

Sucker Rod Grades and Product Series

This reference separates the standardized **API grade framework** from **premium / high-strength series** commonly published by major sucker rod manufacturers. API grade labels are standardized under public API-oriented literature, while premium and high-strength names may vary by manufacturer and should not be treated as one-for-one equivalents without checking chemistry, heat treatment, and service logic.

1. Public API grade framework and grade-to-duty logic

Route / grade	Type	Public mechanical basis	Typical service logic	Technical note
API Grade C	Standard API grade	Yield strength: 60 ksi min Tensile strength: 90-115 ksi	Shallow wells and/or light rod loads; mildly corrosive fluids that are effectively inhibited	Public comparison guides place Grade C in the basic light-duty reciprocating service envelope.
API Grade K	Standard API corrosion-resistant grade	Yield strength: 60 ksi min Tensile strength: 90-115 ksi	Used where corrosion resistance is more important than Grade C, while staying in the same basic load range	Lufkin's public guide identifies Grade K under UNS G46XX0 series steel and keeps it in the same basic tensile range as C.
API Grade D / DA route	Higher-strength API route in public supplier literature	Yield strength: 85 ksi min Tensile strength: 115-140 ksi	Medium-to-deep wells and/or moderate-to-heavy rod loads; inhibited mildly corrosive service; some PCP slim-hole use	Weatherford publicly states its Grade D rod conforms to API 11B DA specifications and is used for medium-load service.
API Grade DS	API special corrosion / fatigue route	Yield strength: 85 ksi min Alloy requirement: Ni + Cr + Mo >= 1.15%	Medium wells and/or moderate rod loads; corrosive fluids that are effectively inhibited; some PCP slim-hole / high-strength coupling applications	Public comparison guides treat DS as the corrosion-oriented special grade above the basic API grades.
API Grade HA	API special high-strength route	Yield strength: 115 ksi min Tensile strength: 140-150 ksi	Deep wells and/or heavy rod loads; low-to-mildly corrosive fluids that are effectively inhibited; PCP slim-hole / high-strength coupling service	Public HA comparison tables place it clearly above D / DA and DS in strength level.

Reading note: Public catalogs and comparison guides often refer to D, DA, DS, and HA together because service selection is based on **load, corrosion, fatigue, and pumping mode**. The key distinction is that basic API grades cover the standard rod-duty envelope, while DS / HA and later premium routes are used when corrosion, fatigue, PCP torque, or high-load service push the design beyond the standard range.

2. Standard API grades vs premium / high-strength series

Comparison point	Standard API grades	Premium / high-strength series
Basis	Public API grade framework built around C, K, D and API-special routes such as DS / HA	Supplier-specific performance families built on public API-aligned or proprietary routes
Main design target	Match ordinary reciprocating service to load and corrosion level	Extend run life under higher load, corrosive service, higher fatigue demand, PCP torque, or deep-well duty
Typical metallurgy / treatment	Public guides show carbon-steel, corrosion-resistant, and higher-strength alloy routes; N or N&T depending on grade	Often based on Ni-Cr-Mo or Cr-Mo alloy steels, shot-peening, N&T or Q&T, and finer-grain or case-hardening routes depending on supplier
Where they are used	Shallow-to-medium wells, controlled corrosion, standard beam pumping, ordinary rod-string duty	Deep wells, heavy polished loads, higher cyclic loading, moderately to severely corrosive wells, PCP slim-hole or torque service
Interchangeability	Grade names are publicly recognized	Series names are not universal ; cross-supplier equivalence must be checked by specification, chemistry, heat treatment, and duty logic

3. Representative public premium / high-strength series examples

Public series	Public base route	Reported service logic	Public note
Lufkin KD	Premium route associated with corrosive-duty service	Medium wells and/or moderate rod loads; corrosive fluids that are effectively inhibited; some PCP slim-hole / high-strength coupling use	Published as a corrosion-oriented premium step beyond the basic API grades.
Lufkin DXS	Premium route for higher duty than KD	Medium-to-deep wells or moderate-to-heavy rod loads; moderately corrosive fluids; ideal for PCP applications with slim-hole, high-strength couplings	Published as a fatigue-oriented premium route for more demanding reciprocating or PCP service.
Lufkin HA / HS	High-strength premium routes	Deep wells and/or heavy rod loads; low-to-mildly corrosive inhibited fluids; suitable for PCP slim-hole / high-strength coupling service	Public comparison guide places HA / HS in the deep-well, high-cyclic-load envelope.
Weatherford KD	API Grade DS special; 4720M Ni-Cr-Mo	Medium-load applications within inhibited, moderately corrosive wells	Weatherford states KD rods are forged with N&T steel and shot-peened, with fatigue life improved by up to 10x.
Weatherford T66/XD	API Grade HA; 4138 Cr-Mo	Highly loaded applications within inhibited, mildly corrosive wells	Publicly described as an intermediate step between API DA grades and ultrahigh-strength rods; fatigue propagation reduced by up to 10x.
Weatherford EL	API Grade HY / ultrahigh-strength route	Heavy-load applications and harsh well environments; sweet or corrosive wells that are properly inhibited	Weatherford describes EL as an ultrahigh-load, high-fatigue-resistance rod made for the most aggressive pumping environments.

Source note: Public data summarized from the API 11B scope PDF, Lufkin *Sucker Rod Comparison Guide* (2022), Weatherford *Sucker Rod Solutions*, and current Tenaris API / high-strength sucker rod product sheets. Premium-series labels are shown as public examples and should be checked against the specific manufacturer's chemistry, heat treatment, and service recommendations before cross-brand comparison.