



HIGH PRECISION MACHINING

That meets your exacting standards

Steel

GLE works with many exotic and standard materials to produce precision products for our customers, including carbide, ceramic and steel.

We machine all types of steel with various heat treat specifications and coatings to produce gages, pins and other products for various industries including waterjet, automotive and medical. GLE works with tool steels, stainless steels and exotic steels to meet customer requirements.

Tool Steel

Tool steel is a carbon alloy that is well suited for manufacturing tools to make other products. The hardness, abrasion resistance and shape retention at increased temperatures are the key properties of this material. Tool steels are utilized for cutting, pressing, extruding and coining of metals and other materials. A heat treat is usually applied to these materials to increase hardness. There are six grades of tool steel:

Water Hardening (W-Grades) – this is a high carbon steel, typically used for cold heading, cutting tools and knives, embossing, reamers and cutlery

Air Hardening (A-grades) – low distortion during heat treat, typically used for arbors, cams, dies bending, blanking, coining, cold forming, laminating, cold swaging, cold trimming, gages, chipper knives, cold shear knives, woodworking knives and lathe center knives

D Type (D-Grades) – high carbon, high chromium, used for burnishing tools, file cutting, paper cutters, die bending, blanking, coining, cold heading die inserts, embossing, cold extrusion, cold forming, lamination, cold swaging, thread roll, cold trimming, wire drawing, gages, paper knives, rotary slitters, cold shear knives, woodworking knives, knurling tools and lathe center knives

Oil Hardening (O-Grades) – general purpose, used for arbors, bushing, chasers (thread cutting), collets, die blanking, cold forming, cold trimming, drill bushing, gages, knurling tools

Shock resisting types (S-Grades) – designed to resist shock at low or high temperatures, battering tools, boiler-shop tools, chisel blacksmiths, chisel cold working, chisel hot working, chuck jaws, clutch parts, collets, cold gripper, hot gripper, cold swaging, hot swaging, hot trimming, chipper knives, cold shear and hot shear

Hot Working (H-Grades) – designed to cut material at high temperatures, cold heading die casings, die casting dies and cores for zinc and aluminum, hot extrusion for aluminum and magnesium, hot forging, hot gripper, hot swaging, hot trimming, dummy blocks (hot extrusion), and hot shear knives

Stainless Steel

PH13-8 is a martensitic precipitation age-hardenable stainless steel. The best features of PH13-8 are the good resistance to general corrosion and stress corrosion cracking along with high strength that is developed by a single

low temperature heat treatment. The Rockwell C rating is 35 for PH13-8, Condition H1100 stainless steel. Typical coating processes include black oxide, carbide coating and PVD coatings. This material can be used for valve parts, fittings, cold-headed and machined fasteners, shafts, landing gear parts, pins, lock washers, aircraft components, nuclear reactor components and oil and gas applications.

Exotic Steel

We produce parts from MP35N which is an alloy made up of 35% nickel, 35% cobalt, 20% chromium and 10% molybdenum. The raw material is produced by vacuum induction melting and consumable vacuum arc re-melting. MP35N exhibits outstanding corrosion resistance at high strength levels. It resists most mineral acids, hydrogen sulfide, seawater and salt spray environments. It is also very resistant to stress corrosion cracking (SCC) and hydrogen embrittlement. The hardness level on this material can go all the way up to a Rockwell C of 60. This material is used in diverse applications such as orthodontic and prosthetic devices, fasteners, high strength wire, oil and gas industry, chemical and marine equipment, aircraft and aerospace components and high pulse magnet research.

These are just a few examples of the various types of steel we work with to produce finished products. Please contact us and we can recommend the best material to use for your application. We can be reached at 989-652-6136 or visit our website at www.gle-precision.com.