

ÖSTERBYBRUK

**Price-list ... bar-iron, blister or shear steel,
crucible steel : Priskurant å ... Dannemora
degelgjutstål**

Dannemora
1893

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PRICE-LIST

OF
BAR-IRON Brand. ○○

Blister-or Shear-Steel
Brand. ○○

and
Crucible-Steel

Brands "Dannemora", "Dora" etc.

MADE BY THE

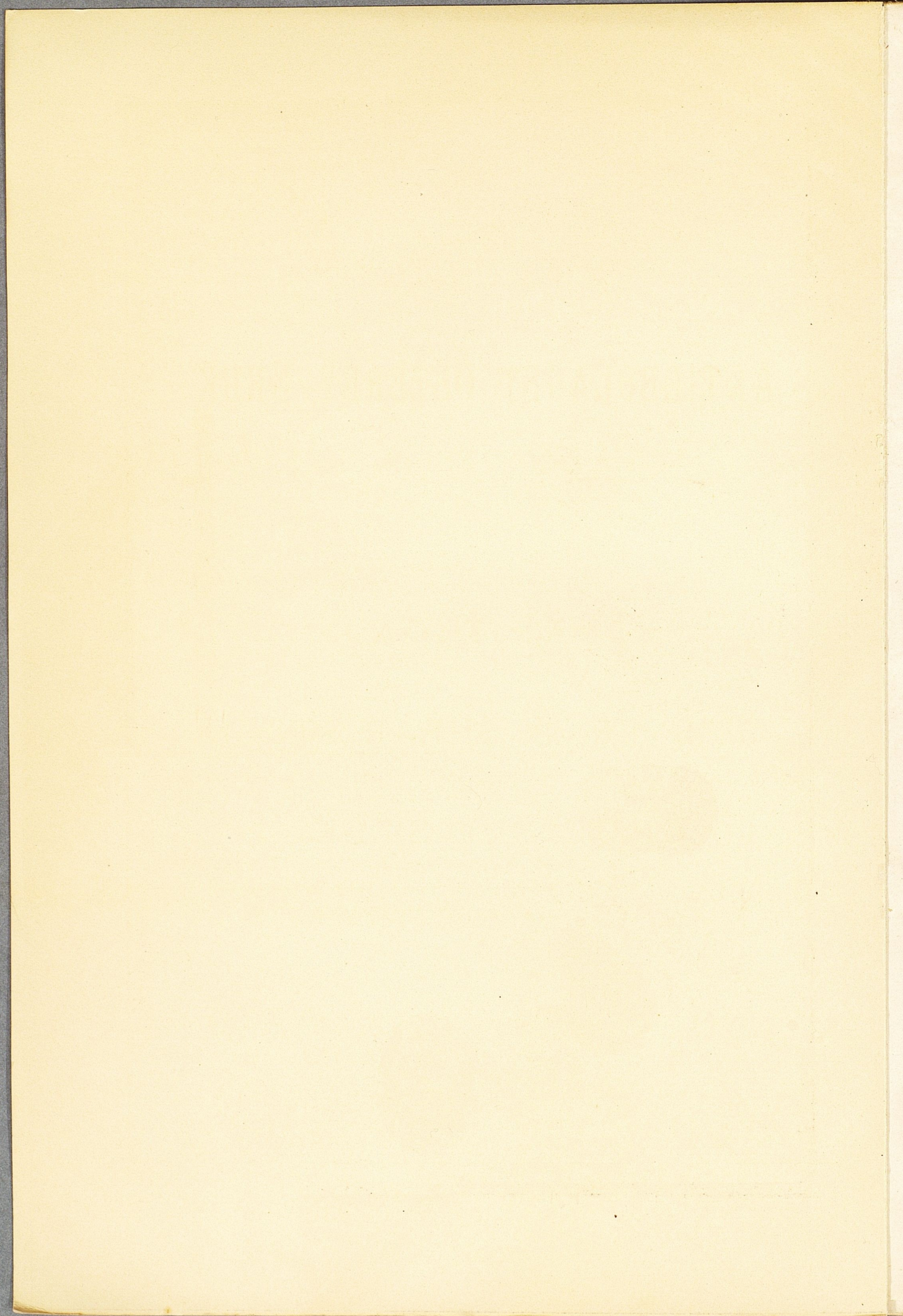
Aktiebolaget Österby Bruk

IRON AND STEEL WORKS

Founded 1565.

Mail and Telegraphic address:

Dannemora,
SWEDEN.



PRICE-LIST

FROM

AKTIEBOLAGET ÖSTERBY BRUK

IRON AND STEEL WORKS

— FOUNDED 1565 —

BAR IRON

BRAND OO

BLISTER OR SHEAR STEEL

BRAND OO

CRUCIBLE STEEL

BRAND "DANNEMORA", "DORA" ETC.

MAIL AND TELEGRAPHIC ADDRESS:

DANNEMORA

SWEDEN.

STOCKHOLM
PRINTED BY CENTRAL-TRYCKERIET
1893.

Walloon Bar Iron.

Brand O O

This brand has indisputably for more than 200 years held the position as the most excellent steel-iron in the world, acknowledged as such by all the principal steel-manufacturers during this long period.

The superiority of this iron for the production of steel depends to a very large extent on its purity from sulphur and phosphor and its comparatively high percentage of carbon.

Such superior qualities this iron obtains owing to its being made from the Dannemora ores, celebrated all over the world for their purity, by the Walloon method, that has made the Dannemora works so famous, with charcoal and cold blast only.



Blister and Shear Steel.

Brand **OO**

Is produced by conversion of the above Walloon Bar Iron.

Tempers: $\left\{ \begin{array}{l} H = \text{Hard} \quad (\text{carbon about } 1,3 \text{ } \%). \\ MH = \text{Medium hard} \quad (\quad \gg \quad \gg \quad 1,1 \text{ } \%). \\ M = \text{Soft} \quad (\quad \gg \quad \gg \quad 0,9 \text{ } \%). \end{array} \right.$

	Swedish crowns pr 100 kilos f. o. b. Sweden	Cents pr Eng. lb. Duty paid ex ship Ameri- can port
Blister Steel.		
Squares 1" to 2"		
Flats 2" to 4" wide $\frac{5}{8}$ " to 1" thick		
Shear Steel.		
Squares $\frac{7}{16}$ " to $1\frac{9}{16}$ "		
Octagons and rounds $\frac{7}{16}$ " to $1\frac{9}{16}$ "		
Flats not less than $\frac{3}{8}$ " thick		
» less than $\frac{3}{8}$ " »		
» not less than $\frac{1}{4}$ " »		

Notice will be given in case of an increase of the prices.

Dannemora Crucible Steel.

Made by the very best processes from the highest grade of raw material in existence, viz: **Dannemora Steel Iron**, this steel can when properly treated and when the right temper is selected undoubtedly in every way compare favourably with the best Sheffield cast-steel, to which only some parts of the same good raw materials are used in the most favourable case. **The Dannemora Steel has the great advantage over other kinds of steel, that it can be heated and hardened nearly an unlimited number of times without thereby losing its body.** In order to bring out all these excellent qualities it must, however, like all crucible steel be treated with great care and in accordance with certain general rules, as no good results can be obtained without observing them.

Heating and forging. The Dannemora Steel must be treated carefully like all other ingot metal and the heat must not exceed certain limits if the good qualities of the steel shall be maintained. The highest tempers with 1.2 to 1.6 % carbon should not be heated above bright red heat and the lower ones not above yellow heat. Overheating destroys the most valuable qualities of the steel, which afterwards can not be completely restored except by a second melting. If the steel in some way or other should have been overheated, a correction of the mistake can only be made through an effective and persistent hammering, the strength of which however ought to decrease in measure of the cooling of the steel although not to cease

until the heat is dull brown. The heating of the steel should be made with charcoal and in direct contact with the fuel, but can also be done by gas when the flame has to be carefully watched so as not to become too sharp and hot, but rather somewhat smoky especially when heating the higher tempers. The whole piece or all parts thereof which are to be reduced into different shapes must be heated uniformly all through, but at the same time the period for heating should not be extended beyond what is necessary for obtaining an even temperature. When the steel has obtained the heat suitable for forging, it is also very important that this operation is made effectively so as to penetrate to the center of the heated parts and that it does not cease until the heat has receded to dull brown. A prolonged hammering at low temperature increases the strength and elasticity of the steel and is indispensable for obtaining good edge-tools. The hammering must however not be so strong as to break the steel. Heating should never be done above dull red without subsequent hammering.

Welding. Dannemora Steel with 1.2 % carbon and less can be welded to iron or steel by an able blacksmith used to that kind of work. The lower tempers with 0.9 % carbon or less can be welded without difficulty by using ordinary welding sand (silica sand mixed with some clay), but for the higher tempers either borax or a mixture of silica sand and borax should be used in order to obtain a slag which melts and gets sufficiently liquid at low temperature. When the steel has obtained bright red heat it is dipped into the slag-making powder or this is strewn over its surface, which is to be repeated several times so as to make sure that the liquid slag covers the surface and protects the steel against burning. When welding heat is reached the parts are hammered together by easy and quick strokes which increase in strength as the temperature is going down so as to ensure a working all through.

Hardening is done, as well known, by heating the steel to a certain degree and then in some way or other suddenly cooling it off. This process is intended either for increasing the hardness only or in most cases the elasticity at the same time. The temperature up to which the steel has to be heated in order to obtain the best proportion between hardness and elasticity by subsequent cooling is always lower than the one at which the steel is forged, or 1300 to 1500° F. This temperature is lower in proportion of the percentage of carbon being higher. Then again it depends on several foreign matters in the steel as manganese, chrome, wolfram, silicon, all of which increase the inclination of the steel for hardening while other matters produce a contrary effect. Finally the said temperature depends greatly on the preference to be given to either hardness or elasticity. The subsequent tempering decides, however, in the last instance whether hardness or elasticity shall prevail. Thus a correct treatment of the hardening process decides whether the good qualities of the steel shall fully appear and therefore great care and good judgment have to be exercised. Even the very best steel can give the poorest results by wrong hardening and in case of non-success through mistakes not only the steel itself is generally useless but the high expenses for working it are without result. The Danne-mora Steel must be hardened at a comparatively low temperature if a satisfactory result shall be obtained. For 1 % carbon or less a red heat can be used, but only a dull brown for higher tempers.

If the steel is overheated it will thereby obtain no greater hardness worth mentioning; but its elasticity as well as its texture becomes considerably damaged and the inclination for cracks is materially increased.

Before undergoing the hardening process the steel ought to be annealed, especially if it has been thoroughly forged or if it has a complicated shape with parts of different thickness. **Annealing** is

done by slowly heating the steel to dull red heat during sufficiently long time and then burying it in dry charcoal dust, sawdust or some other isolating substance, thereby protecting it against the air. This is sometimes absolutely necessary in order to prevent cracks. In no cases the steel is to be hardened in the same heat by which it has been forged, but it has to cool off and then to be heated again for hardening. In the case of edge-tools the hardening should be preceded by a thorough, gradually decreasing hammering continued without interruption until the heat is reduced to dull brown or the surface has become polished. The heating is best made by charcoal in a hollow fire, or still better with the steel imbedded in charcoal powder. It is very important that the whole section of the steel to be hardened is heated uniformly all through in order to avoid cracks, notwithstanding the great difficulty in obtaining this result if the piece has parts of different thickness. Therefore the steel must be exposed to a slow fire during a comparatively long period in order to obtain a uniform temperature all through. If the surface should have been heated somewhat too high the subsequent cooling should be made correspondingly slow. The rapid cooling after the heating is generally done by dipping the steel in some hardening liquid which in ordinary cases is water or some kind of oil, but also sulphuric acid, mercury, etc. At the moment of immersion one has to observe that either the whole piece or the liquid is kept in constant motion so as to allow the steam to escape and be condensed, as otherwise it would easily happen that the cooling and therefore also the hardening becomes uneven and, moreover, cracks are very apt to appear unless the contact is being changed. It should also be observed that enough of liquid is at hand to prevent a considerable raising of its temperature. The ordinary hardening liquid is water which ought to be of 40° to 70° F. In cases where elasticity is more desirable than hardness, oils are preferable as they give a

less effective hardening, the smaller the fatter the oil is. Mercury gives a more rapid cooling than any other liquid substance but can only be used exceptionally owing to its high price. Certain salt solutions or mixtures of two liquids, as for instance sulphuric acid and water, lime water or soap dissolved in water, are also used. Such mixtures have generally the advantage that the steel does not crack so easily and at the same time the hardening gets stronger than in pure water.

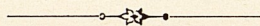
The hardening process is followed by **tempering**, the purpose of which is to modify the hardness by increasing the elasticity and reducing the brittleness. The tempering is done in different ways, either by taking up the steel from the liquid before it is completely cooled off when the heat from the interior partly goes to the surface and thus moderates the hardness, or by first cooling the steel completely and then slowly heating again until the correct temper is obtained. Other methods are also used, as for instance that of dipping the hardened steel into a melted metallic compound of known melting temperature, into boiling oil etc. The purpose for which the steel is intended often decides in what manner the tempering has to be done. If for instance it is desirable to have a hard surface and a soft interior, the tempering ought to be done from the center towards the surface, whereas of course the direction should be changed if the case is reversed. The degree of temper is determined by the colours, which are white, indicating the greatest hardness, light yellow, dark yellow, purple and blue, the last one indicating the farthest going tempering and therefore the lowest hardening.

In order to obtain a fully suitable temper it is necessary when ordering the steel to indicate the number under which it should be ranged according to the classification as below or else the purpose for which it is to be used. Every bar is branded and has a label indicating the heading to which it belongs.

Brand "Dannemora".

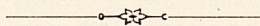
No. O. Very hard.

Steel with 1.45 to 1.60 % carbon. Suitable for tools having a high degree of hardness, which however are not exposed to quick blows, as for instance lathe steel for turning chilled castings, tires etc. It must be treated very carefully in order to give good results, and great precaution is required in the heating and tempering. The use for this class of steel is comparatively limited and such steel should only be worked by persons fully accustomed to the treatment of such material. This steel takes hardening at brown heat. It cannot be welded.



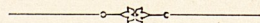
No. I. Hard.

Steel with 1.25 to 1.45 % carbon. Suitable for tools, requiring the finest edges as surgical instruments, millstone picks, saw files, razors, lathe and planing steel for working hard iron and steel, small cutters etc. This steel needs like the preceding class great precaution in its treatment and must not be heated beyond bright red. It takes the hardening of glass and can scarcely be welded.



No. II. Middle hard.

Steel with 1.10 to 1.25 % carbon. Suitable for tools working iron and steel in cold state as for instance lathe, drill, and planing steel, screwtaps and dies, cutters, graving tools, shears, etc. It can be treated without difficulty by an experienced workman, can be welded with quarry sand or borax, and takes complete hardening at a low temperature.



No. 0	DANNEMORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Very hard	DANNEMORA CRUCIBLE STEEL. Suitable for tools turning chilled castings, tires etc. Cannot be welded. Takes hardening at brown heat. Must be treated very carefully.
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No. I	DANNEMORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Hard	DANNEMORA CRUCIBLE STEEL. Suitable for tools requiring the finest edges as surgical instruments, millstone picks, saw files, razors, lathe- and planing-steel, small cutters etc. Can scarcely be welded. Takes hardening at a high brown heat. To be treated with great precaution.
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No. II	DANNEMORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Middle hard	DANNEMORA CRUCIBLE STEEL. Suitable for tools working iron and steel, such as lathe-, drill- and planing steel, screwtaps, cutters, graving tools, shears etc. Can be welded with quarry sand or borax. Takes hardening at a high brown heat.
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No. III	DANNEMORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Tough and hard	DANNEMORA CRUCIBLE STEEL. Suitable for scissors, knives, axes, drills, planing irons and generally for edge tools for working wood, hand chisels, stone working tools, stamps, punches, scythes etc. and for blacksmith purposes generally. Is welded with quarry sand or borax. Takes hardening at a cherry red heat.
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No. IV	DANNEMORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Soft	DANNEMORA CRUCIBLE STEEL. Suitable for hand chisels, sledge chisels, dies, drill-sledges, hammers, springs etc. and generally for tools requiring a hard surface, combined with great toughness. Easily welded with quarry sand. Takes hardening at a cherry red heat.
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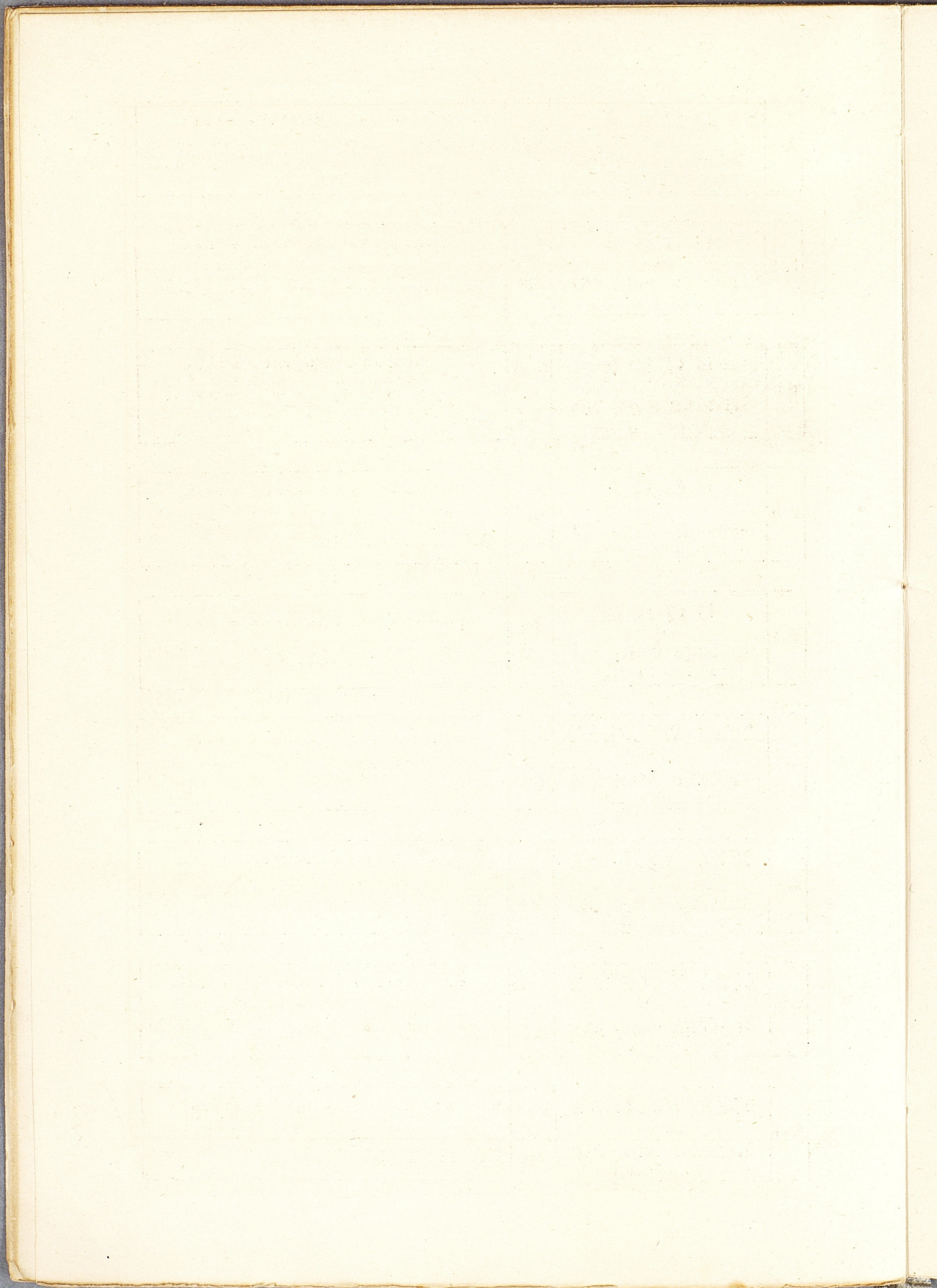
No. V	DANNEMORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Very soft	DANNEMORA CRUCIBLE STEEL. Suitable for shafts and other parts in machinery exposed to great strain. It is easily welded and takes hardening at a red heat.
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No. 0	SPECIAL DANNEMORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Special hard	DANNEMORA CRUCIBLE STEEL. Suitable for all tools working iron, steel or wood. Can be welded with borax. Takes very good hardening at a high brown heat.
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No. 00	EXTRA SPECIAL DANNEMORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Extra special hard	DANNEMORA CRUCIBLE STEEL. Suitable for tools, where the highest temper combined with toughness is required. Cannot be welded. Takes splendid hardening at a high brown heat.
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No. 0	DORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Very hard	DANNEMORA CRUCIBLE STEEL. Suitable for tools turning chilled castings, tires etc. Cannot be welded. Takes hardening at brown heat. Must be treated very carefully.
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No. I	DORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Hard	DANNEMORA CRUCIBLE STEEL. Suitable for tools requiring the finest edges as surgical instruments, millstone picks, saw files, razors, lathe- and planing-steel, small cutters etc. Can scarcely be welded. Takes hardening at a high brown heat. To be treated with great precaution.
No. II	DORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Middle hard	DANNEMORA CRUCIBLE STEEL. Suitable for tools working iron and steel, such as lathe-, drill- and planing-steel, screw-taps, cutters, graving tools, shears etc. Can be welded with quarry sand or borax. Takes hardening at a high brown heat.
No. III	DORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Tough and hard	DANNEMORA CRUCIBLE STEEL. Suitable for scissors, knives, axes, drills, planing irons and generally for edge tools for working wood, hand chisels, stone working tools, stamps, punches, scythes etc. and for blacksmith purposes generally. Is welded with quarry sand or borax. Takes hardening at a cherry red heat.
No. IV	DORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Soft	DANNEMORA CRUCIBLE STEEL. Suitable for hand chisels, sledge chisels, dies, drill-sledges, hammers, springs etc. and generally for tools requiring a hard surface, combined with great toughness. Easily welded with quarry sand. Takes hardening at a cherry red heat.
No. V	DORA from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Very soft	DANNEMORA CRUCIBLE STEEL. Suitable for shafts and other parts in machinery exposed to great strain. It is easily welded and takes hardening at a red heat.
No. I	DORA WOLFRAM from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Hard	DANNEMORA CRUCIBLE STEEL. Suitable for very hard lathe- and planing-steel, magnets etc. Cannot be welded. Takes splendid hardening at a light brown heat. To be treated with great care.
No. II	DORA WOLFRAM from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Special hard	DANNEMORA CRUCIBLE STEEL. Suitable for very hard lathe- and planing-steel, magnets etc. Cannot be welded. Takes splendid hardening at a light brown heat. To be treated very carefully. Most suitably worked with hammer and file at brown heat.
No. III	DORA WOLFRAM from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Natural hard- ness	DANNEMORA CRUCIBLE STEEL. An exceedingly hard steel to be used whenever other tool-steel has been tried and found too soft. Cannot be welded. It does not take hardening but in cold blast at a brown heat. To be treated with great precaution. Can only be worked with a file when brown hot.
No. IV	DORA WOLFRAM from the Aktiebolaget Österby Bruk Dannemora, Sweden.	Natural hard- ness	DANNEMORA CRUCIBLE STEEL. An exceedingly hard steel to be used whenever other tool-steel has been tried and found too soft. Cannot be welded. Takes hardening in oil at a brown heat. To be treated with great precaution. Can scarcely be worked with file except in a brown hot state.



No. III. Tough and hard.

Steel with 0.9 to 1.10 % carbon. Has an extensive use. It takes hardening at a low temperature and has considerable toughness when tempered. The toughness and the hardness can be suitably balanced against each other by proper working and tempering. It is desirable for scissors, knives, axes, drills, planing irons and generally for edge-tools, intended for working wood, hand chisels, stone working tools, dies, stamps, punches and scythes etc. and for blacksmith purposes and tool-steel generally. It can be welded by quarry sand or borax.

No. IV. Soft.

Steel with 0.76 to 0.9 % carbon. Suitable for tools requiring a hard surface combined with great toughness and a good resistance against strong pressure as for instance hand chisels, sledge chisels, dies, sledges, hammers, springs etc. (also edge-steel when large surfaces have to be welded). It can be worked without difficulty and takes a good hardening at dull red heat.

No. V. Very soft.

Steel with 0.6 to 0.76 % carbon. Has a great elasticity, tensile strength and toughness, and is therefore particularly suitable for shafts, exposed to great strain, for certain parts in machinery, springs, etc., and generally for such purposes where an especially good material is needed without requiring a very high degree of hardness. It is easy to weld and takes a small degree of hardening.

Brand "Special Dannemora".

No. O. Special hard.

This steel contains 0.9 to 1.0 % carbon and still has the special quality of taking much greater hardening than steel with the brand »Dannemora» of corresponding carbon without any sacrifice of its tensile strength and toughness. Its hardness becomes most prominent through rapid cooling and it is then especially good for tools working iron and steel, for instance drills, lathe steel, cutters, etc. Its toughness shows especially by weak hardening and it is therefore splendid for edge tools working wood. It needs greater care in heating and hardening than steel with the brand »Dannemora» of corresponding carbon. It can be welded, although some experience and precaution is needed. Hardening is made at dull red heat.

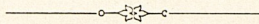
Brand "Extra Special Dannemora".

No. OO. Extra special hard.

This steel has 1.3 to 1.4 % carbon and is especially suitable for such purposes where the highest temper combined with a certain degree of toughness is required. As it is already in its natural state very hard and thus difficult to work, it is most suitable for such tools on which no expenses to speak of for filing etc. have to be spent, as for instance turning and planing steel for working hard castings, steel, etc. Otherwise the same can be said of this as about the »Special» steel. The greatest care has to be exercised in heating and hardening, but the steel gives a splendid result by proper treatment. It cannot be welded.

Brand "Dora".

Is made, like »Dannemora«, of six different classes, to which the same remarks may apply as above given with regard to the corresponding classes of »Dannemora«.



Brand "Dora Wolfram".

This steel is made of four different grades, containing 1.0 to 1.4 % carbon and 2 to 8 % wolfram. It is generally suitable for the same purposes as »Special Dannemora« and »Extra Special Dannemora«, viz. for working hard castings and steel.

The classes Nis. III and IV are called »self-hardening« steel, that is a steel fit for use without undergoing any hardening process, being thus particularly suitable for working on hot metals.

On account of its power of remaining very long in a magnetic state it has obtained an extensive use for electrical purposes, especially the classes Nis. I and II.

It cannot be welded and is to be treated with great precaution.



AKTIEBOLAGET ÖSTERBY BRUK

Weight of round and square steel in lbs per English foot.

Dimensions Engl. inches	Round	Square	Dimensions Engl. inches	Round	Square
$\frac{1}{4}$	0,163	0,208	$2\frac{1}{8}$	11,76	14,98
$\frac{5}{16}$	0,254	0,324	$2\frac{1}{4}$	13,19	16,80
$\frac{3}{8}$	0,366	0,467	$2\frac{3}{8}$	14,69	18,72
$\frac{7}{16}$	0,498	0,636	$2\frac{1}{2}$	16,25	20,73
$\frac{1}{2}$	0,651	0,829	$2\frac{5}{8}$	17,95	22,97
$\frac{9}{16}$	0,826	1,050	$2\frac{3}{4}$	19,71	25,10
$\frac{5}{8}$	1,017	1,296	$2\frac{7}{8}$	21,54	27,43
$\frac{11}{16}$	1,232	1,569	3	23,45	29,87
$\frac{3}{4}$	1,466	1,867	$3\frac{1}{4}$	27,52	34,97
$\frac{13}{16}$	1,722	2,190	$3\frac{1}{2}$	31,92	40,58
$\frac{7}{8}$	1,998	2,539	$3\frac{3}{4}$	36,65	46,67
$\frac{15}{16}$	2,290	2,916	4	41,70	53,09
1	2,61	3,32	$4\frac{1}{4}$	47,07	59,93
$1\frac{1}{8}$	3,30	4,19	$4\frac{1}{2}$	52,78	67,20
$1\frac{1}{4}$	4,07	5,22	$4\frac{3}{4}$	58,80	74,86
$1\frac{3}{8}$	4,93	6,35	5	65,14	82,95
$1\frac{1}{2}$	5,86	7,46	$5\frac{1}{4}$	71,84	91,84
$1\frac{5}{8}$	6,88	8,77	$5\frac{1}{2}$	78,82	100,37
$1\frac{3}{4}$	7,97	10,23	$5\frac{3}{4}$	86,17	109,70
$1\frac{7}{8}$	9,16	11,66	6	93,72	119,43
2	10,42	13,27			

AKTIEBOLAGET ÖSTERBY BRUK

DANNEMORA
AKTIEBOLAGET ÖSTERBY BRUK

IRON AND STEEL WORKS

DANNEMORA: SWEDEN.

CERTIFICATES.

This is to certify that the Stockholm Gun Factory (Stockholms Vapenfabrik) has during the last six years used and is still exclusively using **Dannemora Tool Steel** manufactured by Aktiebolaget Österby Bruk.

This steel has proved to be far superior to any other kind of steel we have hitherto tried.

Stockholm, November 11th 1892.

(Signed) **Emil Ekman.**

General Manager
of Stockholms Vapenfabrik.

(Signed) **Rudolf H. Kjellman.**

Work Manager
of Stockholms Vapenfabrik.

We are requested hereby to certify that we have for several years been using the **Dannemora Crucible Steel** for various work-tools, especially cogwheel-cutters.

We feel great pleasure in stating that this steel has always been found entirely satisfactory.

Stockholm, Sept. 30th 1892.

Gustaf de Laval's Steam Turbine Factory.

(Signed) **Reinh. Hörnell.**

AKTIEBOLAGET ÖSTERBY BRUK

This is to certify that the Stockholm Gun Factory (Stockholms Vapenfabrik) has during six years almost exclusively been using and is still using **Dannemora Special Steel**, manufactured by the Aktiebolaget Österby Bruk, and that this steel has always proved superior to any other kind of steel previously used at the said Factory.

Stockholm, Nov. 25th 1892.

(Signed) **Emil Ekman.**

General Manager
of Stockholms Vapenfabrik.

This is to certify that we, the undersigned, during several years in our large factories have been using for various purposes Crucible Steel of the brands: **Dannemora, Special Dannemora** and **Extra Special Dannemora**, manufactured by the Aktiebolaget Österby Bruk, and that this steel has proved to be of an excellent quality, superior to all other brands we have hitherto used.

Stockholm, Nov. 22nd 1892.

Aktiebolaget Separator

(Signed) *John Bernström.*

This is to certify that we, the undersigned, for several years have been using **Special Crucible Steel** from the Österby Bruk for joinery-tools, and **Tool Steel** of the same manufacture for drop-hammer stamps, press-tools, lathe steel and various other smaller tools, and that we have found it all to be of a superior quality.

Rosenfors, Skogstorp, Dec. 16th 1892.

(Signed) **B. & O. Liberg.**

This is to certify that we, the undersigned, have been using steel from the Dannemora Works, obtained through Messrs Bertram & Graf, Lübeck, for making cutters of an extraordinary hardness and that we have found this steel entirely satis-

AKTIEBOLAGET ÖSTERBY BRUK

factory; owing, however, to the great natural hardness of this kind of steel, which increases the difficulty of working it, the demand for this good material may perhaps be reduced.

Arnberg, Dec. 14th 1892.

**The Royal Direction of
the Gun Factory.**

(Signed) *Freiherr v. Brandt.*

Colonel and Director.

Plagewitz-Leipzig, Dec. 10th 1892.

Gentlemen,

In compliance with your request we beg to certify that we have regularly since the year 1884 ordered from you Swedish **Dannemora Steel** for making cutters and that we are very well satisfied with the qualities of this steel for our purposes.

We remain,

Gentlemen,

yours truly

(Signed) **Gebrüder Brehmer.**

To

Messrs BERTRAM & GRAF

Lübeck.

Braunschweig, Dec. 9th 1892.

Gentlemen,

Referring to your favour of the 7th inst. we beg hereby to state that the cutter-plates of Swedish **Dannemora Steel**, obtained from you, have constantly been of an excellent quality, for which reason we have ordered this material since many years from you only.

AKTIEBOLAGET ÖSTERBY BRUK

We are glad to forward you, as requested, a couple of cutters that have been used a very long time, made of the Swedish Dannemora Steel delivered by you, whereby you will find that this material also wears exceedingly well. It takes a good hardening

Believe us to remain

yours very truly

(Signed) **Grimme, Natalis & Co.**

Share Comp. Lim.

To

Messrs BERTRAM & GRAF

Lübeck.

Having used Crucible Steel, brand "**Dannemora**", from the Aktiebolaget Österby Bruk for making surgical and other instruments of my own manufacture, I beg hereby to state at request that the said steel is of an excellent quality and the very best I have used for making razors and other cutting surgical instruments.

Stockholm, Jan. 10th 1893.

(Signed) **Alb. Stille.**

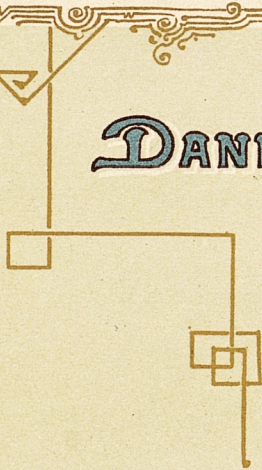




AKTIEBOLAGET ÖSTERBY BRUK

DANNEMORA

SWEDEN



Post- och Telegrafadress: DANNEMORA.

PRISKURANT

Å
AKTIEBOLAGET

ÖSTERBY BRUKS

Prisbelönade
tillverkning
af

Dannemora
Degelgjutstål



Slämpel:

“DORA
SILVERSTÅL”

Central-Tryckeriet, Stockholm.



Dannemora degelgjutstål

af stämpel: "DORA SILFVERSTÅL."

	Kr.	öre
Pris pr 100 Kg.		
Kolhalt 1.6—0.6 %.		
Fyrkant, åttkant och rundt.		
7/16" à 6", eller 11 à 150 m/m	77	—
5/16" à 3/8", » 8 à 10 »	88	—
1/4", » 6 à 7 »	100	—
Platt (äfvén mejselstål med afrundade kanter och stål med trapezformig tvärsektion).		
5/8" à 6' br., 3/8" à 2" tj. = 16 à 150 m/m × 9 à 50 m/m	77	—
3/4" à 4" » 5/16" » = 19 à 100 m/m × 7 à 8 m/m..	77	—
1" à 3" » 1/4" » = 25 à 75 m/m × 6 m/m	77	—
7/16" à 9/16" » 3/8" » = 11 à 15 m/m × 9 m/m	88	—
3/8" à 11/16" » 5/16" » = 9 à 18 m/m × 7 à 8 m/m..	88	—
3/4" à 15/16" » 1/4" » = 19 à 24 m/m × 6 m/m	88	—
5/16" à 11/16" » 1/4" » = 7 à 18 m/m × 6 m/m	100	—
3/4" à 2" » 1/8" à 3/16" » = 19 à 50 m/m × 3 à 5 m/m..	100	—
<p>Alla ofvannämnda dimensioner levereras smidda, utom 6 à 7 m/m fyrkant, åttkant och rundt samt platt med 3 m/m kant, hvilka endast levereras valsade i partier ej understigande 75 kg. af hvarje dimension.</p> <p>För stål med kolhalt 0.60—0.45 % ökas förestående priser med</p>		
	15	—

Ett stål af de bästa egenskaper blir genom sin varaktighet det billigaste, det besparar både tid och penningar.

AKTIEBOLAGET ÖSTERBY BRUK

Stålet levereras fritt å banvagn vid Dannemora jernvågsstation eller Stockholm.

Beställningar emottagas af:

ÖSTERBY BRUKS KONTOR

Dannemora

eller af brukets generalagenter:

HERRAR JOHN BERNSTRÖM & CO.

Stockholm.



Ett stål af de bästa egenskaper blir genom sin varaktighet det billigaste, det besparar både tid och penningar.

För att erhålla en fullkomligt lämplig hårdhetsgrad är nödvändigt, att vid requisition uppgifva det nummer, under hvilket stålet enligt nedanstående klassifikation bör komma eller ock det ändamål, hvartill detsamma skall användas. Hvarje stång är försedd med stämpel och nummer, utmärkande den klass till hvilken densamma hör.

— ❖ —

Klass 0 (Mycket hårdt).

Stål med 1.45—1.60 % kol, lämpligt till verktyg för bearbetning af kokillhårdadt gjutgods, hjulringar m. m. Kan ej vällas. Härdas vid brun värmegrad. Behandlas med försigtighet.

— ❖ —

Klass I (Hårdt).

Stål med 1.25—1.45 % kol; lämpligt till verktyg, som erfordra största skärpa, såsom kirurgiska instrument, qvarnhackor, sågfilar, rakknifvar, svarf- och hyfvelstål, mindre fräsar m. m. Vålles med största försigtighet. Härdas vid hög brunvärme. Behandlas med försigtighet.

— ❖ —

Klass II (Medelhårdt).

Stål med 1.10—1.25 % kol; lämpligt till verktyg för bearbetning af jern och stål i kallt tillstånd, såsom svarf-, borrh- och hyfvelstål, gängdon, fräsar, grafsticklar, klippsaxar m. m. Kan vällas med sand eller borax. Härdas vid hög brun värme.

— ❖ —

Ett stål af de bästa egenskaper blir genom sin varaktighet det billigaste, det besparar både tid och penningar.

Klass III (Segt och hårdt).

Stål med 0.90—1.10 % kol; lämpligt till saxar, knifvar, yxor, borrar, hyflar och i allmänhet till eggjar för bearbetning af trä, handmejslar, stenredskap, stansar, presstyg, liar m. m. Vålles med sand eller borax. Härdas vid körsbärsröd värme.

Klass IV (Mjukt).

Stål med 0.75—0.90 % kol; lämpligt till handmejslar, skrotmejslar, matriser, borrarlägggor, hammare, fjedrar m. m., samt i allmänhet för verktyg, som erfordra på samma gång hård yta och stor seghet. Vålles lätt med sand. Härdas vid körsbärsröd värme.

Klass V (Mycket mjukt).

Stål med 0.60—0.75 % kol; lämpligt till axlar och maskindelar i allmänhet, som äro utsatta för starkt tryck. Vålles lätt med sand. Härdas vid röd värme.

Ett stål af de bästa egenskaper blir genom sin varaktighet det billigaste, det besparar både tid och penningar.

Generalagenter

för
Sverige:
John Bernström & Co
STOCKHOLM:



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