

Laboratory **Daimler India Commercial Vehicles Private Limited-Central Lab,
SIPCOT Industrial Estate, Mattur, P.O. Oragadam Village
Sriperumbudur Taluk, Kanchipuram District, Tamil Nadu**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-5211 (in lieu of T-4395 & T-4396)**

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Validity **08.02.2017 to 07.02.2019**

Last Amended on **07.02.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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CHEMICAL TESTING

I.	METALS & ALLOYS			
1.	Ferrous Alloys Carbon & Alloy Steels	Aluminium	ASTM E 415: 2015 IS 8811: 1998 (RA 2012)	0.01 % to 0.15 %
		Boron		0.0005 % to 0.010 %
		Carbon		0.05 % to 1.25 %
		Chromium		0.02 % to 3.0 %
		Copper		0.04 % to 0.50 %
		Manganese		0.16 % to 2.0 %
		Molybdenum		0.03 % to 1.28 %
		Nickel		0.02 % to 5.0 %
		Niobium		0.005 % to 0.076 %
		Nitrogen		0.004 % to 0.015 %
		Phosphorus		0.006 % to 0.040 %
		Silicon		0.12 % to 1.41 %
		Sulphur		0.006 % to 0.05 %
		Titanium		0.002 % to 0.20 %
Vanadium	0.002 % to 0.30 %			
II.	PLASTIC & RESINS			
1.	Plastics & Plastic Products (Polypropylene, Polyamide & Polycarbonate)	Qualitative Analysis by FTIR	ASTM E 573: 2001 (RA 2013)	Qualitative

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MECHANICAL TESTING

I.	MECHANICAL PROPERTIES OF METALS			
1.	Ferrous Material (Steel & cast iron) Non - Ferrous Material (Aluminum , Al alloys, Copper alloys)	Hardness Test - Rockwell hardness	ISO 6508-1: 2016 ASTM E18: 2017 IS 1586-Part 1: 2012	20 HRA to 88 HRA 20 HRBW to 100 HRBW 20 HRC to 70 HRC
		Brinell Hardness	ISO 6506-1: 2015-02 ASTM E10a: 2017 IS 1500-Part 1: 2013	100 to 550 HBW 5/750 100 HBW to 550 HBW 10/3000
		Vickers Hardness	ISO 6507-1: 2006-03 IS 1501-Part 1: 2013 ASTM E 92-82 (RA 1997)	100 to 650 HV30
		Micro Vickers Hardness	ISO 6507-1: 2006-03 IS 1501-Part 1: 2013 ASTM E 384: 2016	(100 to 850) HV0.5 (100 to 850) HV1
		Tensile Test - Tensile Strength	ISO 6892-Part 1: 2017 IS 1608: 2005 (RA 2011) ASTM A 370: 2017 DIN 50125: 2016	50 N/mm ² to 2000 N/mm ² (Load =1.6 to 400kN, LC: 0.004kN)
		Yield Strength		
		0.2% Proof Stress		
		% Elongation		
% Reduction in Area	10 % to 80 %			
2.	Ferrous Fasteners External Thread	Axial Tensile	ASTM F606/F606 M: 2016 IS 1367-Part 3: 2002 (RA:2013) ISO 898-1: 2013	2 kN to 400 kN

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II.	METALLOGRAPHY TEST			
1.	Ferrous & Non - Ferrous Material (Steel, Cast iron, Al- Alloy, Copper- Alloy & Welding)	Macro Examination	ASTM E 340: 2015	Qualitative (8X to 100X)
2.	Steel Bar & Forging of carbon and Low alloy steels	Macro Examination with rating	ASTM E 381: 2017	Qualitative
3.	Metals & Alloys - Ferrous Material	Microstructural Analysis	ASM Metal hand book- Vol. 9: 2004 ASTM E 407-07: 2015 ASTM E 3: 2011	Qualitative (100X, 200X, 500X, 1000X)
		Depth of Decarburization	ASTM E 1077: 2014 IS 6396: 2000 (Re 2012) Microscopic Method	0.005mm to 0.50mm / 100X
4.	Grey Cast Iron & S.G. Iron Products	Graphite Size, distribution of graphite flakes and nodules	DIN EN ISO 945-1: 2010 IS 7754: 1975 (RA 2003) ASTM A247: 2017	Qualitative (100X)
5.	Case Hardened / Induction hardened Steel and Nitrided steel	Case Depth	ISO 2639: 2003 IS 6416: 1988 (RA 2012) Hardness Traverse Method	0.1 to 15mm/HV1, HV0.5
6.	Metallic coating on Metals	Coating Thickness	ASTM B 487: 1985 (RA:2013) ISO 1463: 2004 SAE J 423 - (RA 1998) Microscopic Method	0.005mm to 0.50 mm / (50X,100X, 200X, 500X, 1000X)
7.	Painted / Electro Plated parts	Coating Thickness	ISO 2178: 2016	10.0µm to 1500.0µm

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III.	RUBBER & RUBBER PRODUCTS			
1.	Rubbers & Rubber products	Hardness Shore "A"	ISO 7619-1: 2010 DIN EN ISO 868: 2003 ASTM D 2240: 2015	(20 to 100) Shore A
IV.	PLASTIC & PLASTIC PRODUCTS			
1.	Plastics & Plastic Products	Hardness Shore "D"	ISO 7619-1: 2010 DIN EN ISO 868: 2003 ASTM D 2240: 2015	(20 to 100) Shore D
		Ash Content	DIN EN ISO 3451-1: 2008	5 % to 70 %
		Density	DIN EN ISO 1183-1: 2013 ASTM D792: 2013	0.50 g/cc to 2.50 g/cc