

KES

Grease for Automobiles

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1. Scope of Applications

This standard specifies the parts manufacturing maker's products of use for factory filling and grease for user which is used (hereafter called Grease) for the lubricant of the automobile accessories.

2. Type and Symbols

Type of grease and symbols of materials are classified into following Table according to the part of main use.

(1) Type

Table 1

Name	Material Symbol	Thickner	Usable temperature	Remarks
Heat-resistant Grease	O-GH02	Bentone	-30 ~ 250	O-GH02 Grease
Seal Grease	O-GS02		-40 ~ 130	Sealub s-4 Grease
Special Grease	O-GE02	Bentone+MoS ₂	-35 ~ 230	O-FS21 Grease
Li-Grease	O-GL02	Li-Soap	-40 ~ 140	O-GM02 Grease
Cold-resistant Grease	O-GC02		-50 ~ 140	O-GL02 Grease
Regulator Grease	O-GR02		-40 ~ 120	Epynox Grease
Rubber Grease	O-GB02		-30 ~ 130	O-GR02 Grease
Lock Grease	O-GK02		-40 ~ 130	Multemp Grease
Cable Si-Grease	O-GI02	Special Li	-50 ~ 130	TSG 3256 Si-Grease
Graphite Grease	O-GG02	Li+Graphite	-35 ~ 120	Graphit Graase
Li-Complex Grease	O-GM02	Li+Complex	-40 ~ 170	O-GM12 Grease
Auto Greaster Grease	O-GA01	Ca	-30 ~ 60	O-GA02 Grease
	O-GA02		-30 ~ 70	O-GA01 Grease
Cup Grease	O-GP02		-40 ~ 70	Cup Grease
MoS ₂ Grease	O-GO02	Li+MoS ₂	-40 ~ 140	MoS ₂ Grease
Clutch Grease	O-GT02	Li+organic Mo	-40 ~ 150	Moly White Grease
Cable Mo Grease	O-GN02	Li+MoS ₂	-40 ~ 120	TSG 3203 Cable Grease
Joint Grease	O-GJ02		-40 ~ 140	NTN Joint Grease
Change Lever Grease	O-GV02	Li+Special Na	-40 ~ 120	Multiknock Wide Grease

(2) Explanation of materials symbols

Shall conform to KES B-K001(nonmetallic materials symbol)

3. Quality

Quality of Grease a shall be performed according to 5 test Method and the test result shall be the requirement specified in Attached Table 1~10.

4. Quality Standards

Quality standards of grease should satisfy the peculiar quality of the thickner, usable temperature of Table 1 and item 3

5. Testing Methods

(1) Sampling method

Conform to KS M 2001(method for sampling of crude oil and petroleum products)

(2) Penetrator testing method

Conform to KS M 2032(method for testing penetrator of a class of grease)

(3) Penetrator change ratio

Fill the sample into the grease blender according to the testing method (2) and maintain 30 minutes at standard temperature. Next, measure the penetrator in the mood temperature according to the testing method (2) and calculate the penetrator change ratio using the equation below

$$\text{penetrator change ratio(\%)} = \frac{\text{penetrator after testing} - \text{penetrator before testing}}{\text{penetrator before testing}} \times 100$$

(4) Dropping Point

Shall follow KS M 2033(method for testing dropping point of a class of grease)

(5) Copper plate corrosion

Conform to KS M 2046(method for testing corrosion of heating copper plate of a class of grease)

(6) Evaporation loss

Conform to KS M 2037 or KES T-L158(method for testing evaporation amount of a class of grease) B method.

(7) Elution level

Conform to KS M 2050 (Method for testing elution level of a class of grease)

(8) Oxidation stability

Conform to KS M 2049, KES T-L112 (Method for testing the degree of oxidation stability of a class of grease)

(9) Adulterated substances

Conform to KS M 2048 (Method for testing adulterated substances of a class of grease)

(10) Mixture stability

Conform to KS M 2051 (Method for testing mixture stability of a class of grease)

(11) Washing water resistance

Conform to KS M 2087, KES T-L157 (Method for testing water of a class of grease)

(12) Degree of leakage

Conform to KS M 2184, KES T-I146 (Method for testing the degree of leakage of wheel bearing grease for automobiles)

(13) Low temperature torque

Conform to KS M 2130 (Grease) 5-14, KES T-L091 (Method for testing low temperature torque of grease)

(14) Humidity

Conform to KS M 2130 5-17 or KES B-M035 (Method for testing dampness of grease)

(15) Thicker and Base oil

Conform to ASTM D 128 (Analysis of lubricating grease) or KES T-M194

(16) Viscosity

Conform to KS M 2014 (Method for calculating kinetic viscosity of crude oil and petroleum products and method for calculating index of petroleum products)

(17) Flash point

Conform to KS M 2010 (Method for testing ignition point of crude oil and petroleum products)

(18) Oil film strength

Conform to KES T-L298 (Method for testing strength of oil film)

(19) Acceptable load

Conform to KES T-L044 (Method for testing the load resistant efficiency of lubricating oil)

(20) Swelling property of rubber and property of organic material

Conform to KS M 2141 (Method for testing the swelling of brake liquid rubber for automobile) At this point, quality of rubber and organic materials are decided by the treaty between the persons concerned and should be filled up in the test records

(21) Timken load

Conform to KS M 2130 5-16 method for testing Timken load of a class of grease

(22) Fluidity point

Conform to KS M 2016 (Method for testing the kinetic viscosity of crude oil and petroleum products)

(23) Shaft rust preventive property

Conform to ASTM D 1743 (Corrosion preventive properties of lubricating grease)

(24) Film contaminated property

After dropping of grease having 15mm diameter circle shape on the Top coating specimen of white color, maintain the mood of 80°C, 72Hr and then remove the grease.

After the removal of grease, observe the degree of fatigued color with naked eyes and record whether the color is fatigued or not.

(25) Washing stability

Conform to MIL G 10924 (Method for testing the washing stability)

(26) Salt spray

Conform to KS M 2091 (Method for testing the rust preventive oil salt water spray)

(27) Ash content

Conform to KS M 2034 or KES T-L165 (Method for testing ash of a class of grease)

(28) Moisture

Conform to KS M 2035 or KES T-L292 (Method for testing moisture of a class of grease)

(29) Free alkali

Conform to KS M 2038 or KES T-M071 (Method for testing free acid/free alkali insoluble carbonate of a class of grease)

(30) Test for life performance of bearing

Conform to ASTM D 3527 or KES T-L136 (Test for Life Performance of Automotive Wheel Bearing Grease)

(31) Appearance viscosity

Conform to JIS K 2220 5-15 (Method for testing low temperature appearance viscosity of grease)

(32) Fluidity

After spread the sample on the SPC steel plate, put it in the constant temperature which maintains regulated temperature. And observe whether the sample flows or not.

6. Inspection of Grease

Inspections of grease shall be performed according to the testing methods 5. and shall be satisfied the quality standard.

7. Presentation of Inspection Record

Grease supplier should record and store the amount and date of supply in the inspection record according to the regulation 6. And he should submit them when the related department of our company requires.

8. Procedures on the Quality Alteration

In case of altering the quality composition and manufacturing process of grease and supplying it, you should hand out the causes, contents, test records, guaranteed standard and 4kg of sample to our company in advance so that you may be allowed to materials div.

9. Procedures on the New Supplied Maker

In case of newly supplying the grease, submit test records, guaranteed standard, 4kg of sample which was tested by the testing method 5. according to the quality standard item 3. to our company (you may pass through integrated purchase department).

And then you should acquire the admission so that you may materials div.

10. Indications

Indications of grease should be written on the side of the vessel which can be easily seen.

Followings are what is written on the vessel.

- (1) Type : name of the products and materials symbol (include penetrator)
- (2) Lot number
- (3) Weight
- (4) Name of the manufactured maker
- (5) Date of manufacture
- (6) Effective usable time

Quoted standards

KS M 2001 (Method for obtaining sample of crude oil and petroleum products)

KS M 2010 (Method for testing ignition point of crude oil and petroleum products)

KS M 2014 (Method for calculating kinetic viscosity of crude oil and petroleum products and method for calculating index of petroleum products)

KS M 2016 (Method for testing kinetic viscosity of crude oil and petroleum products)

KS M 2032 (Method for testing penetrator of a class of grease)

KS M 2033 (Method for testing dropping point of a class of grease)

KS M 2034 (Method for testing ash of a class of grease)

KS M 2035 (Method for testing moisture of a class of grease)

KS M 2037 (Method for testing evaporation amount of a class of grease)

KS M 2038 (Method for testing free acid/free alkali insoluble carbonate of a class of grease)

KS M 2046 (Method for testing corrosion of heating copper plate of a class of grease)

KS M 2048 (Method for testing adulterated substances of a class of grease)

KS M 2049 (Method for testing the degree of oxidation stability of a class of grease)

KS M 2050 (Method for testing elution level of a class of grease)

KS M 2051 (Method for testing mixture stability of a class of grease)

KS M 2087 (Method for testing water of a class of grease)

KS M 2091 (Method for testing the rust preventive oil salt water spray)

KS M 2141 (Method for testing the swelling of brake liquid rubber for automobile)

KS M 2184 (Method for testing the degree of leakage of wheel bearing grease for automobile)

JIS K 2220 (Grease)

JIS K 2519 (Method for testing the load resistant efficiency of lubricating oil)

ASTM D 128 (Analysis of Lubricating Grease)

ASTM D 1743 (Corrosion Preventive Properties of Lubricating Grease)

ASTM D 3572 (Test for Life Performance of Automotive Wheel Bearing Grease)

MIL G 10924 (Method for testing the water stability)

NDS XXK 2740 (Japanese Defense Department designated standard)