

API 6A K-U Temperature Rating Reference

Wellhead and Christmas Tree Equipment

A concise engineering note covering temperature classes K, L, N, P, S, T, and U.

Scope	This note summarizes API 6A temperature classes K-U and related selection points for surface wellhead and tree equipment.
Data basis	Temperature values come from industry guides that summarize API 6A Table 2 and the standard's pressure/temperature framework.
Important	Use this as a quick reference. Final class selection should follow the project datasheet, service medium, material class, and full standard review.

What the rating means

API 6A defines service conditions in terms of pressure, temperature, and material class for well-bore constituents and operating conditions. For temperature class selection, the minimum temperature is the lowest ambient temperature to which the equipment can be subjected, while the maximum temperature is the highest temperature of the fluid that can directly contact the equipment.

Within the API 6A framework, pressure ratings are commonly listed as 2,000, 3,000, 5,000, 10,000, 15,000, and 20,000 psi. Temperature class does not replace pressure rating or material class; the three must be read together.

Quick engineering reading

K-U covers progressively warmer minimum/maximum conditions. The jump from T to U is important because the maximum fluid temperature increases from 82 C / 180 F to 121 C / 250 F.

API 6A temperature classes K-U

The table below condenses the standard temperature classes most often encountered in wellhead and Christmas tree discussions. The last column is an engineering interpretation for quick reading only; it is not a substitute for project-specific design review.

Class	Min C	Max C	Min F	Max F	Illustrative field reading
K	-60	82	-75	180	Very low ambient exposure with fluid temperature up to 82 C / 180 F.
L	-46	82	-50	180	Cold-climate service with the same 82 C / 180 F fluid ceiling as K.
N	-46	60	-50	140	Cold ambient service where the contacting fluid temperature stays lower.
P	-29	82	-20	180	Moderate cold ambient service with 82 C / 180 F fluid capability.
S	-18	60	0	140	Near-freezing ambient service with lower maximum fluid temperature.
T	-18	82	0	180	Near-freezing ambient service with the more common 82 C / 180 F fluid ceiling.
U	-18	121	0	250	Same minimum ambient as T, but for hotter contacting fluid service up to 121 C / 250 F.

Note: API 6A guidance also indicates that temperature classes can be combined to achieve a wider rating. One example commonly cited in introductory material is P+U, equivalent to -20 to 250 F.

Selection notes for wellhead and tree service

- Do not select temperature class from pressure rating alone. A 10,000 psi tree still needs the correct ambient and fluid-temperature envelope.
- Read temperature class together with material class. In sour service, H₂S, water cut, chlorides, and corrosion severity can change what is acceptable.
- Check real installation conditions. The minimum side is about ambient exposure; the maximum side is about fluid directly contacting the equipment.
- Review stack configuration as a system. Top connection, outlet connection, choke position, and spool arrangement should be confirmed together.

Illustrative field examples

Example	Why it matters
Cold-climate production tree	A surface tree on a winter-exposed pad in a cold region may need K or L class if ambient exposure falls well below -29 C, even when the produced fluid is not especially hot.
Moderate-temperature production service	A conventional onshore oil well or gas well with winter ambient near 0 F and fluid temperature below 180 F may fall into the T range after the full service envelope is confirmed.
Hotter fluid service	Where the contacting fluid can rise above 82 C / 180 F but remain at or below 121 C / 250 F, U becomes relevant. This can occur in hotter production streams or certain heated service conditions.
Sour gas example	In a sour gas well producing wet gas with H ₂ S and formation water, temperature class and material class must be reviewed together. A temperature class alone does not confirm sour-service suitability.

RFQ items that should travel with temperature class

Item	Information to confirm
1	Pressure rating and expected wellhead shut-in pressure
2	Temperature class and the actual minimum ambient / maximum contacting fluid temperatures
3	Material class, sour-service status, and any H ₂ S/CO ₂ /water/chloride data
4	PSL, PR, nominal bore, top connection, outlet connection, and choke arrangement
5	Installation context: onshore, offshore, production, injection, or intervention service

Reference basis

- API Specification 6A, 21st Edition announcement (API) - confirms the current standard for Wellhead and Tree Equipment.
- Stream-Flo Purchasing Guide for Wellhead & Tree Equipment (2020) - summarizes API 6A service-condition framework, temperature classes, and pressure ratings.
- Introduction to API Specification 6A (OFM / SUR) - summarizes API 6A temperature classes and the use of combined temperature ratings.

Prepared as a concise reference note for website and project-support use. Standard ownership remains with API.