

|                                     | RDAU                                     | <u> </u>   |   |   |   |  |                           | ANTPUR. A.                                 | 7 31341                                      | <u> </u>                    |             |                    |                    |                   |
|-------------------------------------|--|--|---|---|---|--|---------------------------|--|--|-----------------------------|-------------|--------------------|--------------------|-------------------|
| TEST CERTIFICATE                    |  |  |   |   |   |  |                           |  |  | /QA-TC/12 Rev. 01           |             |                    |                    |                   |
| TC No : 2017/00092181               |  |  |   |   |   |  |                           | Quantily 8.101 t Rolling Input: 160X160 mm |  |                             |             |                    |                    |                   |
|                                     |  |  |   |   |   |  |                           | S.O. No. /                                 |  | B54                         |             |                    |                    |                   |
| PROCESS F                           |  | BF>>BOE  | >>LRF>>   | VD>>CCM   | (EMS & A  | MLC) >>R                                 | <u> </u>                  | Size: 28                                   | _Dia   |                             | Truck No    | : AP02T            |                    | -                 |
| Heat No:- 34189<br>NO OF BUNDLES: 3 |  |  |   |   |   |  |                           | Product : Rolled Bar                       |  | Colour Code: WHITE/         |             | /GREE              |                    |                   |
| NO OF BARS:                         |  |  | Grade :-  | 16MNCF  | R5  |  |                           |  |  |                             |             |                    |                    |                   |
| TAS No. : 903/2014                  |  |  | TDC No :- PFG/MQC/52,REV.NO00/02, DATE:08/08/2014 |   |   |  |                           | Condition :As Rolled                       |  | Reduction Ratio: 4          |             | 41.                | 58 :1              |                   |
| CHEMICAL                            |  | SITION   | - <sub>1</sub>                                    | -r  |   |  |                           |  | _  | -                           |             | -                  | <u> </u>           |                   |
| Element                             | %C                                       | %Mn  | %Si   | %P  | %S  | %Cr                                      | %Ni                       | %С⊔  | %Mo  | %AI                         | %Pb         | %V                 | %Ti                | %Ca               |
| <u>Min.</u>                         | 0.14                                     | 1.00   | 0.15  | ļ <u> </u>  | 0.015   | 0.80                                     | -                         |  | -  | 0.015                       | -           | -                  |                    | -                 |
| Max.                                | 0.19                                     | 1.30   | 0.35  | 0.025   | 0.035   | 1.10                                     | -                         | -  | _  | 0.035                       | -           | -                  | -                  |                   |
| Actual                              | 0.14                                     | 1.13   | 0.25  | 0.016   | 0.027   | 1.06                                     |                           | -  |  | 0.025                       | -           | -                  | -                  |                   |
| OTHER                               |  |  | 1   |   |   |  |                           |  |  |                             |             |                    | <u> </u>           | i                 |
| ELEMENTS<br>Element                 | %В                                       | %Nb  | 0/ 4-   | 0/04  | -   |  |                           | 4  |  |                             |             |                    | GAS LE             |                   |
| Min.                                | 70B                                      | <del>                                     </del> | %As   | %Sb   | %Sn   | %W                                       | <u>%BI</u>                | 4  |  |                             |             | O <sub>2</sub> PPM | H <sub>2</sub> PPM | N <sub>2</sub> PP |
| Max.                                | -  |  | <u> </u>  | <del>  -</del>  | -   | -  |                           | 4  |  |                             | Min         |                    |                    |                   |
| Actual                              | <del></del>                              | -  | <del>-</del>                                      | <del>  -</del>  |   |  | -                         |  |  |                             | Max         | 25                 | 2                  | 80                |
| MECHANIC                            | AL BROD                                  | EDTIES.  |   | <u> </u>  |   |  |                           |  |  |                             | Actual      | 17                 | 0.8                | 75                |
| WECHANIC                            | AL PROP                                  | ERIJES   |   | 1 1/1/11  | <del></del>                                     | <del></del>                              |                           | 1  |  |                             |             |                    |                    |                   |
| Paguirement                         | Hardness<br>(BHN)                        |  | Strength<br>CHARPY)                               | Strength  | UTS<br>(Kg/mm²)                                 | %Elong.                                  | %RA                       |  | J1/16"                                       | JOMINY<br>J4/16"            | Y HARDEN    | IABILITY           | (HRC)              |                   |
| Requirement<br>Min.                 | <u> </u>                                 |  | r   | (Kg/mm²)  |   |  |                           | <u> </u>                                   | 31/10  |                             | -           |                    | _                  |                   |
| Max.                                | 190                                      | <del>-</del> -                                   | <del>-</del>                                      |   |   |  |                           | Min.                                       | -  | 32                          |             |                    |                    |                   |
| Actual                              | 156                                      | -  | -   | <del>-</del> -  |   |  | -                         | Max.                                       | 42   | 37                          | <u>·</u>    | -                  |                    |                   |
| Actual                              | 100                                      | <u> </u>   | <u> </u>  |   |   |  |                           | Actual                                     | 41.6   | 32.7                        |             |                    |                    |                   |
|                                     | METALL                                   | JRGICAL  | PROPE   | RTIES   |   | ا ، ا                                    | · · ·                     | INCLUS                                     | ON RATI                                      | NG AS PE                    | R ASTM E    | 45 (MET)           | IOD AV             |                   |
|                                     | Depth of                                 |  |   | Max.  | Grain   |  |                           | Α  |  | 3                           | C           |                    | . <del></del>      | )                 |
| Require-<br>ment                    | Decarb<br>(mm) (SAE<br>J419 TYPE<br>III) | Macro Et<br>(ASTM E                              |   | Depth of<br>Surface<br>Defect<br>(mm)                               | Size<br>(ASTM<br>E 112)                         |  | т                         | Н  | т  | Н                           | Т           | н                  | т                  | Н                 |
| <i>/</i><br>Viin.                   | <del>  </del>                            |  |   |   | 6   | Min                                      |                           |  |  |                             | <del></del> | ·                  |                    |                   |
| ::::: <u>-</u>                      | 0.50                                     | C2R2S2   |   |   | 8   | Max                                      |                           | - 4.5                                      |  | -                           | -           |                    |                    |                   |
| Actual                              | 0.19                                     | C1R1S1   |   |   | 7.5-8   | Actual                                   | 2.0                       | 1.5  | 2.0  | 1.5                         | 2.0         | 1.5                | 2.0                | 1.5               |
|                                     | 0.10                                     | 911(101  |   |   | 1.0-0   | Actual                                   | 2.0                       | 0.5  | 1.0  |                             | -           |                    | 1.0                | 0.5               |
| park & Spec                         | tral Test:                               |  | 100% OK   | (   | ſ   | Other Tes                                | ts:                       |  |  | I                           |             | _                  | <del>_</del>       | -                 |
| Surface Inspection:                 |  |  | 100% OK   |   |   | 1. MFL:                                  |                           | 100% OK                                    |  | Oil Quenched Core Hardness: |             |                    |                    |                   |
| Ultrasonic Test:                    |  |  | 100% OK   |   |   |  |                           | Found Satisfactory                         |  | Oil Quenched Core Hardness. |             |                    |                    |                   |
| MPI:                                |  |  | -   | <u> </u>  | · · · · · · · · · · · · · · · · · · ·           | 3. Blue Fra                              |                           | Tound Oati                                 | Stactory                                     |                             | Min. in HR  | - T                | <del></del> -      |                   |
|                                     |  |  |   |   | , , , , , , , , , , , , , , , , , , ,           | 4. Upset Te                              |                           | ·  |  |                             | Actual in I |                    |                    |                   |
| emarks                              | Microstructur                            | re : Peariite ·                                  | Ferrile (fre                                      | e from harmfu   |   | т. ород т                                |                           |  | <u>.                                    </u> |                             | el India    | niko j             |                    | -                 |
| ength of Bar                        |  |  | requirement<br>steel require                      | hat the conter<br>s of the purch<br>ments & the n<br>see from radio | ase order, te<br>naterial certi<br>active eleme | chnical delive<br>lication requir<br>nt. | ry conditio<br>ements", S | ns general                                 |  | Jeb Jago                    | Say No.     | 17.12.             | 2017               |                   |







(ISO/IEC 17025 Accredited)

**Customer Address:** 

TALEGAON ROAD CHAKAN

## CHEMICAL ANALYSIS

Customer Name : PRECIFORGE & GEARS

GAT NO.150/2, MAHALUNGE INGLE, CHAKAN CHAKAN

Report No. : 18928 Date: 05/01/2018

Customer Challan: 278

Challan Date:

02/01/2018

**Sample Recd. Date:** 04/01/2018

Lab ID:

780118

Material Specification: DIA 28.0-H.NO-34189-SUPPLIER-GERDAU

FEST METHOD :ASTM E 415 -2017 Grade. :16MnCr5 (DIN

**TEST TEMPERATURE**: 24°C **Test Date**: 05/01/2018

| arameter (% By Weight) | Observed Values | Specification Req.(%) |
|------------------------|-----------------|-----------------------|
| С                      | 0.14            | 0.14-0.19             |
| Si                     | 0.24            | 0.15-0.40             |
| Mn                     | 1.23            | 1.00-1.30             |
| P                      | 0.018           | 0.035MAX              |
| S                      | 0.029           | 0.035MAX              |
| Cr                     | 1.08            | 0.80-1.10             |
| Al                     | 0.022           |                       |
|                        |                 |                       |
|                        |                 | ,                     |
|                        |                 |                       |

Remark: ABOVE TEST RESULT MEETS THE SPECIFICTION OF GRADE 16MnCr5.

| Tested By : MRS.MANISHA BAHEKAR | Authorised By: MR.PRAVEEN DESHPANDE |
|---------------------------------|-------------------------------------|
| MBahekar.                       | Codyo.                              |

GSD/QF/33

NOTE: 1. Sample(s) not drawn by GSD LAB.

----END OF REPORT

- 2. The result relate only to the sample(s) tested.
- 3. The certificate shall not be reproduced except in full, without the written approval of the laboratory.
- 4. Samples are retained 90 days only.
- 5. "\*" marked not covered under ISO/IEC 17025 scope.

Address: Gat No.191/1, Mahalunge Ingle Village, Near Sandbhor complex, Chakan Talegaon Road, Taluka: Khed, Dist: Pune -410 501.M: M +91 7757008758 Email: gsdlab2015@gmail.com