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Parte 5 y 8 del Proyecto

☐ Safety Inspection Addendum 09: Motor Vehicle Brake Fluid

Current	Revision (Proposed)	Notes
1. Limit of Application This standard applies to non-petroleum base hydraulic brake fluid (hereafter referred to as brake fluid)	**1. Limit of Application** This standard applies to the use of non-petroleum base brake fluid (hereafter referred to as brake fluid) in hydraulic brake systems in motor vehicles (transportation vehicles). This brake fluid is to be used in the brake system of motor vehicles (transportation vehicles) with sealing components, cups or double plated packing plugs made from Nitrile Butadiene Rubber (NBR), Styrene Butadiene Rubber (SBR), or Ethylene Propylene Copolymer Rubber (EPDM).	Wording modification (citing KS)
2. Associated Standards **< Deleted>**	**2. Associated Standards** **KS A 0601** Method of measuring specific gravity of liquid **KS A 3151** Method of random sampling **KS B 5231** (hydrometer) **KS M 2014** Testing methods for kinematic viscosity and calculating method for viscosity index of crude oil and petroleum products **KS M 2141** Road vehicles – Non-petroleum base brake fluid **KS M 2142** Engine antifreeze coolants **KS M ISO 37** Rubber, vulcanised or thermoplastic – Determination of tensile stress-strain properties **KS M ISO 812** Rubber, vulcanised – Determination of low-temperature brittleness **KS M ISO 815** Rubber, vulcanised or thermoplastic – Determination of compression set at ambient, elevated or low temperatures **KS M ISO 4926** Road vehicles – Hydraulic brake system – Non-petroleum base reference fluids **KS M ISO 6619** Petroleum products and lubricants – neutralization number – Potentiometric titration method **KS M ISO 10336** Crude petroleum – Determination of water – Potentiometric Karl Fischer titration method **ISO 48** Determination of hardness (hardness between 10 IRHD and 100 IRHD) **ISO 301** Zinc alloy ingots intended for casting **ISO 1250** Mineral solvents for paints – White spirits and related hydrocarbon solvents **ISO 1817** Rubber, vulcanised – Determination of the effects of liquids **ASTM D 91** Standard Test Method for Precipitation Number of Lubricating Oils **ASTM D 865** Standard Test Method for Rubber-Deterioration by Heating in Air (Test Tube Enclosure) **ASTM D 3182** Standard Practice for Rubber-Materials, Equipment, and Procedures for Mixing Standard	Amendment in following with the total revision of the standard

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	Compounds and Preparing Standard Vulcanised Sheets **ASTM D 3185** Standard Test Methods for Rubber Evaluation of SBR (Styrene-Butadiene Rubber) Including Mixtures With Oil **ASTM E 298** Standard Test Methods for Assay of Organic Peroxides	
3. Classification (Omitted) Classification Notation Reference ([1]) Class 3 BF – 3 Suitable for DOT 3 Class 4 BF – 4 Suitable for DOT 4 Footnote ([1]) …..	**3. Classification** (Same as at left) Classification Notation Class 3 BF – 3 Class 4 BF – 4 Class 5 BF – 5	Addition of Class 5; Deletion of Reference and Footnote ([1])
4. Safety Requirement Details The brake fluid shall be a homogenised non-petroleum base hydraulic brake fluid not containing deposits or other floating matter, must be of appropriate quality for use in a motor vehicle brake and/or clutch, and must conform to the standards outlined in **Table 1**. **Table 1** (Omitted) **< Deleted>**	**4. Safety Requirement Details** The brake fluid must be transparent and must not have visible evidence of dust or deposits. If a colouring agent is used, it must not be red or green. The brake fluid must be tested according to the test method in **6** and conform to the clauses detailed below. **4.1 Equilibrium Reflux Boiling Point (ERBP)** **4.1.1** When the brake fluid is tested according to the process outlined in **6.1.1**, the Equilibrium Reflux Boiling Point must conform to that in **Table 1**. (Refer to **6.1.4** and **6.1.5**) **4.1.2 Wet Equilibrium Reflux Boiling Point**([1]) When the brake fluid is tested according to the process outlined in **6.1.6**, the Wet Equilibrium Reflux Boiling Point must conform to that in **Table 1**. Footnote ([1]): When the appropriate test method is developed, Equilibrium Reflux Boiling Point will be replaced by a Vapour Lock measurement. **Table 1** (Omitted) **4.2 Viscosity** When the brake fluid is tested according to **6.2** it must display the following measurements. **4.2.1** At –40°C, must be below 1500mm^2/s for Class 3, and below 1800mm^2/s for Class 4 and Class 5. **4.2.2** Must be greater than 1.5mm^2/s at 100°C. **4.3 pH Level** When the brake fluid is tested according to **6.3**, the resulting pH level must be between 7.0 and 11.5. **4.4 Brake Fluid Stability** **4.4.1 Stability at High Temperature** When tested according to the procedure in **6.4**, the brake fluid Equilibrium Reflux	Wording modification in following with the total revision of the standard Amendment in following with the total revision of the standard Amendment in following with

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< Deleted>	Boiling Point must be not more than 3.0°C at a temperature below 225°C, and [3.0+0.05(Boiling Point – 225)]°C at a temperature above 225°C. **4.4.2 Chemical Stability** When tested according to the procedure in **6.4.2**, the drop in temperature of the mixed test fluid must be within 2.0°C. **4.5 Corrosion** When the brake fluid is tested according to **6.5**, it must not display corrosion levels above the standard levels outlined in **Table 2**. It is not permissible for the outer contact surface of the metallic part to appear worn out when examined by the naked eye. However, it is permissible for the surface to appear stained or decolourised. In order to aid the user's understanding, **Table 2** will be extracted from **KS M 2141:1996**. After completion of the test, the mixture of brake fluid must not solidify at 25±5°C and must not form crystalloid deposits that adhere to the surface of a glass bottle wall or metallic surface. The mixture must not contain more than 0.1% volume of deposit and the mixture must have a pH level between 7.0 and 11.5. After completion of the test, the surface of the rubber cup must not have the appearance of bubbles, film or decomposition resulting from the separation of carbon black and must result in a hardness decrease no greater than 15IRHD. Also, the change in base diameter must be less than 1.4mm and the change in volume must be less than 16%. **Table 2** (Omitted) **4.6 Liquidity and Appearance at Low Temperature** **4.6.1 At -40°C** When the brake fluid is tested according to the procedure in **6.6.1**, the black comparison line of the Hiding Power Chart must be clearly visible through the braking fluid in the bottle. When the bottle containing the sample is inverted, there must be no separation of or deposit in the braking fluid, and the time period for a bubble to reach the upper surface must be no more than 10 seconds. **4.6.2 At -50°C** When the brake fluid is tested according to the procedure in **6.6.1**, the black comparison line of the Hiding Power Chart must be clearly visible through the braking fluid in the bottle. When the bottle containing the sample is inverted, there must be no separation of or deposit in the braking fluid, and the time period for a bubble to reach the upper surface must be no more than 35 seconds. **4.7 Evaporation** When the brake fluid is tested according to the procedure in **6.7**,	the total revision of the standard Amendment in following with

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< Deleted>	there must be no greater than 80% loss in weight due to evaporation. When touched with a finger, the residue remaining after evaporation must not feel rough or be chafing to the touch and the liquidity point must be below -5°C. **4.8 Water-resisting Qualities** **4.8.1 At -40°C** When the brake fluid is tested according to the procedure in **6.8.1**, the black comparison line of the Hiding Power Chart must be clearly visible through the braking fluid in the centrifuge tube. When the centrifuge tube containing the sample is inverted, there must be no separation of or deposit in the braking fluid, and the time period for a bubble to reach the upper surface must be no more than 10 seconds. **4.8.2 At 60°C** When the brake fluid is tested according to the procedure in **6.8.2**, there must be no separation. If the test is for the purpose of certifying quality, the deposit after centrifugation must be no greater than 0.05% of volume. **4.9 Mixability** **4.9.1 At -40°C** When the brake fluid is tested according to the procedure in **6.9.1**, the black comparison line of the Hiding Power Chart must be clearly visible through the braking fluid in the centrifuge tube. **4.9.2 At 60°C** When the brake fluid is tested according to the procedure in **6.9.2**, there must be no separation. If the test is for the purpose of certifying quality, the deposit after centrifugation must be no greater than 0.05% of volume. **4.10 Antioxidation** When the brake fluid is tested according to **6.10**, it must not cause the outer contact surface of the metallic part touching the tin plate to appear worn out when examined by the naked eye. However, it is permissible for the surface to appear stained or decolourised. Also, there must be no more than just trace amounts of deposit on the outside of the test part touching the tin foil. In the case of an aluminium test part, the change in weight must be no greater than 0.05mg/cm^2, in the case of a cast iron test part, the change must be no greater than 0.3mg/ cm^2. **4.11 Effect on Rubber** **4.11.1** In the case of the Styrene Butadiene Rubber cup being exposed to brake fluid as in **6.11.1**, there must not be an increase in hardness and the evidenced decrease in hardness must be within 10IRHD. The surface of the rubber cup must not have the appearance of bubbles, film or decomposition resulting from the separation of carbon black. The increase in the base diameter of the cup must be	the total revision of the standard Amendment in following with

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	between 0.15mm and 1.4mm, and the increase in volume must be between 1% and 16%. **4.11.2** In the case of the Styrene Butadiene Rubber cup being exposed to brake fluid as in **6.11.2**, there must not be an increase in hardness and the evidenced decrease in hardness must be within 15IRHD. The surface of the rubber cup must not have the appearance of bubbles, film or decomposition resulting from the separation of carbon black. The increase in the base diameter of the cup must be between 0.15mm and 1.4mm, and the increase in volume must be between 1% and 16%. **4.11.3** In the case of the Nitrile Butadiene Rubber cup being exposed to brake fluid as in **6.11.3**, there must not be an increase in hardness and the evidenced decrease in hardness must be within 10IRHD. The surface of the rubber cup must not have the appearance of bubbles, film or decomposition resulting from the separation of carbon black. The increase in the base diameter of the cup must be between 0.15mm and 1.4mm, and the increase in volume must be between 1% and 16%.	the total revision of the standard
< Deleted>	**4.11.4** In the case of the EPDM test part being exposed to brake fluid as in **6.11.4**, and with regard to the change in hardness at 70±2°C, 70±2h, there must not be an increase in hardness and the evidenced decrease in hardness must be within 10IRHD. In addition, the surface of the rubber cup must not have the appearance of bubbles, film or decomposition resulting from the separation of carbon black, and the increase in volume must be between 0% and 10%. **4.12 Simulation of Application Capacity** If the brake fluid is tested according to the procedure in **6.12**, the following performance requirement details must be fulfilled. **4.12.1** The metallic part must not appear worn out when examined by the naked eye. However, it is permissible for the surface to appear stained or decolourised. **4.12.2** The change in the diameter of the cylinder and piston must be no greater than 0.13mm. **4.12.3** The change in the hardness of the rubber cup must be no greater than 15 IRHD and in addition there must be no more than two rubber cups that decline in hardness by more than 17 IRHD. Also, there must not be conditions that render a cup inappropriate for use, such as appearance of too many lines, scratch marks, bubbles, excessive appearance of cracks and chips (wear and tear at the	
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	ends), and change from the original shape.	the total revision of the standard
< Deleted>	**4.12.4** The change in the base diameter of the rubber cup must be no greater than 0.9mm.	
< Deleted>	**4.12.5** For the rubber cups used for the test, the average allowed change in average tightening lip diameter must be no greater than 65%.	
< Deleted>	**4.12.6** Regardless of the time duration, the loss of brake fluid volume must be less than 36ml for 24,000 strokes.	
< Deleted>	**4.12.7** The cylinder piston must not stop nor operate abnormally during the test.	
< Deleted>	**4.12.8** The loss of brake fluid volume during the last 100 strokes of the test must be less than 36ml.	
< Deleted>	**4.12.9** At the completion of the test, the brake fluid must not have solid matter in the form of sludge or gel, rough matter that causes chafing, or conditions stemming from deposit matter that render it inappropriate for use, and the deposit after centrifugation must be no greater than 1.5% of volume.	
< Deleted>	**4.12.10** For the duration of the test, there must be no more than trace amounts of adhesive matter on the brake cylinder wall or other metal parts. There must not be matter that causes chafing of the brake cylinder or matter that cannot be wiped off using a cloth moistened with ethanol.	
5. Measure of Capacity When the brake fluid is tested according to the measure of capacity in **6.14**, the value of each individual item must be greater than –2% and the average value must be greater than the indicated value.	**5. Measure of Capacity** When the brake fluid is tested according to the measure of capacity in **6.13**, the value of each individual item must be greater than –2% and the average value must be greater than the indicated value.	Wording modification
6. Testing Methods	**6. Testing Methods** **6.1 Equilibrium Reflux Boiling Point** (Refer to Exhibit 1 and Exhibit 2)	Amendment in following with the total revision of the standard
< Deleted>	**6.1.1** With the exception of the equipment applications detailed below, follow **KS M 2142** to measure the Equilibrium Reflux Boiling Point. - Thermometer, one that is devised to be usable when dipped 76mm. - Heat source: Use an appropriate Variac adjustable heating mantle designed to fit the flask or an electric heater with an attached regulator. The heat source must be able to supply the heat necessary to satisfy the stipulated heating and reflux ratio.	
	Exhibit 1 (Omitted)	
	Exhibit 2 (Omitted)	
	6.1.2 Preparation of Equipment All glass equipment should be cleanly washed	Amendment in following with the total

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< Deleted>	and dried, and the flask should be attached to the condenser. If using the heating mantle, the mantle should be placed under the flask and supported with the appropriate ring clamp laboratory stand, then adjust the equipment for proper positioning by using the ring clamp. If using an electric heater with regulator, place above the heat source either a normal porcelain bowl or a hardened, fireproof asbestos brick with a suitable opening (32~38mm) in the centre, and place the flask on top of it so that the heat is directed to the flask only via the opening. **Note:** The entire set-up should be placed in a location that is free from draughts and in which there is no sudden change in temperature. **6.1.3 Testing Sequence** When all preparations are complete, pass water through the condenser. Then for 10±2 minutes increase the heat so that the brake fluid is refluxed at a ratio of at least 1 drop per second. However, the reflux ratio shall not exceed 5 drops per second. Next, immediately adjust the heat immediately in order to attain the stipulated Equilibrium Reflux Boiling Point of 1~2 drops for 5±2 minutes. For another 2 minutes, continue to maintain the prescribed Equilibrium Reflux Boiling Point for 1~2 drops and take the temperature 4 times at 30-second intervals. The average value shall be designated as the Equilibrium Reflux Boiling Point. **6.1.4 Brake Fluid at 205°C through 232°C** Measure and record the boiling point at intervals of 1°C. If the resulting measure from the second test is different by no more than 1°C, the average value shall be designated as the boiling point (at a 95% confidence interval). **6.1.4.1 Repeatability** If the same tester running the test on a different day obtains result measurements with standard level declination (each measure from the repeated test) estimated to be 0.4°C with 72 degrees of freedom, and if the difference between two measurements is greater than 1.5°C, then the resulting measurement must be considered questionable (at a 95% confidence interval). **6.1.4.2 Reproducibility** If a tester from a different laboratory obtains result measurements (each measure from the repeated test) with standard level declination estimated to be 1.8°C with 17 degrees of freedom, and if the difference between two measurements is greater than	revision of the standard Amendment in following with the total

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< Deleted>	5°C, then the resulting measurement must be considered questionable (at a 95% confidence interval). **6.1.5 Brake Fluid at 288°C** Measure and record the boiling point at intervals of 1°C. If the resulting measure from the second test is different by no more than 3°C, the average value shall be designated as the boiling point (at a 95% confidence interval). **6.1.5.1 Repeatability** If the same tester running the test on a different day obtains result measurements with standard level declination (each measure from the repeated test) estimated to be 1.3°C with 34 degrees of freedom, and if the difference between two measurements is greater than 1.5°C, then the resulting measurement must be considered questionable (at a 95% confidence interval). **6.1.5.2 Reproducibility** If a tester from a different laboratory obtains result measurements (each measure from the repeated test) with standard level declination estimated to be 3.5°C with 15 degrees of freedom, and if the difference between two measurements is greater than 5°C, then the resulting measurement must be considered questionable (at a 95% confidence interval). **6.1.6 Wet Equilibrium Reflux Boiling Point** **6.1.6.1 Equipment** **6.1.6.1.1 Bottles for Use in Corrosion Test**([2]) Use four bottles designed for corrosion tests or similar glass bottles with a screw in the opening area and shaped with straight sides. The bottles should have a capacity of approximately 475ml, interior length of 100mm, inner diameter of 75mm, and have lids using clean, new insertions so that the water vapour can be sealed in. Footnote ([2]): Suitable bottles for corrosion test use and tin-coated steel lids can be obtained from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096, USA. **6.1.6.1.2 Desiccator and Lid** Four glass rice bowl-shaped desiccators with interior diameter of 250mm, with the top part shaped like a crown, and equipped with lid utilizing No.8 rubber plugs (Refer to **Diagram 3**). **6.1.6.1.3 Desiccator Plate** Desiccator plate made of porcelain with four 230mm diameter holes, without feet, and smoothed on one side. **6.1.6.2** Utilising two samples, follow the process detailed below (Refer to **Diagram 3**) to measure the Wet Equilibrium Reflux Boiling Point (ERBP). Treat the 100ml	revision of the standard Amendment in following with the total

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< Deleted>	brake fluid sample by adjusting conditions to cause moisture absorption; 100ml of mixed fluid is utilised to find the point at which humidification is complete (Refer to **KS M 2142**). After humidification is complete, measure the moisture content and the Equilibrium Reflux Boiling Point of the brake fluid. Oil the connected glass part of the desiccator that has been grinded. Put into the desiccator 450±25g of ammonium sulphate and 125±10ml of distilled water. The distance between the surface of the salt aqueous suspension and the surface of the top of the desiccator plate must be 45±7mm. The desiccator should be placed in a location at which the temperature can be held steady at 23±2°C while the humidification process is in progress. Before use, the desiccator containing the salt aqueous suspension shall sit for a minimum of 12 hours with the lid on and the plug in place so that humidity can be modulated. A new salt aqueous suspension shall be used each time a test is run. **Exhibit 3** (Omitted) **6.1.6.3** After pouring 100±1ml of brake fluid into the corrosion test bottle, place the bottle in the desiccator immediately. Prepare an identical sample and two mixed fluids. At the beginning of the test, adjust the ratio of contained water to be 0.50±0.05% of weight. One at a time, open the rubber plugs of each desiccator containing the mixed fluid and, using a syringe with a long needle, extract a sample of no more than 2ml and measure the moisture content. While the humidification process is in progress, no more than 10ml shall be extracted from each fluid sample. When the moisture content of the mixed fluid has reached 3.50±0.05% of weight (the average of the 2nd test), remove the bottle containing the brake fluid sample from the desiccator and cover it with the lid as quickly as possible. The Equilibrium Reflux Boiling Point of this sample is to be measured according to the procedure in **6.1.1 ~ 6.1.3**. If the results of the boiling point test for the two samples are within 4°C, the designated Wet Equilibrium Reflux Boiling Point will be the average of the two measures. If that is not the case, the test must be repeated and the two resulting boiling point measures will be averaged with the two boiling point measures from the first test, a total of four measures. This average	revision of the standard Amendment in following with the total

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< Deleted>	will be designated the Wet Equilibrium Reflux Boiling Point. All moisture content will be measured in accordance with **KS M ISO 10336**. **6.2 Viscosity** **6.2.1 KS M 2104** The viscosity of brake fluid is to be measured in accordance with **KS M 2104**. **6.2.2** The viscosity at -40°C will be measured in increments of 1mm^2/s and in increments of 0.01mm^2/s at 100°C. If the relative ratio of the resulting measure in the repeat test is within 1.2%, it is permissible for the average measure to be used (at a 95% confidence interval). **6.2.2.1 Repeatability** If the same tester running the test on a different day obtains result measurements with standard level declination (each measure from the repeated test) estimated to be 0.4% with 47 degrees of freedom, and if the difference between the two measurements is greater than 1.2%, then the resulting measurement must be considered questionable (at a 95% confidence interval). **6.2.2.2 Reproducibility** If a tester from a different laboratory obtains result measurements (each measure from the repeated test) with standard level declination estimated to be 1.0% with 15 degrees of freedom, and if the difference between the two measurements is greater than 3%, then the resulting measurement must be considered questionable (at a 95% confidence interval). **6.3 pH Level** Combine the brake fluid with the same volume of mixed fluid, a mixture of ethanol and distilled water 80/20 by volume, having a neutralised pH level of 7.0. Then, in accordance with the stipulations of **KS M ISO 6619** at 23±5°C, use a measuring device with a glass electrode calibrated for the entire range (0~14) and a standard calomel (mercurous chloride) electrode to measure the pH level utilising the electrometer method. The pH level of the ethanol/distilled water mixture at 23±5°C is to be adjusted to 7.0 by using 0.1N sodium hydroxide. Mixtures requiring more than 4.0ml of sodium hydroxide for neutralization shall be disposed. All reagents employed must be authorised for analysis-grade use. **6.4 Brake Fluid Stability** **6.4.1 Stability at High Temperature** In accordance with the procedure in **6.1**, heat a fresh sample of the original test brake fluid to 185±2°C and maintain that state for 2 hours. Then, in accordance with the procedure in **6.1**, measure the boiling point of the brake fluid. The difference	revision of the standard Amendment in following with the total

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< Deleted>	between this measurement and the boiling point previously measured in **6.1** is to be designated the change in boiling point. **6.4.2 Chemical Stability** Combine 30ml of brake fluid with 30ml of mixture fluid (refer to **KS M ISO 4926**). Using the equipment setup stipulated in **6.1**, heat the flask to attain a Equilibrium Reflux Boiling Point of 1~5 drops every second for 10±2 minutes. Record the highest temperature reached during the one minute following the point in time at which the brake fluid first starts to reflux more than one drop per second. Then make adjustments to attain and maintain a reflux rate of 1~2 drops per second for 15±1 minutes. For another 2 minutes, continue to maintain the prescribed Equilibrium Reflux Boiling Point of 1~2 drops and take the temperature 4 times at 30-second intervals. The average value shall be designated as the final Equilibrium Reflux Boiling Point. The drop from the originally measured high temperature of the brake fluid and the final Equilibrium Reflux Boiling point indicates chemical change. **6.5 Corrosion KS M 2141 Section B** As enumerated in **KS M 2141 Section B**, prepare 2 sets of metal parts, each with a surface area of 25±5cm^2 (approximately 8cm in length, 1.3cm in width and less than 0.6cm in depth). Create a hole 4~5mm in diameter approximately 6mm from one end of the metal part. With exception of the tin-plated iron section, polish the surface of the remaining metal part with 320A silicon carbide paper and **ISO 1250** white spirits until scratch marks and dents are eliminated. Use fresh polishing paper for each metal part. With exception of the tin-plated iron part, clean the remaining metal surface with a new 00 grade (very fine) polishing cloth until glossy. After washing the metal part, including the tin-plated iron section, with 95% ethanol, wipe it with a clean, smooth cloth, place it in the desiccator containing a drying agent, and dry it for a minimum of at least 1 hour at 23±5°C. After polishing, using the pin set on the metal part to avoid contaminating it with fingerprints. After measuring the weight of each metal part within 0.1mg, assemble in order tin-plated iron, steel, aluminium, cast iron, brass, bronze and iron with non-coated steel coaters or bolts so that they can conduct electricity to each other. With the exception of the cast iron, bend the remaining metal parts so that there are gaps of approximately 10mm between the ends of adjoining parts. Place the assembled collection of metal parts in	revision of the standard Amendment in following with the total

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< Deleted>	95% ethanol containing 5% by volume of distilled water to wash away fingerprints, and thereafter handle using a clean pin set (refer to **KS M 2141 Section E**). Measure the base diameter of the two standard SBR cups as stipulated in **KS M 2141 Section A Exhibit 7**, using an optical comparator or micrometer. Measure along the centreline of the ISO and rubber type indictors and the line perpendicular to it in increments of 0.02mm. Next, at 0.4~2.4mm above the bottom edge, measure the bottom of the cup and the parallel diameter. Dispose of cups for which the difference in the two diameter measures is greater than 0.08mm. Use new, different cups then calculate the average of the measure values. Follow the procedure stipulated in **ISO 48** to measure the hardness of each cup. However, if unable to use this methodology, it is permissible to use other methods such as using a rubber support (refer to **KS M 2141 Section A Exhibit 9a**). Measure the change in volume according to the methodology in **6.11.1**. In each cup, with the lip portion at the top, place two glass bottles inside, one at a time. Each glass bottle is to have capacity for approximately 475ml, be approximately 100mm in length, have a inner diameter of 75mm, have straight sides, and use a tin-plated steel lid with an air hole 0.8±0.1mm in diameter. Using the pin, place the assembled metal parts into the cup so that the fastened parts are aligned with the hollowed part of the cup and the open part is facing the left side of the glass bottle. Then pour into each glass bottle 760ml of brake fluid and an adequate amount of mixed fluid containing 40ml of distilled water so as to cover the assembled metal parts and fill the bottle to 10mm above the parts. Seal the lid tightly and place in a gravity convection oven for 120±2 hours at a constant temperature of 100±2°C. Cool the bottles to room temperature at 23±5°C for 60~90 minutes. Then immediately extract the metal parts from the metal bottle by using the pin set. Next, clean out the matter adhering to the side of the bottle by swishing the mixed fluids inside the bottle. Examine the metal parts and the inside of the bottle for crystalloid deposits. Then disassemble the metal parts, wash away with water any mixture fluid still on the parts, and clean each piece using a cloth moistened with 95% ethanol. Inspect the metal parts for corrosion and dents. Place the metal parts in a desiccator containing drying agents and dry for a minimum of one hour at a temperature of	revision of the standard Amendment in following with the total

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< Deleted>	23±5°C. Then measure the weight of the metal parts in increments of 0.1mg. Take the difference in weight from the initial measurement and divide it by the number of square centimetres in the metal part surface area. Average the resulting measures for the two samples. In the case the value falls outside the standard values or if one of the two tests fails, the entire test must be re-run with both samples. Also, the two re-test samples must satisfy the requirements in **4.5**. Immediately after completion of the cooling process, using the pin set to extract the rubber cup from the bottle and swirl the cup in the mixture fluid inside the bottle to wash away any adhering matter. Then rinse the cup in 95% ethanol and air dry. Next, examine for appearances of decomposition including membranes, bubbles and other forms, and measure the base diameter, hardness, and volume within no more than 15 minutes after extracting the cup from the mixture fluid. Examine the brake fluid/water mixture in the bottle for solid matter in gel form. After swishing the fluid in the bottle to equalize the deposit matter, pour 100ml of the solution into a cone-shaped centrifugal tube and, in accordance with Sections **5** and **6** of **ASTM D 91**, measure the deposit content in percentage increments. In addition, the pH level of this corrosion test fluid is to be measured according to the process in **6.3**. **6.6 Liquidity and Appearance at Low Temperature** **6.6.1 At -40°C** Put 100ml of brake fluid into a laboratory glass bottle([3]) with volume capacity of approximately 125ml, outer diameter of 37±0.5mm and total height of 165±2.5mm, and close with a cork plug. Place inside a low temperature freezer for 144±4 hours at -40±2°C. Next, take the bottle out of the low temperature freezer and immediately wipe it with a clean, smooth cloth soaked in ethanol or acetone. Then place the bottle on top of the Hiding Power Chart (refer to **KS M 2141 Section D**) and then depending on the visibility of the comparison line as seen through the braking fluid in the bottle, measure the degree of clearness of the breaking fluid. Examine the braking fluid for separation and deposit matter, then invert the bottle and measure the time period needed (in seconds) for a bubble to reach the upper surface.	revision of the standard

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<Deleted>	Note ([3]): The sample bottle can be purchased from the Automotive Engineers Association, 400 Commonwealth Drive, Warrendale, PA 15096, U.S.A. **6.6.2** Put the brake oil 100ml at **-50℃** into the sample bottle([1]) with 125ml capacity, 37±0.5mm outer diameter and 165±2.5mm total height, cover it with a cork, and then put it in the low temperature container and keep it at -50±2℃ for 6±0.2 hours. Then, after taking the bottle from the cooler, wipe it quickly with a clean, lint-free cloth dampened with ethanol or acetone. Place it on the hiding power chart (refer to the **attachment note D** of **KS M 2141)** and then measure the transparency of the brake oil through the high definition of the comparison line in the brake oil of the bottle. Examine the separation and sludge of the brake oil, and then invert the bottle to measure the time (seconds) it takes for the bubble to move to the top of the oil. **6.7 Volatilisation** Measure the weight of four petri dishes 100mm in diameter and 15mm in height, as covered with lids, per 0.01g unit respectively. Pour 25ml brake oil into each dish, cover with a lid, and measure the weight again per 0.01g unit. By comparing these two different masses, the weight of the brake oil can be measured. Put the other dish under a lid, and then place this dish in an oven having the method of gravity circulation and an upward ventilation system. Only one brake sample should be heated in one oven. Remove the dish from the oven, with the lid on, and then cool at 23 ±5℃ and measure the weight of each plate. Put four plates in the oven again and keep them at 100±2℃ for 24±2 hours. After 70±4 hours, if the average evaporation loss rate is less than 60%, stop the test and report the average result. Otherwise, 22 hours later, continue this procedure until the average increasing mass loss on the dishes reaches the equilibrium condition of less than 0.25g, or continue the procedure for a maximum of 7 days. Calculate the evaporation quantity of four dishes per plate, seek the average percentage of evaporation, and then measure the rate of loss by evaporation. Examine the residue on the plates at 23±5℃ for one hour at the point of ending time. Scrub the sludge with a finger and examine whether	Amendment in the following with total revision of the standard

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<Deleted>	the sludge is worn or causing friction. Put the combined residue from the four plates into the oil sample bottle. Let the bottle stand at -5±1℃ for 60±10 minutes, then take it out quickly and place the bottle horizontally. Examine whether the sludge flows 5mm within 5 seconds along with the tube wall under this condition. **6.8 Water-resistant qualities** **6.8.1** Mix distilled water 3.5ml with brake oil 100ml at **-40℃,** and then pour the mixture in the centrifugal separation tube shaped like a funnel. Put a cork in the tube, place it in a low-temperature container at -40±2℃ and keep it there for 22±2 hours. Next, take the centrifugal separation tube out of the low-temperature container and wipe it quickly with a clean, lint-free cloth dampened with ethanol or acetone. Place the tube on the hiding power chart and measure the transparency of the brake oil through the high definition of the comparison line in the brake oil in the tube. Examine whether there is any separation of oil and sludge in the brake oil, and then invert the bottle to measure the time (seconds) it takes for the bubble to move to the top of the fluid. (If the topmost the bubble reaches the 2ml graduated on the centrifugal separation tube, consider it as being that all bubbles have moved to the top of the fluid.) **6.8.2** Put the centrifugal separation tube at **60℃** in **6.8.1** into the oven and keep it at 60±2℃ for 22±2 hours. Take the tube out of the oven and immediately examine whether there is any separation in the brake oil. According to items **5 and 6** of **ASTM D 91**, calculate the volume percentage of the sludge. **6.9 Mixtures** **6.9.1** Mix brake oil 50ml with mixed fluid 50ml (refer to **KS M ISO 4926**), place this mixture into the funnel-shared centrifugal separation tube and cork it. Put the centrifugal separation tube in the low-temperature container at -40±2℃ and keep it for 22±2 hours. Then, take the centrifugal separation tube out of the low-temperature container and wipe it quickly with a clean, lint-free cloth dampened with ethanol or acetone. Place the tube on the hiding power chart and measure the transparency of the brake oil through the high definition of the comparison line in the brake oil in the tube. Examine whether there is any separation of oil and sludge.	Amendment in the following with total revision of the standard

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<Deleted>	**6.9.2** Put the centrifugal separation tube mentioned in **6.9.1** into the oven at **60℃** and keep it at 60±2℃ for 22±2 hours. Then remove the tube from the oven and immediately examine whether there is any separation in the brake oil. Based on items **5** and **6** of **ASTM D 91**, calculate the percentage of volume of sludge. **6.10 Anti-oxidisation** Prepare two sets of aluminium and cast iron for test facilities (one of listed in the **attachment note B** of **KS M 2141**) based on the procedure in **6.5**, and then measure the weight of each test facility as per 0.1mg unit. Assemble each metal test facility with an uncoated steel coater pin or bolt, and separate the end of each metal facility by inserting a tin gourd (99.9% tin, maximum 0.025% lead) with a width of approx. 12mm² and thickness of 0.02~0.06mm. After putting the brake oil 30±1ml into the small glass bottle with the capacity of approx. 120ml, put benzoyl peroxide (reagent grade of 60±2mg) and distilled water 1.5±0.05ml. (Do not use benzoyl peroxide with purity less than 90%, or with a brown or ash colour. The density of the reagent should be calculated according to **ASTM E 298.**) Put a cork on the bottle and shake the bottle without letting the fluid reach the cork, and then put the bottle into the oven and keep it at 70±2 ℃ for 120±10 minutes, shaking the bottle every 15 minutes to accelerate the melting of the peroxide. Remove the bottle from the oven and cool it to room temperature (23±5℃) for 2 hours, leaving the cork as it is. According to the standards set forth in the **attachment note A** of **KS M 2141**, cut an SBR cup and put approx. one-eighth of it into two test tubes, each approx. 22mm in diameter and 175mm in length. Add the prepared test fluid 10ml to each test tube and insert the tube, placing the end of the assembled metal test facility on the upper part of the rubber. Soak approx.1/2 of the metal test facility into the fluid so that the part inserted to the coater pin floats on top of the fluid. Put the cork on the tube and keep it at 23±5℃ for 70±2 hours, making it stand erect. After that, loosen the cork and put it in the oven, and keep it at 70±2℃ for 168±2 hours. If heating is finished, then remove the metal facility and separate it. Examine whether there is anything adhering to the metal facility. Wipe it with a cloth dampened	Amendment in the following with total revision of the standard

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<Deleted> **<Deleted>**	in ethanol, and examine whether there is any hollowed or rough surface. Put the metal facility into dry desiccant material, dry it for at least an hour at 23±5℃, and then measure the weight of each metal facility per 0.1mg unit. Next, divide the whole surface area of metal facility marked with the weight change mass of each metal facility in units of a square centimetre, and measure the rate of loss from the corrosion respectively. Then average the result of two samples measured at the same time. If it deviates from the basic value or has failed one of the tests, then the two sample tests should be repeated. Also, both of the repeat tests should satisfy the requirements of **4.10**. **6.11 Effect on the rubber** Use a standard ISO natural rubber cup and SBR cup, as explained in the **attachment notes C** and **A** of **KS M 2141.** Measure the bottom diameter and hardness of all cups according to **6.5**. Do not use the cup with a diameter deviation of 0.08mm or over. Measure the weight (m_1) of the cup in the air as per 1mg unit, and then measure the outward weight (m_2) of the cup soaked in distilled water at room temperature. Quickly dip each test cup into alcohol, and then remove the moisture using the filter paper that is free of fluff and foreign particles. **6.11.1** Put two ISO and SBR cups at **70**℃ into the round-shaped glass bottle with approx. 250ml capacity, approx. 125mm inside height, approx. 50mm inside diameter, a tin-coated steel lid and straight side, and then pour in the brake oil 75ml. Heat the glass bottle at 70±2 ℃ for 120±2 hours, and then cool it at 23±5℃ for 60～90 minutes. Afterwards, take the cups out of the alcohol and wash quickly with 95% of ethanol, dry in the air and check whether the degradation of rubber, such as bubbling or scum, has occurred. Afterwards, take each of the cups out of the alcohol. Put the dried cups (whose mass has been measured) into the mass measuring bottle with a cork, measure the weight (m_3). Take each cup out of the mass measuring bottle again and measure the outward weight (m_4) of the soaked state in distilled water. Measure the bottom diameter and hardness of each cup within 15 minutes after taking it out of the brake oil. Report the rate of volume change as the percentage rate to the original volume, and	Amendment in the following with total revision of the standard

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<Deleted>	calculate it using the following formula: Rate of change in volume %= $\frac{(m_3-m_4)-(m_1-m_2)}{(m_1-m_2)} \times 100$ In this formula, m_1: Weight in the air(g) m_2: outward weight in the water(g) m_3: weight in the air after soaked in the test liquid (g) m_4: outward weight in the water after test(g) **6.11.2** Put two standard SBR cups at **120**℃ into the round-shaped glass bottle with approx. 250ml capacity, approx. 125mm inside height, approx. 50mm inside diameter, a tin-coated steel lid and straight sides, and then pour in the brake oil 75ml. Heat the glass bottle at 120±2℃ for 70±2 hours, and then cool it at 23±5℃ for 60～90 minutes. Afterwards, take the cups out of the bottle and wash quickly with 95% of ethanol, dry in the air and check whether any degradation of rubber (such as bubbling or scum) has occurred. Afterwards, take each cup out of the alcohol and put the dried cups (whose mass has been measured) into the mass measuring bottle with a cork, and measure the weight (m_3). Remove each cup from the mass measuring bottle again, and measure the outward weight (m_4) of the soaked state in distilled water. Measure the bottom diameter and hardness of each cup within 15 minutes after taking it out of the brake oil. Report the rate of volume change as the percentage rate to the original volume, and calculate it using the following formula: Rate of change in volume %= $\frac{(m_3-m_4)-(m_1-m_2)}{(m_1-m_2)} \times 100$ **6.11.3** Repeat the test of **6.11.1** using the ISO natural-rubber cup explained in the **attachment note C** of **KS M 2141**. **6.11.4 Standard EPDM Test Facility** **6.11.4.1 Test Facility** The EPDM test facility has characteristics([4]) such as the composition of Table 3 or standard EPDM test facility with the approx. 25mm x25mm and thickness of approx. 2mm. Note ([4]) means the hardness change, increase in volume, and outward appearance. **Table 3** (Omitted) **6.11.4.2 Preparation of Test** Prepare the standard EPDM test facility, which is within 6 months if it was preserved at under 30℃ after	Amendment in the following with total revision of the standard

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<Deleted>	manufacture or within 36 months if it was preserved at under 15 after manufacture. When the hardness is measured, if the micro- or pocket hardness scale is used, then measure the hardness by placing it on the scale itself. If it is an A- type hardness scale like a spring, then measure it by putting it on the rubber stand ([5]). Note ([5]): Use the rubber stand with thickness of 10mm, which is the same as the hardness of the standard EPDM test facility. **6.11.4.3 Method of Test** Put two standard EPDM test facilities into the round-shaped glass bottle with approx. 250ml capacity, approx. 125mm inside height, approx. 50mm inside diameter, a tin-coated steel lid and straight sides, and then pour in the brake oil 75ml. Be careful not to overlap each of the tests. Heat this glass bottle at 70±2℃ for 70±2 hours or at 120±2℃ for 70±2 hours, and then cool it at 23±5℃ for 60～90 minutes. Next, take the cups out of the bottle and wash it quickly with 95% of ethanol, dry it in the air and check whether any degradation of rubber (such as bubbling or scum) has occurred. Afterwards, take each cup out of alcohol and put the dried cups (whose mass has been measured) into the mass measuring bottle with a cork, and measure the weight (m_3). Remove each cup from the mass measuring bottle again and measure the outward weight (m_4) of the soaked state in the distilled water. Measure the bottom diameter and hardness of each cup within 15 minutes after taking it out of the brake oil. **6.11.5** Report the rubber expansion rate as per 0.03mm unit. If the difference of two results is within 0.1mm, then the usage of average value is allowed (95% reliability level). **6.11.5.1 Repetition** The standard deviation (average value of each repeat test) of the results from the test at the same date by the same experimenter was estimated as 0.05mm in the (degree of freedom). If the difference of two values exceeds 0.13mm, then the results should be treated as suspicious (95% reliability level). **6.11.5.2 Reappearance** The standard deviation of result value (average value of each repeat test) from the experimenter from the different laboratory was estimated 0.08mm in degree of freedom 7. If the difference between the two values exceeds 0.20mm, then the measured result value should be considered as suspicious (95% reliability level).	Amendment in the following with total revision of the standard

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<Deleted>	**6.12 Mock Test for Usage Efficiency** The evaluation procedures for the lubricant function of brake oil are as follows: **6.12.1 Test Equipment and Materials** As the fixed stroking equipment (as in picture 5), the equipment arranged (as in picture 4) and installed with the following components is used. **Picture 4** (Omitted) **Remarks** As the multi-purpose grease containing 3% MoS2 or equivalent, grease is used for all components. **Picture 5** (Omitted) **6.12.1.1 Master Cylinder Assembled Components** As a cast-iron housing cylinder for the brake system, it is equipped with a diameter of approx. 28mm but no coated-steel stand pipe. **6.12.1.2 Brake Cylinder Assembled Components** Oil-pressure brake wheel cylinder assembly components with four cast-iron housings and a straight hole with diameter of approx. 28 mm. With the fixed equipment for stroking (as in picture 5), four fixed devices are necessary (including a suitable adapter) to install the board in order to fix the brake-wheel cylinder components. **6.12.1.3 Equipment Subject to Braking Pressure (Air or Oil Pressure)** A suitable piece of functional equipment so as not to cause any side pressure and to supply power to the push loader of the master cylinder. The power added by the generating equipment should be controlled, and it should be capable of adding enough propulsion to the master cylinder to make the minimum 7MPa pressure occur in the mock brake system. A pressure scale or pressure recorder should have a range of 0～7MPa, and it should be located between the master cylinder and the brake fabricated part. Further, it should be equipped with a cut-off valve and bleeding valve to remove the air from the connected tube. The number of adjustable strokes of the generating equipment should be designed for approx. 1000 times for one hour. If there is a mechanical or electronic meter, it should be possible to record the number of total strokes. **6.12.1.4 Air Thermostat** It should have a size sufficient to accommodate four fixed components, the master cylinder and necessary connection tubes such as the adiabatic thermostat or oven. It should be a	Amendment in the following with total revision of the standard

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<Deleted>	heating apparatus controlled by automatic temperature-control equipment and able to maintain a temperature of 120±5℃. The heating equipment should be properly cut to prevent heat from being radiated directly onto the wheel or master cylinder. **6.12.2 Preparation of Test Equipment** **6.12.2.1 Wheel Cylinder Fabricated Components** Use the new wheel cylinder component with the diameter set out in **6.12.1.2**. The piston should be the SAE AA 2024 made of aluminium alloy, not treated by tunic. Disassemble the cylinder and dispose of the rubber cups. Wash all metal components with ethanol and dry them with clean, compressed air. Examine the surfaces and functionalities of all metal components, and check to see whether they have cracks, damage or any hollowed areas, or any coarse part of the cylinder's inside diameter. Then destroy the defective components. Remove the spots and dirt from the cylinder wall with a clean, lint-free cloth dampened in ethanol. If these substances are not removed in this process, destroy the cylinder. Measure the inside diameter of each cylinder at the point of approx. 19mm, which is the straight-line direction with the inflow hole for oil pressure and at the rectangular direction with the centre of this straight line, respectively, at both sides of the cylinder hole. If any of the measured values is out of maximum and minimum 28.55～28.52mm in the course of four separate measurements, destroy the cylinder. If the space between cylinders paired with each piston is within 0.08～0.13mm, then select it. Use a new ISO SBR cup free of fluff and dust **(as shown in picture 7)**, as set forth in the **Attachment Note A** of **KS M 2141.** The number of SBR cups used is six of the plate type for wheel cylinder, one of the first plate types for the master cylinder, and one of the second ring types for the master cylinder. Destroy cups with cracks or bubbles caused by the cutting track or moulding. Measure the bottom and granule diameter of all cups having the purpose of use in the test, using an optical-comparison measuring instrument or a micrometer as per 0.02mm unit, by the central line direction and rectangular direction as per ISO and marked with rubber type. The bottom diameter should be measured horizontally with the bottom from a point above 0.4mm minimum compared with the bottom edge. The cups	Amendment in the following with total revision of the standard

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<Deleted>	with a diameter difference of 0.08mm between the bottom diameter and granule should be destroyed. Then calculate the average value of the diameter of each cup's bottom and granule. According to the procedure in 6.5, measure the hardness of each cup. The components made of rubber should be washed with a clean, lint-free cloth dampened in ethanol and then dried with clean, compressed air. Soak the wheel cylinder components made of rubber and metal in the brake oil for testing, except for the housing and rubber cover, and install them according to the manufacturer's instructions. Move the cylinder by hand and check whether it performs well, and then install the cylinder in the mock brake system. **6.12.2.2 Master Cylinder Components** Use the new master cylinder equipped with a piston of SAE CA 360 copper alloy (anti-hardness). Also, for the use of new standard SBR cups for the cylinder, use of those are checked, measured and washed in the same way as set forth in pictures 8 and 9 in the **attachment note A** of **KS 2141,** and according to the method set forth in **6.12.2.1**. Also, before measuring the granule and bottom diameter of the cup for the second cylinder, soak it in the test brake oil for a short time. Then remove it and assemble it together with the piston and keep it at 23±5℃ for a minimum of 12 hours in vertical orientation as assembled. Check the outflow and inflow ports of the master cylinder. If they are coarse or the edges are sharp, exclude this cylinder. The inside diameter of the cylinder is measured at two points: Measure the nearly central part of the inflow port of the relief photo, and at a point 19mm toward the direction of the bottom or an exhaust port along with the vertical and horizontal centre line of the cylinder's inside diameter. If any of the measured values are outside the maximum and minimum limits of 28.65mm and 28.57mm, do not use it in the test. Soak the rest of the components (except for the housing, push loader and component cover among the rubber and metal components of master cylinder) in the test brake oil for a short time, then take them out and install them according to the manufacturer's instructions. Move the cylinder by hand and check whether it performs well, and then install the cylinder in the mock brake system. **6.12.2.3** Use a steel tube with a dual wall. Based on a visual test of the tube's inside	Amendment in the following with total revision of the standard

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<Deleted>	surface, if there is any corrosion or sludge, then replace the tube completely and replace with a new tube from the master cylinder to wheel cylinder per test (minimum length 0.9m). It is recommended that the master cylinder and wheel cylinder have the same tube size. There are two vents for the standard master cylinder tube, and both tubes should be used. **6.12.2.4 Fabrication and Adjustment of Test Equipment** Install the wheel cylinder and master cylinder, and then fill with brake oil for testing in the system. Make the brake oil flow out from all wheel cylinders and pressure meter to remove any air that is trapped in the system. To make the functional equipment have higher pressure than the required pressure necessary for the proper functioning of the system, check with a finger to see whether there is any leaking. Adjust the pressure for the functional equipment to 7±0.3MPa. **Picture 6** (Omitted) **Picture 6** shows the increase of pressure in the movement of the master cylinder in the round-type stroking equipment of **pictures 4** and **5**. Pressure is relatively low at the first part of the stroke, but it increases to 7±0.3MPa at the last stage when the stroke distance becomes approx. 23mm. This makes the first cup able to penetrate the complementary hole under relatively low pressure. The movement distance of the wheel cylinder piston is approx. 2.5±0.25mm when the pressure reaches 7±0.3MPa. Adjust the number of strokes to1000±100 times per hour, and then record the level of brake oil in the stand pipe of the master cylinder. **6.12.3 The Order of the Test** **6.12.3.1** Operate the system at 23±5℃ for 16 000±1000 times. If there is any area of leakage in the course of operation, repair it and supplement the brake oil in the stand pipe of the master cylinder, and keep the level as recorded the first time. Continuing the test, increase the temperature of the thermostat to 120±5℃ within 6±2 hours. During the test, examine whether the wheel cylinder is operating properly. When it operates at the return movement of 24,000 times, record the quantity of brake oil used to supplement the loss. If the total stroke number is recorded as 85,000 times, stop the test and	Amendment in the following with total revision of the standard

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<Deleted>	include the stroke number at the point of 23±5 ℃ and the stroke number necessary for the increase in operating temperature to 120±5℃. Cool the equipment to room temperature. Then, after checking to see whether there is any excessive leaking area in the wheel cylinder, record the volume of brake-oil loss. Dismantle the master cylinder and wheel cylinder from the system within 16 hours, and immediately cover or cork the cylinder to preserve the brake oil. Collect the brake oil from the master cylinder and wheel cylinder after dismantling them. When collecting the brake oil, you should collect all attachments, after stirring the attachments attached to the inside of the rubber and metal components in the test oil, wash them, and using a soft brush remove any residue adhering to the components. Wash the rubber cup with ethanol and dry it with clean, compressed air. The change in the hardness of the rubber should be within 15 IRHD. Moreover, the change in hardness should not be more than two rubber cups, which has been lowered to 17 IRHD over. Moreover, the condition should not produce inadequacies such as excessive lines, scratched spots, bubbles, too many cracks, cuts (worn at the end) or a change from the original shape. Measure the granule and bottom diameter of the cylinder cup within one hour after dismantling according to the procedure in the **6.12.2.1** and **6.12.2.2**. If the difference in diameters between two parts exceeds 0.08mm, then exclude this cup. Then, measure the hardness of each cup according to the procedure in **6.5**. Record all sludge, gel or residue causing friction. After pouring the test oil out of the cylinder, stir the oil in the bottle within one hour, and make the sludge flat. Transfer the oil 100ml to the cone-shaped centrifugal separation tube, and then measure the quantity of contained sludge as per percentage unit according to items **5** and **6** of **ASTM D 91**. Check the cylinder components and examine whether there is any mucilaginous residue stuck to the piston and cylinder wall, or any hollowed area. Then, after measuring the possibility of wear and removing the sludge by scrubbing it away with a cloth soaked in ethanol, wash the cylinder components with ethanol and dry with clean, compressed air. Measure and record the diameters of the piston and cylinder according to the procedure	Amendment in the following with total revision of the standard

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<Deleted>	in **6.12.2.1** and **6.12.2.2**. The change rate of granule-diameter tightening allowance is calculated using the following formula: The change rate of granule-diameter tightening allowance % = $\frac{d_1-d_2}{d_1-d_3} \times 100$ In this formula d_1: granule diameter before the test d_2: granule diameter after the test d_3: original cylinder inside diameter When a mechanical malfunction occurs, which can affect the evaluation of test oil, try the test again. **6.12.3.2 Calculation and Result** After testing, the calculation of the result will be performed for all the standard SBR cups used in the test. However, the quantity change of hardness is performed in seven cups except the second ring-type standard SBR cups for the master cylinder.	Amendment in the following with total revision of the standard

http://europa.eu.int/comm/enterprise/tbt/

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6.14 Quantity **6.14.1** (Same as above) **6.14.2**…… Measured by weight according to the method in **6. A hydrometer** of **KS A 0601** **6.14.3** (Omitted) **6.14.4**….. Report down to the two decimal points **6.14.5**……By master cylinder….. **7.** (Omitted) **7.1 Composition of Examination Rot** …. Composite by kind. **7.2** (Omitted) **7.3** (Omitted) Examination section Size of sample (n) / Number accepted (Ac) / Number rejected (Re) Safety Examination: 2 / 0 / 1 Regular Examination: 2 / 0 / 1 **8**. (Omitted) **8.1** (Omitted) • • • **8.2 Precautions for usage** Surroundings for usage are … purport of the following contents … • • • **8.2.4**….. cover the lid and … of children …. **8.2.5** (Omitted) **8.2.6** the supplement of the tank is in every automotive … **※ Refer to KS M 2141** **Appendix Table 1 composition of standard SRB cup** • • •	**6.13 Quantity** **6.13.1** (Same as above) **6.13.2**…… Measured according to **7** of **KS A 0601** **6.13.3** (Omitted) **6.13.4**….. Report down to the two decimal points **6.13.5**……By master cylinder….. **7.** (Omitted) **7.1 Composition of Examination Rot** …. Composite by kinds. **7.2** (Omitted) **7.3** (Omitted) Examination section Size of sample (n) / Number accepted (Ac) / Number rejected (Re) Safety Examination: 2 / 0 / 1 Regular Examination: 1 / 0 / 1 **8**. (Omitted) **8.1** (Omitted) • • • **8.2 Precautions for usage** Precautions for usage are … purport of the following contents … • • • **8.2.4**….. cover the lid and … of children …. **8.2.5** (Omitted) **8.2.6** the supplement of tank is ….. every automotive … **<deleted>** **<deleted>** **<deleted>** **<deleted>**	Self-amendment Self-amendment Self-amendment Self-amendment Self-amendment Self-amendment Self-amendment Self-amendment Self-amendment Amend in following with the size change

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<table>
<tr><th>Current</th><th>Revision (Proposed)</th><th>Notes</th></tr>
<tr><td>5.1 Thickness The thickness and its tolerance shall comply with Table 3.</td><td>5.1 Thickness The thickness and its tolerance shall comply with Table 3.</td><td rowspan="3">Global standards such as ISO 3536 and ANSI Z 26.1 do not define thickness range in testing. Moreover, ECE R43 only conducts tests in thickness as categorised by group.
Given this backdrop, the present domestic safety test standards, whose application is limited to a specific fixed benchmark, do not live up to the international standards.
To keep up with the global standards, it is strongly recommended that tests be conducted on the basis of tolerance regardless of the thickness of designation.</td></tr>
<tr><td>Table 3
Unit: mm
<table>
<tr><th>Type</th><th>Thickness of designation</th><th>Thickness and tolerance</th></tr>
<tr><td>Laminated glass A

Laminated glass B</td><td>Total thickness of raw-material flat glass and intermediate membrane</td><td>Thickness of designation ([1])±0.2n([2])</td></tr>
<tr><td rowspan="5">Tempered glass</td><td>3.2</td><td>3.2±0.2</td></tr>
<tr><td>3.5</td><td>3.5±0.2</td></tr>
<tr><td>4</td><td>4±0.2</td></tr>
<tr><td>5</td><td>5±0.2</td></tr>
<tr><td>6</td><td>6±0.2</td></tr>
</table>
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</table>
</td></tr>
<tr><td>Note:
([1]) The thickness of the glass is subject to agreement between the parties.
([2]) n indicates the number of sheets of raw-material flat glass that make up the laminated glass.</td><td>Note:
([1]) The thickness of the glass is subject to agreement between the parties.
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</table>

Parte 5 y 8 del Proyecto