



उत्पाद मानुयल
स्वचलित हाईड्रोलिक ब्रेक तरल, भारी ड्यूटी- विशिष्ट
8654: 2019 (तीसरा पुनरीक्षण) के अनुसार
PRODUCT MANUAL FOR
AUTOMOTIVE HYDRAULIC BRAKE FLUID, HEAVY DUTY – SPECIFICATION
ACCORDING TO IS 8654 : 2019

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की स्कीम-I के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन में रीति और पारदर्शिता के सुसंगत सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेन्स/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	उत्पाद Product	:	IS 8654 : 2019
	शीर्षक Title	:	स्वचलित हाईड्रोलिक ब्रेक तरल, भारी ड्यूटी Automotive Hydraulic Brake Fluid, Heavy Duty
	संशोधन संख्या No. of Amendments	:	Nil
2.	नमूनाकरण दिशा निर्देश Sampling Guidelines:		
a)	कच्चा माल Raw material	:	N.A
b)	समूहिकरण दिशा निर्देश Grouping guidelines	:	Sample of each type shall be test for consideration of GoL/CSoL.
c)	नमूने का परिमाण Sample Size	:	6 litres
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	कृपया Annex- A देखें Please see Annex – A

4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	कृपया Annex- B देखें Please see Annex – B
5.	एक दिन में संभावित परीक्षण Possible tests in a day :		
	All tests can be carried out in a day except for “Fluidity and Appearance at low temperatures”.		
6.	लाइसेन्स का कार्यक्षेत्र/ Scope of the Licence :		
	IS 8654 : 2019 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है “Licence is granted to use Standard Mark as per 8654 : 2019 with the following scope:		
	उत्पाद का नाम Name of the product	स्वचलित हाईड्रोलिक ब्रेक तरल, भारी ड्यूटी Automotive Hydraulic Brake Fluid, Heavy Duty	
	Types	Type I, Type II and Type III	

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ANNEX – A

TO PRODUCT MANUAL FOR

AUTOMOTIVE HYDRAULIC BRAKE FLUID, HEAVY DUTY

AS PER IS 8654 : 2019

LIST OF TEST EQUIPMENTS,

Major test equipment required to test as per the Indian Standard

Sr. No.	Tests used in with Clause Reference	Test equipment
1.	Equilibrium reflux boiling point (ERBP), Annex A, Sl no.i, Table 1 of IS 8654.	A 100 ml round bottom, short-neck heat resistant glass flask neck with a 19/38 standard taper, female ground glass joint and a side-entering tube with an outside diameter of 10 mm which centres the thermometer bulb in the flask 6.5 mm from the bottom
		A water-cooled, reflux, glass tube type condenser having a jacket 200 mm in length, the bottom end of which have a 19/38 standard-taper, drip-tip, male ground glass joint
		Boiling Stones — Three clean, unused silicon carbide grains (approximately 2 mm in diameter, grit No. 8)
		Thermometer — Standardized calibrated partial emission (76 mm) solid stem, thermometers as mentioned in Cl A-3 d)
		Heat Source — Variable autotransformer controlled heating mantle designed to fit the flask, or an electric heater with rheostat heat control.
2.	Wet equilibrium reflux boiling point Annex B, Sl no ii), Clause 4.3 and 7, Table 1 of IS 8654	Glass Jars — Four SAE RM-49 corrosion test jars or equivalent screw top, straight-sided, round glass jars each having a capacity of about 475 ml and approximate inner dimensions of 100 mm in height by 75 mm in diameter, with matching lids having new, clean inserts providing water-vapour-proof scales
		Desiccator and Cover — Two bowl form glass desiccators, 250 ± 10 mm inside diameter, having matching tubulated covers fitted with suitable rubber stoppers
		Desiccator Plate — Four 230 ± 10 mm diameter, perforated porcelain desiccator plates, without feet, glazed on one side
		Distilled Water

		TEGME (Triethylene Glycol Monomethyl Ether) as mentioned in B-4b) of Annex B
3.	Kinematic viscosity, Sl no iii), Table 1, IS 1448 [Part 25/Sec1],	Viscometer, calibrated, of the glass capillary type, capable of measuring kinematic viscosity within the limits of precision given in clause 14 of IS 1448[Part 25/Sec 1]; Viscometer holder, Temperature-controlled bath, Temperature-measuring device, for the range 0 °C to 100 °C; Timing device; Chromic acid cleaning solution, or a nonchromium-containing, strongly-oxidizing acid cleaning solution; Sample solvent; Drying solvent; distilled water; Certified viscosity reference standards
4.	pH value Annex C, Sl no iv), Table 1	pH meter; ethanol; distilled water
5.	Brake fluid stability Annex D, Sl no v), Table 1	Apparatus as mentioned for Annex A;
6.	Corrosion test Annex E, Sl no vi), Table 1	Balance- Min. capacity 50 ml and Least count 0.1 mg.
		Desiccators- containing silica gel or other suitable desiccant.
		Oven- Gravity convection oven capable of maintaining the desired set point within 2°C.
		Micrometer- A machinist's micrometer 25 to 50 mm capacity, or an optical comparator, capable of measuring the diameter of the SBR wheel cylinder (WC) cups to the nearest 0.02 mm.
		Corrosion Test Strips- Test strips shall be 80 mm long, 13 mm wide, and not more than 6 mm thick with a hole of 4-5 mm diameter drilled at about 6 mm from one end of the strip. The metal strips shall be of tinned iron steel, aluminium, cast iron, brass and copper.
		SBR Cups- Two unused standard 32 mm dia wheel cylinder (WC) cups.
		Corrosion Test Jars and Lids
		Machine Screws – 12mm and 18 mm Length and matching Nuts
		Supplies for Polishing Strips - Waterproof silicon carbide paper, grit No. 320, grade 00 steel wool, lint-free polishing cloth
		Distilled Water
7.	Fluidity and appearance at low temperatures Annex F, Sl no vii), Table 1	Iso-propanol
		Oil Sample Bottle - Two clear flint glass bottles of approximately 125 ml capacity, an outside diameter of 37.0 ± 0.05 mm and an overall height of 165 ± 2.5 mm Cold Chamber - An air bath cold chamber capable of maintaining storage temperatures, down to –55°C with an accuracy of 2°C.

		Timing Device
8.	Evaporation test Annex G, Sl no viii), Table 1	Petri Dishes - Four covered glass petri dishes approximately 100 mm in diameter and 15 mm in height
		Oven - A top vented gravity convection oven capable of maintaining a temperature of 100+ 2°C;
		Balance – Min. 100g Capacity, Accuracy 0.01g
		Cold Chamber - Air bath cold chamber capable of maintaining a temperature of –5 +1° C; oil sample bottle and timing device
9.	Water tolerance test Annex H, Sl no ix), Table 1 & IS 1448 (Part 41)	Cold chamber (– 40 ±2°C); centrifuge; centrifuge tubes; oven; water bath IS 1448[Part 41], toluene, emulsifier
10.	Compatibility test Annex J, Sl no x), Table 1	Benzoyl Peroxide — Reagent grade 96 percent purity; Corrosion Test Strips, aluminum & cast iron; SBR cups as mentioned in Annex E; Machine Screw and Nut
		Tinfoil — Four unused pieces of tinfoil approximately 12 mm square and between 0.02 and 0.06 mm in thickness. The foil shall be at least 99.9 percent tin and should not contain more than 0.025 percent lead.
11.	Effect on rubber cups (SBR), Annex J, Sl no xi), Table 1	Two screw-top, straight sided round glass jars of 250ml capacity and inner dimensions of approximately 125 mm in height and 50 mm in diameter and a tinned steel lid,; iso-propanol; oven; micrometer
12.	Simulated performance test (stroking properties) Annex J, Sl no xii), Table 1	Master Cylinder Assembly — One cast iron housing hydraulic brake master cylinder with diameter of approximately 32 mm and fitted with an uncoated steel stand pipe
		Brake Assemblies — as mentioned M-2.1 b)
		Braking Pressure Actuating Mechanism as mentioned M-2.1 c)
		Heated Air Bath Cabinet as mentioned M-2.1 d); micrometer or optical comparometer

The above list is indicative only and may not be treated as exhaustive

ANNEX – B

TO PRODUCT MANUAL FOR AUTOMOTIVE HYDRAULIC BRAKE FLUID, HEAVY DUTY – SPECIFICATION ACCORDING TO IS 8654 : 2019.

SCHEME OF INSPECTION AND INSPECTION

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. PACKING AND MARKING – The Standard Mark, as given in the Schedule of the licence shall be incorporated on each container of the product provided that the product contained in the container thus marked conforms to the requirement of the specification.

3.1 Material shall be marked with the following information:

- a) Name and type of material;
- b) Manufacturer's name, initials or trade-mark, if any;
- c) Net mass of material; and
- d) Identification in code or otherwise to enable the lot of consignment or manufacture to be traced back from records.
- e) BIS Licence No. CM/L-----
- f) BIS website details as follows “For details of BIS certification please visit www.bis.gov.in”.

4. CONTROL UNIT – For the purpose of this scheme, the entire quantity of material mixed homogenously in one operation shall be considered as a control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

6. REJECTIONS – A separate record shall be maintained giving information detailed information regarding the rejected control units and mode of their disposal shall be maintained. Such material shall in no case be stored together with those conforming to the specification.

TABLE 1
LEVELS OF CONTROL

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods Cl. Ref.	Test Method IS		No. of Sample	Frequency	Remarks
4.1	Appearance	4.1	IS 8654	R	One	Each Control Unit	See Notes
4.2	Colour	4.2	IS 8654	R	One	-do-	-do-
4.3& Table1	Equilibrium reflux boiling point (ERBP)	Annex A	IS 8654	R	One	-do-	-do-
-do-	Wet Equilibrium reflux boiling point	Annex B	-do-	R	One	Every Tenth Control Unit	-do-
-do-	Kinematic viscosity		IS 1448 (P:25/Sec 1)/ASTM D 7042	R	One	Each Control Unit	-do-
-do-	pH Value	Annex C	IS 8654	R	One	-do-	-do-
-do-	Brake fluid stability	Annex D	IS 8654	R	One	Every tenth control unit	-do-
-do-	Corrosion test	Annex E	-do-	R	One	-do-	-do-
-do-	Fluidity and appearance at low temperature	Annex F	-do-	R	One	-do-	-do-
-do-	Evaporation test at 100 ± 2°C	Annex G	-do-	R	One	-do-	-do-
-do-	Water tolerance test	Annex H	-do-	R	One	-do-	-do-

-do-	Compatibility test	Annex J	-do-	R	One	-do-	-do-
-do-	Resistance to oxidation:	Annex K	-do-	R	One	-do-	-do-
-do-	Effects on rubber cups (SBR)	Annex L	-do-	R	One	-do-	-do-
-do-	Simulated performance test (stroking properties)	Annex M	-do-	R	One	Once in 6 months	
4.4	Shelf Life (optional)	4.4	IS 8654	R	One	Once in 12 months	

Note -1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification to BO Head.

Note-3: In case the sample fails in the tests with each control unit frequency, the entire quantity of the material in the control unit may be reprocessed if it is possible to rectify the defect. Such reprocessed material when tested again shall satisfy the relevant requirements before it is considered for marking.

Note- 4: In case the sample fails in the tests with every tenth control unit frequency, after taking corrective action, samples from each subsequent control unit shall be tested till samples from three consecutive control units shall satisfy the relevant requirements of the specification, whereupon the original frequency of testing may be resumed.