HAVER & BOECKER



THE RIGHT ALLOY
BETTER RESULTS – LONGER LIFE

MATERIALS THAT MAKE PROCESSES SAFER

FASCINATING ENGINEERING. AS ONE.

SELECTING THE BEST WIRE MATERIAL – THE KEY QUESTIONS

Every screening process has its own requirements. That's why reliable screening always starts with choosing the right wire material. It plays a critical role in determining the stability of your screen cloth, the throughput of your operation, and the long-term reliability of your process.

In practice, the focus is primarily on the commonly used stainless steel materials AISI 304 and AISI 316, HAVER & BOECKER NIA® spring steel wire, the magnetizable stainless steel AISI 430, and, increasingly in recent years, duplex AISI 318LN.

Whether your product is abrasive, corrosive or food-grade, our broad range of wire types allows us to work with you to identify the ideal solution for your process. It's worth taking a closer look at the material properties that significantly influence how a wire screen performs in operation. These criteria stem from practical questions that arise in every screening process, and that our experts address every day.

IS YOUR PRODUCT ABRASIVE?

With abrasive products, the surface hardness of the wire determines service life. It correlates directly with tensile strength and is the best indicator of wear resistance. Spring steel wire offers the highest wear resistance. Duplex AISI 318LN follows closely behind and provides an ideal balance of hardness and corrosion resistance. Materials such as AISI 430 are softer and wear more quickly.

DOES YOUR WIRE MESH BREAK BEFORE IT WEARS OUT?

If breakage occurs before the wire mesh reaches its wear limit, it is often a vibration-induced fatigue break. In such cases, it is worth taking a closer look at the screening machine and possible wear protection measures, since the material itself has only limited influence. Due to its more brittle structure, spring steel develops breaks sooner than conventional stainless steel materials.

IS YOUR PRODUCT CORROSIVE?

The chemical composition of the wire has a direct impact on corrosion resistance. The resulting properties are shown in the table on pages 6 and 7. Unalloyed spring steel has by far the lowest resistance and can start to rust when stored in humid conditions. All stainless steel materials offer sufficiently good corrosion resistance for most screening applications, with AISI 316 and duplex AISI 318LN providing a higher corrosion resistance, for example when exposed to salty seawater.

ARE YOU PROCESSING FOODSTUFF?

Because wire mesh can wear or break, magnetic separators are installed downstream of the screening process in the food industry. This allows magnetizable wires to be effectively separated from the screened material. Duplex material AISI 318LN is recommended for this purpose.

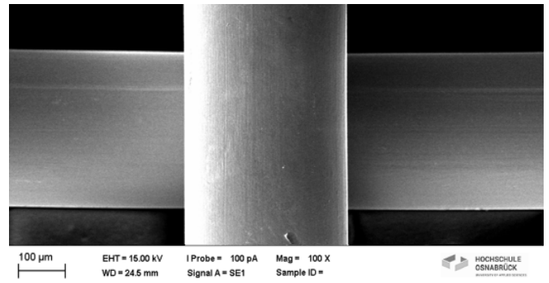
Because the requirements and selection criteria for food-grade materials are complex, pages 4 and 5 show which solutions are truly essential for sensitive products.

DOES YOUR SCREEN CLOTH BLIND BECAUSE YOUR MATERIAL IS STICKY OR MOIST?

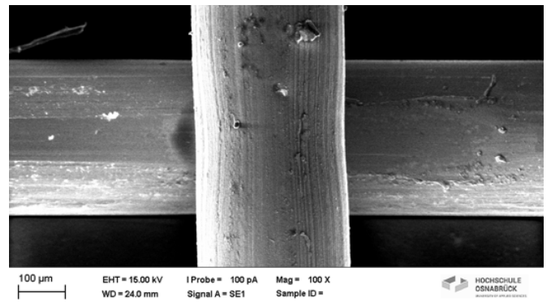
Sticky or moist products tend to adhere primarily to rough surfaces. While materials such as AISI 430 and spring steel are more prone to buildup because of their rough surface, materials such as AISI 304 and especially AISI 318LN offer smooth wire surfaces that can significantly delay screen blinding.

DO YOU NEED PARTICULARLY CLEAN WIRE MESH?

Lubricants are used in the production of wire mesh, which means that dust or metal particles can accumulate on the surface of rougher wires. Spring steel wires are particularly sensitive in this respect and also cannot be cleaned. Especially in sensitive applications, such as the food or pharmaceutical industries or ultrasonic screening, it is therefore recommended to use cleaned stainless steel wire mesh.



Duplex AISI 318LN: very smooth wire surface



High Carbon Spring Steel Wire: rough wire surface

SUMMARY

Properties	Materials				
	AISI 304	AISI 316	AISI 430	AISI 318LN	Spring Steel
Tensile strength	o	o	-	+	++
Surface hardness	o	o	-	+	++
Fatigue properties	++	++	-	+	-
Corrosion resistance	++	++	+	++	-
Magnetizability	-	-	++	+	+++
Wire surface	smooth	smooth	rough	very smooth	rough
Cleaning	✓	✓	✓	✓	not possible

Main materials for industrial screens and their properties. Special stainless steel alloys for temperature- and acid-resistant materials available on request.

Duplex stainless steel AISI 318LN combines the best properties in most categories. Depending on the application, however, stainless steels AISI 304 and AISI 316 can also deliver excellent performance. Spring steel is ideally suited for dry, highly abrasive processes, while AISI 430 should only be used in low-wear food applications, such as grain, on plansifters.





Legal framework and recommendations

Our products comply with the requirements of the following regulations and guidelines (as of March 2026):

- **EU REGULATION (EC) NO. 1935/2004:** Materials intended to come into contact with food must not transfer constituents to food in quantities that could endanger human health.
- **EU REGULATION NO. 10/2011:** Specific requirements for plastics intended for food contact.
- **EU REGULATION 2024/3190:** New requirements regarding the absence of bisphenol A in plastics and silicones.
- **BFR RECOMMENDATION NO. XV:** National guideline for the assessment of materials.
- **GERMAN FOOD AND FEED CODE (LFGB):** German law governing food safety.

COMPLIANCE IN EVERY FOOD PROCESS

SAFE MATERIALS FOR VALIDATED PROCESSES

The demands placed on materials and components in the food industry continue to rise. In processes such as industrial screening, where products come into direct contact with technical surfaces, strict compliance with statutory regulations is essential. HAVER & BOECKER meets this responsibility with high-quality stainless steel wire mesh and precisely engineered system solutions that fulfil the stringent requirements of both EU and national authorities. In doing so, we safeguard your processess with reliability, transparent documentation and a clear focus on future-proof performance.

Preferred material for your wire mesh: Duplex AISI 318LN

The stainless steel grades AISI 304 and AISI 316 do comply with the regulations mentioned above as well as with FDA requirements (CFR 21 Parts 182 and 189). However, by their nature, these materials are not magnetizable. This is a disadvantage in processes where magnetic separators are used as a safety stage to remove metallic particles in the event of wire breakage – particularly in food production.

Ferritic stainless steels such as AISI 430 and austenitic-ferritic duplex stainless steels such as AISI 318LN, by contrast, are magnetizable. Thanks to its excellent wear resistance and above-average corrosion resistance, AISI 318LN is the preferred material for demanding applications in food production.

Spring steel wire mesh, although highly magnetizable, is fundamentally unsuitable for food contact.

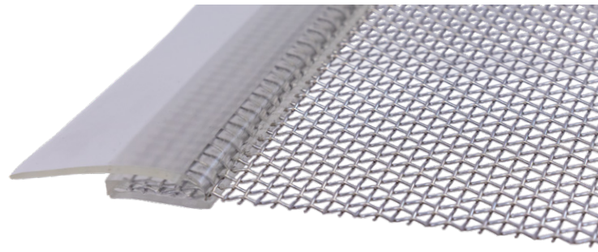
Validated complete solutions: documented conformity

HAVER & BOECKER goes beyond individual component documentation by delivering fully validated screen sections ready for demanding food applications – including order-specific declarations of conformity that document all materials used. This significantly simplifies audit documentation.

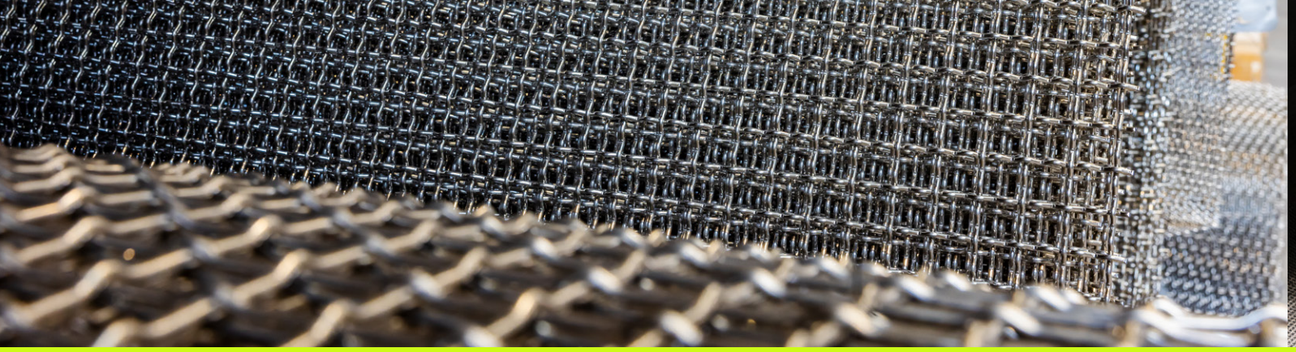
More than wire: plastics and adhesives

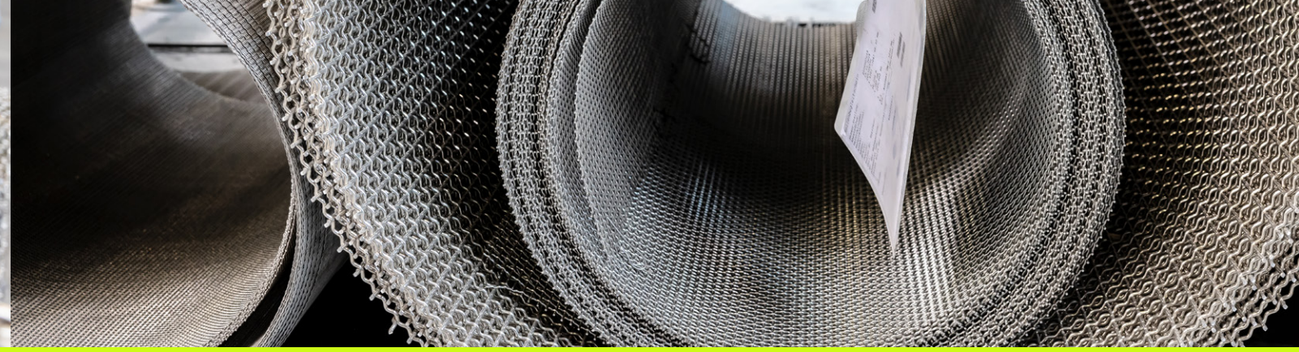
In addition to the wire mesh, other materials are used in screen sections, all of which are also subject to strict regulations.

- **SILICONE AND RUBBER** are increasingly viewed critically by many food producers, as they may contain bisphenol A – a substance whose use has been banned under EU Regulation 2024/3190.
- **POLYURETHANE** therefore represents a compelling alternative: the optional wear protection strips and lip seals made of polyurethane used by HAVER & BOECKER not only comply with the requirements of Regulation 10/2011, but are also completely bisphenol-free and significantly more stable than silicone.
- **ADHESIVES** used in the manufacture of screen sections are also subject to strict requirements. HAVER & BOECKER uses exclusively tested materials that comply with the relevant food law regulations.



Polyurethane Side Seal





MATERIALS AND PROPERTIES

Material No.		**Unalloyed Stell** Alloy Composition (Melt Analysis) – Percentage per Mass								
EN 10016	Short Term	C	Si	Mn	Fe	Cr	Cu	Mo	Ni	Others
1.0586	C50D NIA	0.48-0.53	0.1-0.3	0,.5-0.8	Rest	≤ 0.15	≤ 0.25	≤ 0.05	≤ 0.20	Al ≤ 0.01
Material No.		**Ferritic** Stainless Steel Alloy Composition (Melt Analysis) – Percentage per Mass								
EN 10088	AISI(1)	C	Si	Mn	N	Cr	Cu	Mo	Ni	Others
1.4016	430	≤ 0.08	≤ 1.0	≤ 1.0	–	15.5-17.5	–	–	–	–
Material No.		**Martensitic and Precipitation-hardening** Stainless Steel Alloy Composition (Melt Analysis) – Percentage per Mass								
EN 10088	AISI(1)	C	Si	Mn	N	Cr	Cu	Mo	Ni	Others
1.4006	410	0.03-0.12	≤ 1.0	≤ 1.0	–	12.0-14.0	–	–	–	–
1.4034	–	0.43-0.50	≤ 1.0	≤ 1.0	–	12.5-14.5	–	–	–	–
Material No.		**Austenitic** Stainless Steel Alloy Composition (Melt Analysis) – Percentage per Mass								
EN 10088	AISI(1)	C	Si	Mn	N	Cr	Cu	Mo	Ni	Others
1.4301	304	≤ 0.07	≤ 1.0	≤ 2.0	≤ 0.11	17.5-19.5	–	–	8.0-10.5	–
1.4306	304L	≤ 0.03	≤ 1.0	≤ 2.0	≤ 0.11	18.0-20.0	–	–	10.0-12.0	–
1.4310	301	0.05-0.15	≤ 2.0	≤ 2.0	≤ 0.11	16.0-19.0	–	≤ 0.8	6.0-9.5	–
1.4401	316	≤ 0.07	≤ 1.0	≤ 2.0	≤ 0.11	16.5-18.5	–	2.0-2.5	10.0-13.0	–
1.4404	316L	≤ 0.03	≤ 1.0	≤ 2.0	≤ 0.11	16.5-18.5	–	2.0-2.5	10.0-13.0	–
1.4435		≤ 0.03	≤ 1.0	≤ 2.0	≤ 0.11	17.0-19.0	–	2.0-3.0	12.5-15.0	–
1.4439	317LN	≤ 0.03	≤ 1.0	≤ 2.0	0.12-0.22	16.5-18.5	–	4.0-5.0	12.5-14.5	–
1.4539	904L	≤ 0.02	≤ 0.7	≤ 2.0	≤ 0.15	19.0-21.0	1.20-2.00	4.0-5.0	24.0-26.0	–
1.4571	316 Ti	≤ 0.08	≤ 1.0	≤ 2.0	–	16.5-18.5	–	2.0-2.5	10.0-13.0	Ti = 5 X C bis 0.7
Material No.		**Austenitic-ferritic** Stainless Steel Alloy Composition (Melt Analysis) – Percentage per Mass								
EN 10088	AISI(1)	C	Si	Mn	N	Cr	Cu	Mo	Ni	Others
1.4462	318LN	≤ 0.03	≤ 1.0	≤ 2.0	0.10-0.22	21.0-23.0	–	2.5-3.5	4.50-6.50	–

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Material No.	Density	Resistance(5)				Tensile Strength	Heat Conducting Capacity	Electrical Resistance
EN 10016	kg/dm3	Atmosphere	Seawater	Lyes	Acids	MPa	W / K m	Ω mm2/m
1.0586	7.85	5	5	2-4	4-5	1000-2000	–	–
Material No.	Density	Resistance(5)				Tensile Strength	Heat Conducting Capacity	Electrical Resistance
EN 10088	kg/dm3	Atmosphere	Seawater	Lyes	Acids	MPa	W / K m	Ω mm2/m
1.4016	7.70	2	4	2	3	450-600		
Material No.	Density	Resistance (5)				Tensile Strength	Heat Conducting Capacity	Electrical Resistance
EN 10088	kg/dm3	Atmosphere	Seawater	Lyes	Acids	MPa	W / K m	Ω mm2/m
1.4006	7.70	2	4	2	3-4	450-600	30	0,60
1.4034	7.70	2	4	2	3	450-800	30	0,55
Material No.	Density	Resistance(5)				Tensile Strength	Heat Conducting Capacity	Electrical Resistance
EN 10088	kg/dm3	Atmosphere	Seawater	Lyes	Acids	MPa	W / K m	°C
1.4301	7.90	1	3	1-2	2-4	500-700	15	450
1.4306	7.90	1	3	1-2	2-4	460-680	15	450
1.4310	7.90	1	3	2	2-4	750-900	15	450
1.4401	7.90	1	2-3	2	2-3	550-710	15	450
1.4404	7.90	1	2-3	2	2-3	490-690	15	450
1.4435	8.00	1	2-3	2	2-3	490-690	15	450
1.4439	8.00	1	1	1-3	2	580-800	14	450
1.4539	8.00	1	1	2	2-3	520-720	12	500
1.4571	8.00	1	1	2	2-3	500-730	19	500
Material No.	Density	Resistance(5)				Tensile Strength	Heat Conducting Capacity	Electrical Resistance
EN 10088	kg/dm3	Atmosphere	Seawater	Lyes	Acids	MPa	W / K m	Ω mm2/m
1.4462	7.80	1	1	2-4	2-4	680-880	15	0,8

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(1) Parts of the melt analysis do not correspond to EN 10088-3:08-1999. The given AISI-designations are general recommondations
(2) Heat resisting steels
(3) Heat conducting alloys
(4) Brands or registered trade names
(5) 1 = resistant; 2 = largely resistant; 3 = resistant with some conditions; 4 = little resistant; 5 = poor resistant
(6) At the atmosphere (round values)

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