

Specification for forged aluminium alloy blades

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| Description of the item : | Aerofoil shaped blade for use in axial fans (Refer attached photographs) |
| Material : | Aluminium alloy as per IS 734 HF 15 (or) AlMgSi1 F31 of DIN 1725 Part - 1 |
| Profile data : | at various sections along the height of the blade and if required sample blade(s) can be given by the purchaser while ordering |
| Locating features for m/c: | shall be provided in the blade - to suit purchaser's m/c fixture – will be indicated while ordering (Refer sketch attached for typical arrangement) |
| Process of manufacture : | Drop Forging |
| Heat Treatment preferred : | Solutionising and precipitation hardening to achieve the required properties |
| Expected requirement : | |

| Sl. No. | Size | Max. height ("h" in mm) | Approx weight raw forged blade per piece (Kg) | Approx requirement per annum (Nos) | Remarks |
|---------|------|-------------------------|---|------------------------------------|-----------------------|
| 1 | 11 | 590 | 2.4 | 500 | Refer sketch attached |
| 2 | 12 | 660 | 3.1 | 1000 | |
| 3 | 16 | 850 | 5.0 | 500 | |

Quality control Checks (Raw material)

- § Raw material to be ultrasonically tested before forging.
- § Chemistry check melt wise to be done

Quality control checks (Forged blade)

- § Tensile test on blade in blade-boss area in 3 directions (Refer sketch)
(UTS : 310 MPa minimum, YS: 250 MPa minimum, Elong: 6 % minimum)
- § Profile inspection on each blade to be done with proper checking fixture
- § Blade forging to be dye penetrant tested fully
- § Blade forgings at random are checked by RT in root area (Refer sketch)
- § Hardness check on blade-boss to be done on all blades(90 HB minimum)
- § Surface roughness check - Rt 6.3 to 12.5µm
- § Weight tolerance $\pm 6\%$

Note: Bulk manufacture to be taken up after complete acceptance of minimum four sample blades by purchaser. Machining of aerofoil blade profile is not envisaged. Only machining of boss & trimming the height is considered and this machining will be done by purchaser.



Photograph of forged blade
(after trimming the height & machining the mounting boss)



