wear, anti-cut, corrosion resistance, low temperature start-up performance good, low ash, low smoke, no corrosion of moving parts for high-speed, high torque, Engineering conditions; while low noise, vibration small, easy to produce coke and other characteristics.

Summary

[0004] The object of the present invention is to provide a clean dispersion with excellent results, viscosity-temperature characteristics, TBN retention, acid neutralizing capacity, good resistance to high temperature oxidation, nitration resistance, anti-wear, anti-friction and shear corrosion resistance, good cold starting, low ash, no corrosion of moving parts for high-speed, high torque, Engineering conditions, the engine can work long rotor Wankel rotary engine lubricating oil composition. Yang billion of] view of the above problems, the present invention adopts the following technical solution:

[0006] Wankel rotary engine lubricating oil composition, the use of poly inner diameter of association control and Ξ-methyl propane vinegar compound as a base oil, with a variety of complex additives, the quality of each component as a percentage:

Yang cited total mass percentage of the components is 100%.

[0009] The base oil is a mass ratio of 45% to 55% of polyethylene in the association control and 55% ~ 45% Ξ diameter methyl propane vinegar complex.

[0010] detergent is a mass ratio of 45% to 55% of the high base value synthesis clever cross acid and 55% to 45% of the low base value synthesis clever cross-acid compound.

[0011] dispersing agent is the mass ratio of 25% to 35% lower under low nitrogen polyisoprene association next two cool imine T155,25% ~ 35% double-associative bis cool imine with 50% to 30% nitrogen shed By association of polyisoprene double next two cool imine compound; mass percentage of the sum Ξ components is 100%.

[0012] reinforcing agent is the mass ratio of 45% to 55% of the alkyl sulfide clever T115A cheese and 55% to 45% nitrogen polyisoprene association under the next two cool imine compound.

[0013] Antioxidant preservatives mass ratio of 45% to 55% of the sulfur pity double-octyl alkaline salt T203 front and 55% to 45% of the sulfur-based secondary pity Feng salt compound.

[0014] Anti-lure is the mass ratio of 45% to 55% of benzo Ξ nitrogen and fell 55% to 45% of associated acid half vinegar-based compound.

[0015] defoamer mass ratio of 45% to 55% of phenyl methyl silicone oil and chlorine 55% to 45% ethyl silicone compound.

[0016] Antioxidants are a mass ratio of 45% to 55% of the diameter of diphenylamine and 55% to 45% of the sulfur-benzimidazole frustration complex Si 1 = 1〇

[0017] aid is a dithiocarbamate steel; friction modifiers are Lin vinegar.

[0018] The significant advantage of the present invention, the Wankel rotary engine lubricating oil compositions are: good clean dispersion, viscosity-temperature characteristics, TBN retention, acid neutralizing capacity, can inhibit the formation of sludge and other polar substances ; good resistance to high temperature oxidation, nitration resistance, anti-wear, anti-friction shear and corrosion resistance, to better protect the engine components subjected to wear; good cold starting, low ash, no corrosion of moving parts for high-speed, large torque, Engineering conditions, rotary engine work long hours.