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ALLOY BAR CONDITIONS

These are the classifications of Physical & Surface conditions of Aircraft Alloy Steels. This information is a summary of the symbols used in military (MIL) specifications to designate various conditions of the material grades. This information is provided by RS for reference purposes only. Data may not always match others within the industry.

PHYSICAL CONDITIONS

A = AS FORGED

B = AS ROLLED

C = ANNEALED

D = NORMALIZED

E = NORMALIZED & TEMPERED

F = QUENCHED & TEMPERED



SURFACE CONDITIONS

1 = AS FORGED/ROLLED

2 = PICKLED & BLASTED CLEAN

3 = ROUGH TURNED

4 = COLD FINISHED

5 = TURNED, GROUND & POLISHED



PHYSICAL CONDITIONS

As Forged - As it was hot forged from the manufacture

As Rolled - As it was rolled from the manufacture

Annealed - Heating in a furnace above recrystallization temperature and then slowly cooled inside of the furnace to remove the stress and toughen the material

Normalized - Like annealing except after being heated up it is cooled outside of the furnace in the atmosphere

Normalized and Tempered - Like normalizing but before cooling it undergoes an additional heat-treating process to remove more internal stress and improve ductility

Quenched and Tempered - Like tempering mentioned above except it cooled suddenly using water or oil bath, or even sometimes using polymers

SURFACE CONDITIONS

As Forged/Rolled - No further processing after it is forged or rolled by the manufacture

Pickled and Blast Clean - After forging or rolling material is submerged in acids to remove the surface impurities, rust, and scale, it is then blasted clean with different types of media

Rough Turned - A rough non-precision machining process is added to remove the surface impurities

Cold Finished - A re-drawing or tight re-rolling process is added to remove the surface impurities

Turn, Ground, and Polished - A more precision machining process is added to start, then the material undergoes an even more precision grinding process before finally being polished out to remove all surface impurities and imperfections giving the surface a mirror like appearance