



XD16N™ a Trade Mark of Aubert&Duval

*A New Martensitic Stainless Steel
for corrosion, temperature and wear resistance*

INTERNAL USE ONLY – NOT FOR CUSTOMERS

1- A new material

- XD16N is an air-melted grade. It has been developed as a high corrosion and wear resistant grade, for markets where traditional high Cr stainless steels like 440C are not stainless enough to meet our customers' requirements.

SPECIFICATIONS

X50CrSiMnVN16-1
UNS: S42716
AMS: 5926

COMPOSITION

Carbon	0.50
Chromium	16.00
Silicium	2.00
Manganese	1.00
Molybdenum	0.30
Vanadium	0.30
Nitrogen	0.10

- The development has consisted in replacing part of the C by N, in such proportions that the 58 HRC minimum hardness can be achieved for together low (180°C) and high (500°C) tempering temperatures. Addition of Si ensures a good resistance when used at temperature up to 450°C.

- This has also resulted in fine and homogeneous precipitates, and higher free Cr content in the matrix.

2- Benefits

- XD16N offers advantages compared to conventional air melted grades capable of 58 HRC, like 440C (XDBD) or 1.7448 (APZ9):

- Improved corrosion resistance,
- Increased fatigue strength,
- Higher ductility and less prone to quench cracking,
- Better weldability.

- XD16N (air-melted) is also a cheaper alternative to the XD15NW / X15TN (re-melted ESR grade). Moreover, XD16N is patented until 2027. Therefore,
 - as long as the XD15NW / X15TN is well entrenched at our customers, leave things as they are and do not try to substitute with XD16N or even mention it.
 - depending on the application, it may be worth offering XD16N to lock the business.
 - keep in mind that patented grades can often be frightening to customers as they usually look for multi sourcing. Then, be careful when you communicate on this point.

3- Applications

- XD16N can be used for:
 - Industrial bearings operating at temperature up to 450°C,
 - Industrial ball-screws operating at temperature up to 450°C,
 - Valves, especially to replace SOS3 (1.4718) or APZ9 (1.4748),
 - Injection systems for automotive,
 - Cold work in corrosive environment.

4- Comparison with other Martensitic Stainless Steels

- Aubert&Duval grades:

A&D Grades	Designations	Melting route	C	Cr	Ni	Mo	V	N	Co	Si	Mn
XDBD	X105CrMo17 1.4125 – 1.3544 440C AMS: 5630-5880-5618	Air or Remelt	1.00	17.0	--	0.50	--	--	--	--	--
RA50YW	80MoCrV42-16 1.3551 / M50 AMS: 6491	VIM + VAR	0.83	4.15	--	4.25	1.00	--	--	--	--
CX13VD	X12CrNiMoV12-3 1.4933 AMS: 5719	Air or Remelt	0.12	12.0	2.50	1.60	0.30	--	--	--	--
XD15NW	X40CrMoVN16-2 1.4123 AMS: 5925	ESR	0.42	16.0	--	1.80	0.35	0.20	--	--	--
XD16N	X50CrSiMnVN16-1 AMS: 5926	Air	0.50	16.0		0.30	0.30	0.10		2.00	1.00

- Competition grades:
 - BG42[®] from Latrobe;
 - CRONIDUR[®]30 from Energietechnik Essen;
 - N360 from Böhler (equivalent grade to CRONIDUR[®]30);
 - Pyrowear[®]675 from Carpenter.

Competition Grades	Designations	Melting route	C	Cr	Ni	Mo	V	N	Co	Si	Mn
BG42[®]	AMS: 5749	VIM + VAR	1.15	14.5		4.00	1.20			0.30	0.50
CRONIDUR[®]30	AMS: 5898	PESR	0.30	15.0	--	1.00	--	0.40	--	--	1.00
Pyrowear[®]675	AMS: 5930	VIM + VAR	0.07	13.0	2.60	1.80	0.60	--	5.40	0.40	0.65

5- Already some success stories!

- The XD16N is currently under test at several customers and we have already business in the USA for industrial ball screws and bearings.

6- Item List and Development stock

- The XD16N will be available, on a regular basis, for sizes similar to the XD15NW / X15TN.

- Today stock at our Service Centre of Heyrieux, France:

- 19mm diameter: 9 bars (5 to 6m length) – 95kg;
- 30mm diameter: 5 bars (5 to 6m length) – 163kg;
- 87mm diameter: 3 bars (0,5 to 4,7m length) – 309kg.

- Additional stock scheduled in Q4-2011:

Diameter (mm)	Items	Surface condition	Heat Treatment condition	Specification	Weight (kg)
19	045207XD16N	Peeled	Annealed	AMS 5926	500
40	044814XD16N	Peeled	Annealed	AMS 5926	500
65	045328XD16N	Peeled	Annealed	AMS 5926	1200
87	045209XD16N	Peeled	Annealed	AMS 5926	2400
100	Ref. to create	Peeled	Annealed	AMS 5926	1200
140	045210XD16N	Peeled	Annealed	AMS 5926	1200

7000

→ Please contact the Market Managers if you need sample material.

7- Promotion Tools already available

- XD16N Technical Data Sheet, 2 pages;
- XD16N Brochure, 20 pages;
- 2 XD16N presentations on Adonix, (*Products / New Grades / "XD16N" + "XD16N for valves"*);
- For XD16N development stock and samples, contact the Market Manager.
- www.aubertduval.com: you can download the XD16N Technical Data Sheet and the XD16N Brochure, and compare the grade with other Aubert&Duval's Martensitic Stainless Steels (*Product / Our materials*).

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