LL HA SUCKER ROD

SUCKER ROD PRODUCT LINE

The Liberty Lift HA (API HA High Strength Alloy) normalized and tempered (N&T) sucker rod is engineered for heavily loaded, effectively inhibited wells. This grade HA sucker rod is specifically designed to enhance performance and extend runtime in wells that exceed the capabilities of API grade D applications.

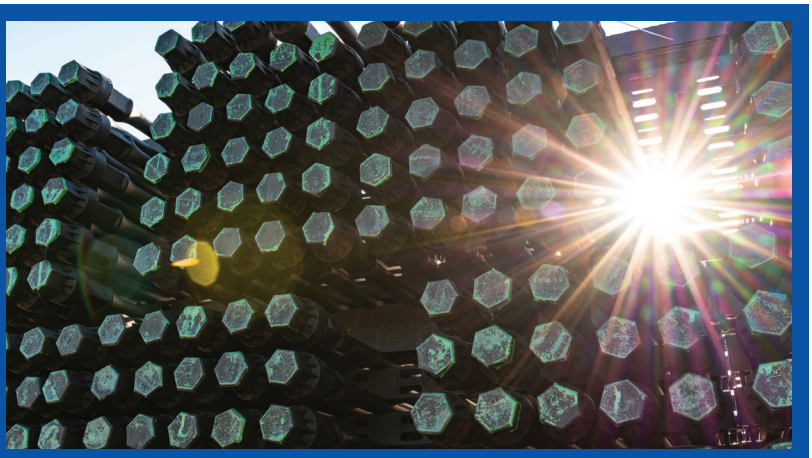
ABOUT LL HA SUCKER RODS

The HA sucker rod is manufactured using AISI 4138M chromium-molybdenum micro-alloyed SBQ (Special Bar Quality) steel for exceptional strength in the most demanding applications. Liberty Lift HA rods are designed to exceed API standards for HA high strength alloy sucker rods.

PROCESS

Liberty Lift Rods undergo thorough straightening and inspection using advanced eddy current technology. The rods are forged to precise dimensions, and all forged ends are examined for discontinuities through magnetic particle inspection. Next, the rods are normalized to relieve residual stress and create a uniform grain structure, then tempered to establish the desired mechanical properties. To further enhance fatigue resistance, the normalized and tempered rods (N&T) are shot-peened.

Our quality team oversees every stage of manufacturing and performs tensile testing on three samples from each heat treatment batch to ensure mechanical properties meet specifications. Finally, the pin ends are precision machined, and the threads are cold rolled to add strength to the sucker rod pin connection.



CHEMISTRY

CARBON
0.38-0.42

MANGANESE
1.00-1.30

PHOSPHORUS
< 0.025

SULPHUR
< 0.020

SILICON
0.20-0.35

COPPER
<0.25

NICKEL
<0.30

CHROMIUM
0.55-0.85

MOLYBDENUM
0.25-0.35

MECHANICAL PROPERTIES

MINIMUM YIELD
115,000

TENSILE STRENGTH
140,000-150,000 PSI

ELONGATION (% IN 8IN)
8Mn

REDUCTION OF AREA %
30Mn

ROCKWELL HARDNESS C
30 to 34

APPLICATION

Deep, highly loaded wells with mildly corrosive environments when satisfactory corrosion inhibition practices are followed.

MAXIMUM OPERATING STRESS

Sa=(T/2.8+0.375 Smin) SF