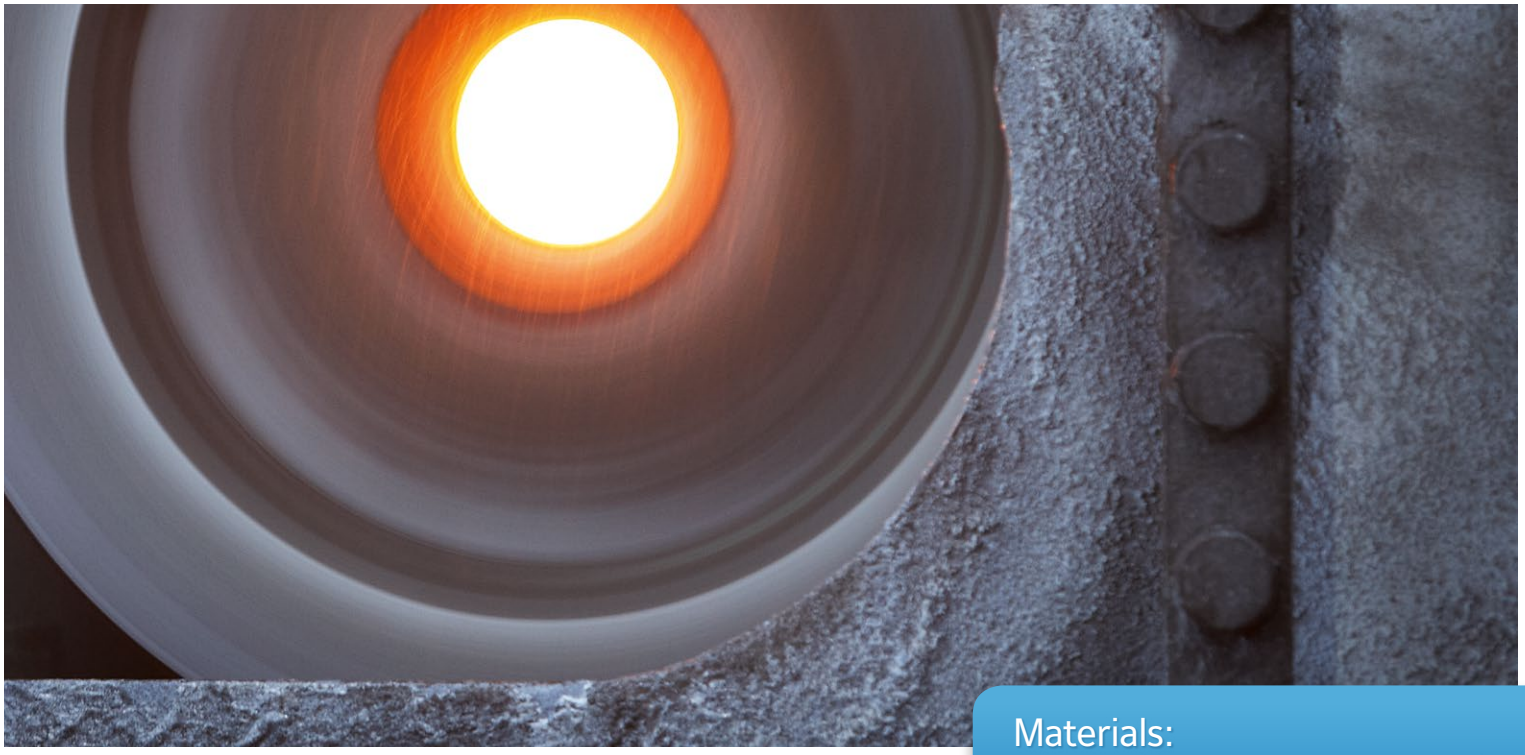


Materials:
1.2396 (G22CrMoVNb6-12)
1.4317 (GX4CrNi13-4)

Kuhn Special steel presents two materials customised for use in spools: 1.2396 (G22CrMoVNb6-12) and 1.4317 (GX4CrNi13-4).

The demand for aluminium – in the form of sheets, strips and foil – continues to grow from year to year. Aluminium manufacturers are meanwhile placing greater demands on the wear-performance and durability of their aluminium coils, and therefore also on the spools used to handle them.

Kuhn Special Steel has set itself the objective of being able to supply each and every customer or market with the right material solution for its purposes.

In the area of spools, we can offer a high-strength, price-effective variant in the form our 1.2396 (G22CrMoVNb6-12) material, with characteristics that fully match up to those of materials that have been tried and tested over many years. The mechanical properties of our newly-developed 1.2396 material stand up to any comparison with other materials used in the manufacture of spools.

$R_{P0.2}$ is at least 850 MPa, thereby easily fulfilling the minimum strength-requirements of spools. This alloy achieves an ultimate tensile strength of R_m = 1100 MPa, resulting in elongation at rupture of at least 10 %.

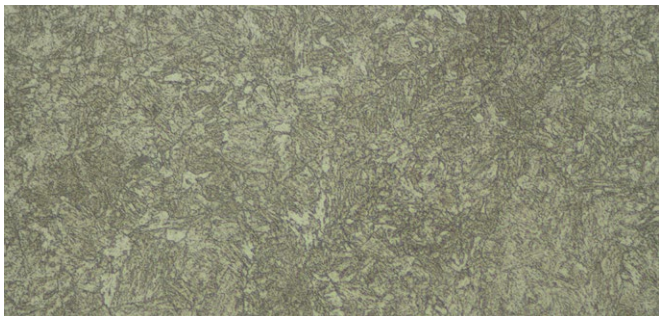
As specifications concerning safety and quality nevertheless tend to demand spools with ever-greater toughness and resistance to corrosion, our rust-free, equally high-strength alternative 1.4317 (GX4CrNi13-4) has meanwhile proven itself. This tougher, costlier alternative comes into its own when accidents are caused by spools that are incapable of withstanding heavy-duty use in the long term. But there is no need to go so far. Rust-free performance is in itself a decisive argument, when it comes to maintaining and guaranteeing the maximum quality of metal-strip surfaces during transport.

The following table (see overleaf) compares tempered steel 1.2396 with soft martensite 1.4317 and the spool materials KCP 12 and Centricore 4. The high yield-point of 1.2396 delivers good dimensional stability for spools during operation, thereby helping to ensure a longer service life. The increased toughness of 1.4317, combined with the right amount of strength and outstanding performance at higher temperatures, ensures especially-wide margins of safety in the long term.

Table: Mechanical properties and composition of various materials used for spools in the aluminium industry

Material	1.2396	1.4317 (QT1)	KCP 12	Centricore 4
Composition	G22CrMoVNb6-12	GX4CrNi13-4	G25NiCrMoV5-3	G23CrMoV6
$R_{P0,2}$ in MPa	> 850	> 550	> 850	> 850
R_m in MPa	> 1100	> 760	> 1100	–
A in %	> 10	> 15	> 12	> 8

Microstructure of 1.4317



Microstructure of 1.2396

Kuhn Special Steel – Reliable solutions. Always.

This is our commitment.

Kuhn Special Steel is a medium-sized world-class supplier of high-quality, stainless-steel components. Since 1960, the company has been manufacturing products that range from centrifugally-cast, rotationally-symmetrical components – both as individual items and in short production-runs – to ready-to-install end-products faithfully based on original drawings. The name Kuhn Special Steel stands for top quality, maximum flexibility, outstanding reliability and the power of innovation.

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