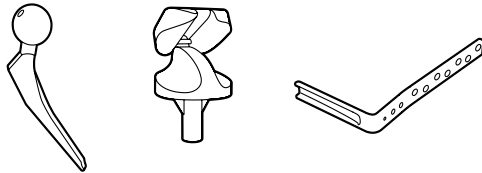


# Implant Stainless Steel Nomenclature

## ASTM F138 / ASTM F139



To avoid misinterpretation of the designation of special implant stainless steel according to ASTM F138 or ASTM F139 the following information may be valuable:

Often a designation 316 LVM is used in inquiries, customer orders or even customer's specifications.

This is not a traceable designation on the level of international standards. It is more a kind of brand name.

Consequently, using this designation may result in problems with regulatory affairs or the notified body.

The only referable and valid designation which exists for this specific alloy is: **UNS S31673**.

In the German DIN, the designation 1.4441 is given. It is taken from the former DIN 17443 which is no longer valid.

The following standards are referring to this alloy (explicitly or non-explicitly):

- ASTM F138 (bar, wire)
- ASTM F139 (sheet, strip)
- ISO 5832-1

Designation on AISI-Basis: AISI number 316L (UNS S31603)

This refers to a grade which shows differing compositional limits compared to the special implant stainless steel grade UNS S31673.

Therefore, UNS S31673 cannot be referred to as 316L.

Description		C	Mn	P	S	Si	Cr	Ni	Mo	N	Cu
UNS S31673*		-	-	-	-	-	-	-	-	-	-
ASTM F138	min.	-	-	-	-	-	17.0	13.0	2.25	-	-
ASTM F139	max.	0.03	2.00	0.025	0.010	0.75	19.0	15.0	3.00	0.10	0.50
AISI 316L		-	-	-	-	-	-	-	-	-	-
UNS S31603	min.	-	-	-	-	-	16.0	10.0	2.00	-	-
ASTM A276	max.	0.03	2.00	0.045	0.030	1.00	18.0	14.0	3.00	-	-

\* additional requirement: %Cr + 3.3 x %Mo ≥ 26

“VM” is often interpreted as short term for “Vacuum Melted” depending on the process used for the re-melting technique.

There are two different processes in place for re-melting practices:

- ESR (Electro Slag Remelting)
- VAR (Vacuum Arc Remelting)

Both re-melting practices are acceptable in order to fulfill the standards.

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