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|-------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------|-------------------|
| <b>Laboratory</b>             | <b>Materials Engineering Laboratory, Central Quality, Tata Motors Limited,<br/>Pimpri, Pune, Maharashtra</b> |                    |                   |
| <b>Accreditation Standard</b> | <b>ISO/IEC 17025: 2005</b>                                                                                   |                    |                   |
| <b>Discipline</b>             | <b>Chemical Testing</b>                                                                                      | <b>Issue Date</b>  | <b>30.01.2016</b> |
| <b>Certificate Number</b>     | <b>T-1280</b>                                                                                                | <b>Valid Until</b> | <b>29.01.2018</b> |
| <b>Last Amended on</b>        | <b>-</b>                                                                                                     | <b>Page</b>        | <b>1 of 2</b>     |

| <b>S.No.</b>                 | <b>Product /<br/>Material of Test</b>        | <b>Specific Test Performed</b>                  | <b>Test Method Specification<br/>against which tests are<br/>performed</b> | <b>Range of Testing /<br/>Limits of Detection</b>                                                                                                                        |
|------------------------------|----------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>I. METAL &amp; ALLOYS</b> |                                              |                                                 |                                                                            |                                                                                                                                                                          |
| <b>1.</b>                    | <b>Plain Carbon and<br/>Low Alloy Steels</b> | C<br>Mn<br>P<br>S<br>Si<br>Ni<br>Cr<br>Mo<br>Al | ASTM-E415-2014                                                             | 0.05 % to 1.50%<br>0.15 % to 1.60%<br>0.005 % to 0.05%<br>0.005 % to 0.05%<br>0.05 % to 2.0%<br>0.05 % to 2.0%<br>0.05 % to 2.0%<br>0.01 % to 0.50%<br>0.005 % to 0.075% |
| <b>2.</b>                    | <b>Stainless Steel</b>                       | C<br>Si<br>Mn<br>P<br>S<br>Cr<br>Ni<br>Mo       | ASTM-E1086-2014                                                            | 0.01 % to 0.20%<br>0.1 % to 1.0%<br>0.1 % to 2.0%<br>0.005% to 0.05%<br>0.005% to 0.05%<br>10% to 25%<br>0.5 % to 25.0%<br>0.1 % to 3.0%                                 |
| <b>3.</b>                    | <b>Cast iron</b>                             | C<br>Si<br>Mn<br>P<br>S<br>Mg<br>Cu             | ASTM-E1999-11                                                              | 2.50% to 4.0 %<br>1.0% to 2.50 %<br>0.03% to 1.0%<br>0.005 % to 0.25%<br>0.005 % to 0.25%<br>0.01% to 0.075%<br>0.05 % to 0.25%                                          |

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| <b>Accreditation Standard</b> | <b>ISO/IEC 17025: 2005</b>                                                                               |                    |                   |
| <b>Discipline</b>             | <b>Chemical Testing</b>                                                                                  | <b>Issue Date</b>  | <b>30.01.2016</b> |
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| S.No.                     | Product / Material of Test | Specific Test Performed                      | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection                                                                                                            |
|---------------------------|----------------------------|----------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.                        | Cu Base Alloy              | Zn<br>Sn<br>Pb<br>Fe<br>Ni<br>Al<br>Si<br>Mn | BS EN 15079:2015                                            | 0.05 % to 45.0%<br>0.05 % to 10.0%<br>0.1 % to 2.5%<br>0.05% to 0.50%<br>0.05 % to 0.75%<br>0.05 % to 0.25%<br>0.05 % to 0.25%<br>0.05 % to 0.50% |
| 5.                        | Al Alloy                   | Cu<br>Mg<br>Si<br>Fe<br>Mn<br>Ni<br>Zn       | ASTM-E1251-2011                                             | 0.05% to 5.0%<br>0.05 % to 0.75%<br>0.05 % to 15%<br>0.05 % to 1.20%<br>0.05 % to 0.50%<br>0.05 % to 0.50%<br>0.05 % to 1.0%                      |
| -X-X-X-X-X-X-X-X-X-X-X-X- |                            |                                              |                                                             |                                                                                                                                                   |