

**GOVERNMENT OF INDIA
MINISTRY OF DEFENCE
RESEARCH AND DEVELOPMENT ORGANISATION
DIRECTORATE OF AERONAUTICS**

TYPE APPROVAL No. : 545

ISSUED TO : M/s MISHRA DHATU NIGAM LTD., HYDERABAD
FOR : NIOBIUM STABILISED STAINLESS STEEL MDN 347A
HOT ROLLED BARS AND FORGED BARS
CO-ORDINATED BY : RCMA (MATERIALS)

This is to certify that Niobium Stabilised Stainless Steel MDN 347A (Hot Rolled Bars and Forged Bars) developed by M/s.Mishra Dhatu Nigam Ltd., Hyderabad, has satisfied all the test requirements laid down by the Directorate of Aeronautics, as per the Test Schedule No. CRE(M)/3, dated 1 Sep'83. This material has been found suitable for aircraft use as a substitute for BS:S130 (British), MSRR 6522 (Rolls Royce), Kh18NHB (Soviet) materials. The components manufactured from MDN 347A may however require seperate endurance testing based on their functional requirements/end use.

2. This approval is contingent upon :

- i) Composition and source of supply of raw materials being as per Annexure-III of type test Record No.MDN/AMD/TA/002 submitted by M/s.Midhani, vide letter No.MDN/AMD/DA/86/87, dated 6 Oct'1986
- ii) Processing parameters remaining the same as detailed in Annexure-II of the type test record.
- iii) Batches from series production conforming to the requirements laid-down in respective materials specification of concerned collaborators of HAL Division.
- iv) Quality Control aspects of bulk production being cleared by DTD&P(Air), Ministry of Defence.

3. This approval is indefinitely valid except when discrepancies are observed during repeat type approval as may be called for by this Directorate.

4. Prior agreement of Directorate of Aeronautics will have to be obtained if this approval is to be transferred to any other agency or if changes within the Type Record are effected.



(SURESH C.GUPTA)

Air Vice Marshal

Director of Aeronautics

No. : AERO/RD-132/117/6/2

Date : 29 Sep. 1987