Purpose:

The Purpose of this procedure is to ensure that the Product comply with required Specification or Standard and Process of Rebar manufacturing.

To maintain a system which provides identification and where contractually required, traceability of all types and sizes of rebar during manufacturing process.

Scope:

Laboratory Testing Area, Billet Charging area, Production Line and Bundling area.

Responsibility:

Quality Control Manager / Engineer / Shift Supervisor is responsible for

- Adherence to this procedure
- Organizing and Management of resources and delegation of responsibility for inspection, identification and traceability.
- Coordinate with production and material handing department.
- Prepare all records which is mention in this procedure.

Procedure:

Raw Material:

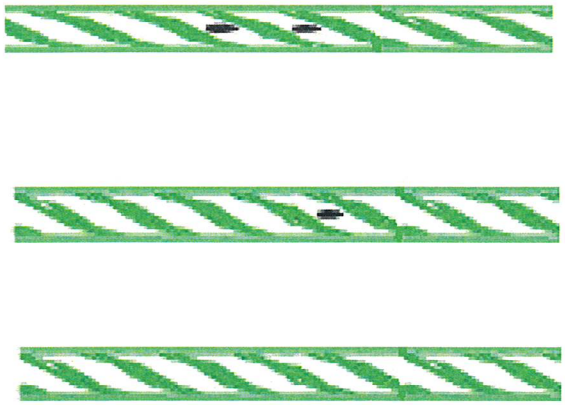
1. Billets upon receipt shall be inspected to ensure that they are properly segregated and stacked as per cast / Heat number and supplier.
2. Production Plan are verified and approved upon ascertaining the suitability of the cast and chemical composition.
3. Common cast or UIS Heat number is verified as per procedure of billet integration (UIS-QC-P-01).
4. The material is not mixed with other casts and the product identify is maintained in the following stages:
   - Charging to the furnace
   - Reheating in the furnace
   - Rolling
   - Quenching
   - On Cooling bed
   - Cutting to specified length
   - Counting of bars and Bundling
   - Tagging of Bundle
   - Transfer of bundles to finish product storage area.
5. Billet charge in Reheating Furnace and recorded in Billet Charging Report (UIS-QC-FM-17) during Reheating- gap is maintained in between common cast batch.
6. If there is a change of common cast numbers, which will affect the production plan, the production department will be informed accordingly.
7. If the traceability of cast is missing or last, quality control department shall investigate and initiate corrective measures.

Rolling:

1. During the Rolling regular observing Furnace Temperature, Mill speed, Rebar Temperature Before and after quenching, Water Flow, Water Temperature and quenching line Pressure and recorded in Process parameter record (UIS-QC-FM-04).
2. Identify the bar marking according to UIS company logo, UAE logo, Certification body logo, Certification marking for standard and Grade refer Drawing of Rebar.
3. Rebar are having two series of parallel transverse ribs and Product Rib Geometry is to be done as per Quality Plan (UIS-QC-PL).
4. Initial products rolled after size change, pass change and mill interruptions for cobble clearing etc. are inspected and monitored on the cooling bed, any non-conformity concerning surface condition, rib pattern, logo mark, etc. is reported to Rolling Supervisor for rectification.
5. On a regular basis at intervals observation is made at cold shear roller table for surface, straightness and waviness of bars.
6. Sampling of Rebar (refer Quality Plan UIS-QC-PL)
   - One sample will be taken for non-slit sizes (Ø 14 - Ø 40 mm)
   - Two sample taken for two slit sizes (Ø 10 - Ø 14 mm)
   - Three samples for three slit sizes (Ø 8 mm)

   Sample shall be taken from the middle bar (approximately 2 or 3 bar depending of the bar size) in the cooling bed.

   Sample shall be identified by Bar size, cast number, Billet number or Bundle number, Production date.
7. Identification of Rebar in case of Slit sizes (refer drawing UIS-PRD-0028)
   - In case of three slit size (Ø 8 mm) rolling, having two dot ● ● on drive side represented by **D**, Single dot ● on Middle represented by **M** and **No dot** on operator side that is represented by **O**

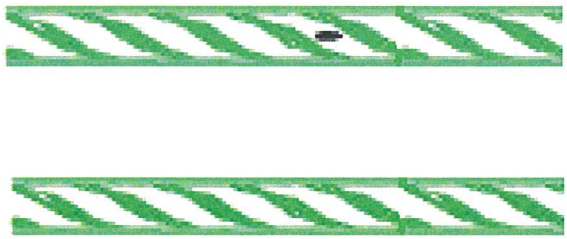


Drive Side- **D**

Middle - **M**

Operator Side- **O**

- In case of two slit sizes (Ø 10 - Ø 14 mm) rolling, having One dot marks ● on drive side represented by D and on operator side, **No dot** marks that is represented by **O**



Drive Side - **D**

Operator Side- **O**

8. At any stage if any surface defect, wt./ m, mechanical property variations etc. are observed, immediate action is taken to inform Rolling Supervisor for rectification, Shift Supervisor/ Technician shall ensure that non- conforming product is separated in its designated areas.
9. The acceptance limits for surface defects, mechanical properties and chemical composition are as per standard product specifications refer Quality Plan (UIS-QC-PL).
10. 5 to 10 bundles shall be counted manually by Shift Supervisor / Technician in each shift to ensure each bundle consist of specified number of bars. Refer to Table 2 of (UIS –QC-P-O3) for standard bar count and bar length tolerance.

11. The Length of 5 to 10 bars from different cuts shall be measured at ambient temperature by shift supervisor / Technician in a shift.
12. Bundles containing few defective bars or variation in number of bars during in line production are held for sorting / re-inspection, for the bundles held for sorting / re-inspection, a green paper tag is attached and the reason for holding is clearly specified, details are recorded in Bar counter report and Daily summary report (UIS-QC-FM-14 & 15).
13. After sorting / re-inspection of held bundles, reclassification will be done and bars / bundles made as prime and the details are recorded in the re-inspection report (UIS-QC-FM-16).
14. Summary of the inspection results are recorded in the Daily Summary Report (UIS-QC-FM-15).
15. Mechanical Testing results are recorded in the Mechanical Test Report according to standard and grade stored in a computer as a reference for determining the long-term quality level, tensile testing shall be done as per (UIS-QC-WI-01).
16. Bundles shall be checked for correct labeling as per rebar labeling process (UIS-QC-P-03) on a random basis by shift supervisor / Technician.
17. The Wt./m cross rib dimensions and cross-sectional area shall be determined as per work.
18. Instruction (UIS-QC-WI-01), if any variation observed, shift supervisor / Technician shall give instruction to the production department to change the groove of the finishing stand.
19. The sample are received, prepared and controlled for mechanical testing as per work instruction (UIS-QC-WI-01), Results are recorded in Mechanical Test Report according to standard and grade wise from see (UIS-QC-PL).

20. Chemical composition of the rebar in every common cast is determined by spectrometer and results are recorded in the chemical analysis record (UIS-QC-FM-10).
21. Rebend test is done every common cast by Bend & Rebend Machine and results are recorded in the mechanical test results record according to standard and grade wise.
22. Rebar martensite ring check
    a. Martensite ring check should be conducted in order to determine the uniformity of the cooling in quenching pipes
    b. It's done as per checking martensite ring work instruction (UIS-QC-WI-01).

Rev. No.	Rev. Date	Amendment Description	Issue Date	Issue No.
00	June 2014	Document established	June 2014	01
01	Sept 2015	Company Logo changed	Sept 2015	02
02	Oct 2016	Raw Material procedure #5, Amendment in Billet Charging Form (New Form No. is UIS-QC-FM-17), Addition of two slit for 14mm Ø product size.	Oct 2016	03
03	March 19	Approving authority change	March 19	04
04	March 2020	Engr. Supervisor responsibility added in Page #1.	March 2020	04
05	26.7.2023	Ø 40mm included in sampling of rebar	26.7.203	05

	Name	Position	Signature
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