

## Analysis of Signature of Stainless Steel in Uzbekistan and Abroad

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**Annotation:** This article analyses the branding of stainless steels in Uzbekistan and abroad, the types of steels according to their use, chemical composition, type of application, hot and cold resistant stainless steel coils.

**Keywords:** corrosion resistant, flame retardant, bearing, durability, grinding, radioactive, acid resistant, quality, length, thickness.

### Introduction.

In Uzbekistan, high-quality corrosion-resistant steels are marked in Russian letters. Austenitic and chromium-nickel steels are high-quality corrosion-resistant steels. Metallurgical plants produce cast iron first from iron ore and steel from cast iron. Although the basis of carbon steels is iron (97-99.5%), it contains a certain amount (Mn, S, Si, P, N) and some random additives (Cr, W, Cu) and other elements are also present. The effect of carbon on the properties of iron-carbon alloys is enormous. As the amount of carbon in the alloy increases, its hardness increases and its plasticity decreases. Variations and markings of steels are divided into the following groups according to the field of application and chemical composition of steels used in mechanical engineering.

### Literature analysis and methods.

By use: 1. Structural steels. 2. Tool steels

Chemical composition: 1. Carbon steels. 2. Alloy steels.

Structural steels: Structural steels contain up to 0.6% carbon. Depending on the quality of carbon structural steels, ordinary quality steels are divided into high-quality steels. a) Ordinary quality steels - shipped to consumers in the form of visual structures, fittings, wires, rivets and other items. Plain quality steels. According to GOST 380-60 is divided into 3 groups: A, B and V. In group A, mechanical properties are guaranteed. In group B, the chemical properties are guaranteed.

According to GOST 4543-71, these steel grades consist of letters and numbers. 12XN steel If the first number is one hundred, the percentage of carbon in the steel is Subsequent letters indicate the elements of the alloy and the percentage of this element, if the element is less than 1.5%, the numbers are not written. Alloying elements are defined as follows: X-chromium, H-nickel, B-tungsten, M-molybdenum, Φ-vanadium, T-titanium, Ю-aluminum, Д-copper, Γ-manganese, C-silicon, K-cobalt, Ц - zirconium.

12XH C=0,09 – 0,15%, Cr 0,4 – 0,7%, Ni 0,5 – 0,8%.

38XH3MΦA (%) — 0,33-0,40 C; 1,2-1,5 Cr; 3,0-3,5 Ni; 0,35-0,45 Mo; 0,1-0,18 V;

In tool steels, the number at the beginning of the mark indicates one-tenth of the carbon, if the carbon is less than 1%, the number is not written, for example: XBΓsteel,% 0.90–1.05 C; 0.9–1.2 Cr; 1.2–1.6 B; 0.8–1.1

Mn. Y8A steel content, 0.8 C; The letter “A” at the end of the steel grade indicates high quality (30XГCA, Y7A), in the middle - the presence of nitrogen in the steel (16Г2AΦ), at the beginning - in the case of automatic steels (A35Г, AC35Г2). Steels used for bearings begin with the letter "Sh" and then the alloying element and its percentage are marked, for example, ШХ15, ШХ15СГ, ШХ20СГ). improves, reduces the consumption of cutting tools by 2-3 times and increases productivity by 30%. At the end of a very high-quality steel grade, the letter “Ш” is added 18ХГ-Ш, 20ХГНТ-Ш(this steel is obtained by electro slag, ie purified from sulfides and oxides).

Stainless steels are rich in chromium and nickel:

08X18H10TC < 0.08%, Cr- 17.0 - 19.0%, Ni- 9.0 - 11.0%, TiC- 0.5- 0.7%. 03X16H15M3Б - C - 0.03%, Cr - 16.0%, Ni - 15.0%, Mo - 3.0%, Nb - 1.0%.

Heat-resistant steels 15X5M, 16X11H2B2MΦ, 12X18H12T, 37X12H8Г8МБΦ are used to make high-pressure pipes at 400-8500S, steam turbine blades. Refractory steels include 12X13, 08X18H10T, 15X25T, 10X23H18 steels. They are used to make steam boilers, thermal furnaces and products used in aggressive environments. [1]

## Results.

In Europe, steels are marked with numbers. Stainless steel plate is an alloy steel with smooth surface, high welding, corrosion resistance, heat resistance, corrosion resistance and other properties. It is widely used in various fields and is an important material in modern industry. Stainless steel is divided into austenitic stainless steel, ferrite stainless steel, martensitic stainless steel and duplex stainless steel according to their structural condition. [2]

Rating (EN)	1.4301, 1.4307, 1.4541, 1.4401, 1.4404, 1.4571, 1.4438, 1.4539, 1.4547, 1.4529, 1.4410, 1.4501, 1.4462, 1.4845, 1.4542 and others
Standard)	ISO, JIS, ASTM, AS EN, GB
surface	NO.1, NO.2D, NO.2B, BA, NO.3, NO.4, NO.240, NO.320, NO.400, HL, NO.7, NO.8, and others
Length	2000mm, 2438mm, 3000mm, 5800mm, 6000mm, 12000mm and others
Thickness	0.05-200mm(umumi); 0,01-0,05mm(stainless steel foil)
Width	10-2000mm
Coilweight	3-20MT / Bobina or at your request
MOQ	5MT
packaging	Export standard, seaworthy
ID	508 mmyoki 610 mm
Terms of trade	FOB, CFR, CIF
Type of transport	Container, bulk and train
Payment terms	T / T, L / C, Western Union, D / P, D / A, Paypal



Corrosion resistance: Non-corrosive, acid, corrosion, non-radioactive.

Surface Cleanliness: The surface of the product is smooth and compact, not easily contaminated with dust and has good self-cleaning. [3]



**Discussion.**

According to state educational standards, the labeling of metals depends on the chemical composition. The chemical composition depends on how the finished product is produced from rolls, where it is used, and what operational requirements it meets.

Superficial	Characteristic	Brief description of the production method	Application
NO.1	Silver white	At the specified thickness	It is not necessary to use a glossy surface
	Weak		
NO.2D	Silver white	After cold rolling, heat treatment and	General material, deep

		salting are carried out	material
NO.2B	Brightness is stronger than No.2D	After No. 2D processing, the last light cold rolling is carried out by means of a polishing cylinder	General material
BA	Bright as six pence	There is no standard, but usually a bright annealed surface with high reflection.	Building materials, kitchen utensils
NO.3	Rough squeezing	Sprinkle with 100 ~ 200 # (units) sling tape	Building materials, kitchen utensils
NO.4	Intermediate grinding	Sprinkle with 100 ~ 200 # (units) sling tape	Building materials, kitchen utensils
NO.240	Fine squeezing	Grinding with 240 # strop abrasive tape	Kitchen utensils
NO.320	Very fine grinding	Grinding was done with 320 # strop abrasive tape	Kitchen utensils
NO.400	Its gloss is close to BA	Use a 400 # polishing wheel to grind	General wood, building timber, kitchen appliances
HL	Hair line grinding	Suitable particle material for smoothing multi-grain hair (150 ~ 240 #)	Construction, building materials
NO.7	This is close to glass grinding	Use a 600 # rotating grinding wheel to grind	For art or decoration
NO.8	Mirror ultrafinish	The window is shattered with a grinding wheel	Reflector for decoration

### Conclusion.

In conclusion, our bachelor's, master's and doctoral students need to know the marking of metals not only in Uzbekistan, but also in Europe and Asia in the creation of new composite materials. The marking of the roll sheets is given by numbers.

### References.

- William D. Callister, Jr., David G. Rethwisch. Materials science and engineering /Wiley and Sons. UK, 2014. - 896 p.
- Каллистер У., Ретвич Д. Материаловедение от технологии к применению (металлы, керамика, полимеры) / Пер.с англ. Подред. Малкина А.Я. –СП.: Научные основы технологии, 2011. -896 с.
- Carter C. Barry, Norton M. Grant “Ceramic Materials/ Science Engineering” Spinger 2007.
- Tim A. Osswald, Georg Menges “Material Science of Polymers for Engineers” Carl Hanser Verlag, Munich
- Mikell P. Groover . Fundamentals of Modern Manufacturing. Inted in the United States of America. 2010.
- Umarov E.O. Materialshunoslik. Darslik. -T.: “Cho‘lpon”. 2014.
- Saydahmedov R.H., Almataev T.O., Ziyamukhammedova U.A., Materialshunoslik va konstruksion materiallar materiallar texnologiyasi. O‘quv qo‘llanma. –T.: “Fan va texnologiya”, 2017.



8. Nurmurodov S.D., Rasulov A.X., Baxadirov K.G., Materialshunoslik va konstruksion materiallar materiallar texnologiyasi.-T.: “Fan va texnologiya”, 2015. -240 b.
9. Nurmurodov S.D., Rasulov A.X., Baxadirov K.G., Konstruksion materiallar materiallar texnologiyasi.-T.: “Fan va texnologiya”, 2015. -272 b.
10. Nurmurodov S.D., Ziyamukhammedova U.A., Metallar texnologiyasi. – T.: “Navro’z”, 2018.
11. Адаскин А.М. Материаловедение. Учебник. - М.: “Машиностроение” 2006
12. Колесов С.Н., Колесов И.С. Материаловедение и технология металлов. – М.: “Машиностроение” 2004.
13. Арзамасов Б.Н. Материаловедение. Учебник для ВУЗов. - М.: “Машиностроение” 2004.
14. [www.satback.ru](http://www.satback.ru) – научные статьи и учебные материалы.
15. [www.ziyonet.uz](http://www.ziyonet.uz);
16. [www.bilim.uz](http://www.bilim.uz)

