# Coarse Thread vs. Fine Thread

## COARSE

+ Stripping strengths are greater for the same length of engagement.
+ Less likely to cross-thread or strip because of the wider thread style, allowing for more material between the threads.
+ Quicker assembly and disassembly.
+ Tap better in a brittle material.
+ Larger thread allowances accommodate thick plating, coatings and are therefore less likely to seize in corrosion-prone applications.
+ Less prone to stripping when fastened into lower strength materials.
+ Better fatigue resistance because of less concentration to stress at thread root radius.
+ The height of each thread is greater than the corresponding fine thread so there is more material between each thread-making flank engagement greater.
+ Less susceptible to being nicked or damaged, so they do not have to be "handled with care" as much as fine threads.
+ Coarse threads are much less likely to experience thread galling than fine threads.
+ Aerospace applications generally use coarse threads on sized 8-32 and smaller.
+ Coarse threads are used when threaded into aluminum or cast iron because the finer threads tend to strip more easily in these materials.
+ Are stronger when assembled with lower strength nut or tapped hole materials.
+ Stronger for bolt/screw/nut sizes over one inch.
+ They start more easily than fine thread, particularly in awkward positions and require less time to tighten.
+ Coarse threaded fasteners are specified for most applications unless there is an overriding reason to use a fine threaded fastener. User to purchase, more supply available.

# FINE

+ Are stronger in tapped hole materials normally used in design and significantly increase joint clamping force.
+ Allow for greater adjustment accuracy because of their smaller helix angle. Can be threaded closer to the head since thread die chamfer is a function of pitch.
+ Are better for tapping thin-walled members because tapping torque I lower for short engagement lengths.
+ Are stronger for fastener sizes one inch diameter and smaller, gaining strength advantages as size decreases.
+ Maintains joint tightness and clamping force better due to the smaller helix angle of the thread.
+ Aerospace applications generally use fine thread fasteners due to their increased strength.
+ Stronger than corresponding coarse threaded bolts of the same hardness.
+ Stronger in both tension and shear due to having a slightly larger tensile stress area and minor diameter.
+ They have less of a tendency to loosen under vibration due to their having a smaller helix angle than coarse threads.
+ Shorter thread depth allows for threading in thin wall applications.
+ Where the length of engagement I limited, fine threads provide greater strength.
+ Their larger minor diameters develop higher torsional and transverse shear lengths.
+ Fine threads require less torque to develop equivalent bolt preloads.
+ Fine threads are more susceptible to thread galling than coarse threads.
+ Fine threads need longer thread engagements and are more prone to damage (nicking) and thread fouling.
+ They are less suitable for high-speed assembly since they are more likely to seize when being tightened.
+ Fine threads feature a higher tensile strength, making them ideal for strength applications.

+ The shallow pitch (helical angle) of fine threads makes them much less susceptible to loosening from vibration.
+ Fine threads have also less tendency to loosen since the thread incline is smaller and hence so is the off torque.
+ Fine threads with the smaller pitch allow finer adjustments in applications that need such a feature.
+ Fine threads can be easily tapped into hard materials and thin-walled tubes.
+ Fine threads require less torque to develop equivalent bolt preloads.

**The suitability of either a coarse or fine thread series for a specific application must be determined on a case-by-case basis. Analyze, evaluate, experiment, and test to obtain the greatest level of confidence in the design of critical bolted joints in specific applications.**