



Product Information

Welding Wire Finish HELICORD® W NB37F001

HELICORD® W are flat textile cords containing yarns that are impregnated with extractable materials for welding wire finishing.

The extractable materials are used as finish for the wire surface, with the exact kind of material and quantity being adjusted to the different requirements of various types of welding wire.

They improve the properties of welding wires with respect to feedability, corrosion resistance, welding properties and arc stability.

HELICORD® W was designed for application by HELICORD® process supported by use of an extraction liquid. Herein, they differ from the wax and additive oversaturated earlier developments (NB35V00x) which are extractable by heat and friction. The special advantage of HELICORD® W is the possibility of running them opposite to the wire run direction, due to liquid extraction. Thus, loose and loosely adherent particles and scales from the drawing process or other preceding process steps are thoroughly removed. This improves the properties of welding wire regarding life time of the liner and contact nozzles. For application of HELICORD® W products, the HELICORD® machine models NB57 and NB58 or especially NB57W and NB58W (process zone follows the traverse of the winder) are required.

Feedability

HELICORD® W types are wax-based lubricants.

Wax provides good and stable sliding properties, because it is much less volatile than liquids and oils and, being a solid material, does not follow gravity and flow down on a spool of wire.

Also, dust does not stick to the waxed surface as it does to oil.

Using wax, lower coefficients of friction can be achieved as compared to liquid lubricants.

Applied quantities between 5 and about 30 mg/m² provide positive impact. Beyond feedability worsens again due to accumulation of wax in the liner.

Corrosion Protection

NB37F001 contains corrosion-inhibiting extractable additives both for protecting the copper surface and the iron substrate not completely covered by copper coating.

The time before the first appearance of rust points in warm and humid climate will be extended from several hours to more than one week. To achieve this, already an application of less than about 20 mg/m² of finish from HELICORD® W is sufficient instead of 30 – 50 mg/m² oil. Formation of diffusible hydrogen from the applied hydrocarbons is reduced. This effective corrosion protection will allow to leave the wire spool unprotected on the welding machine, e.g. during weekend, also in tropical climate.

Welding Arc Stability

Another extractable additive stabilizes the electrical discharge. When welding with wire coated with NB37F001, the spray arc welding inception voltage and thus the noise level are measurably lower. Thus, the energy input into the metal melt will be reduced and welding of thinner sheets enhanced. Also, loss of material by spattering of several percent of the material used and formation of deposit in the gas nozzle can be reduced.

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Application Guidelines

Range of Applications

NB37F001 was developed mainly for use on pre-cleaned solid or seam-welded core-filled steel wire, copper-coated or copper-free. Copper-coated wires usually are already clean. Other wire can be pre-treated by pickling, electrolytic cleaning, wet drawing, ultra sonic cleaning, or especially by use of abrasive HELICORD® A braids and a HELICORD® machine NB58.

In the case of core-filled wire with not welded seam extraction liquid containing dissolved active components may penetrate into the core and cause unwanted side effects. For such products, oversaturated pre-impregnated yarns are successfully used in the industry. However, loose particles will be cleaned off less effectively.

NB37F001 can be used on stainless steel wire, but in this case the corrosion-inhibiting components are unnecessary. Therefore we suggest the use of NB37F002 instead.

For non-ferrous metals, especially aluminum and its alloys, optimized solutions are under development.

Liquids for Extraction

Liquids to be used must sufficiently dissolve the extractable active components. For NB37F001 white spirits with a flash point above 31 °C is recommended.

Applied Quantity

The applied quantity should amount to between 10 and 30 mg/m². For the influence on welding wire properties refer to the previous remarks.

The formation of diffusible hydrogen in the weld also depends on the applied quantity. This fact should be considered.

Control of the Applied Quantity

Wire speed, cord speed and metered quantity of the extraction liquid determine the applied quantity. Increasing the amount of the extraction liquid will increase the applied quantity up to a certain extent. The applied quantity changes contrarily to the wire speed and concordantly to the cord speed if the amount of extraction liquid is sufficient. For orientation see the following table 1:

Wire speed (m/min)	Cord speed (cm/min)	Dosage of extraction liquid (ml/min)	Applied quantity (mg/m ²)
100	20	0.4	~ 50
900	20	2.0	~ 20

Table 1

Data of HELICORD® W NB37F001

Weight of the cord	[mg/m]	2.720
Hexane extractables	[mg/m]	420
Ash content	[mg/m]	about 40
Melting point	[°C]	> 61
Appearance, color	Textile braided flat cord of white viscose yarn	
Storage stability	6 months at 23° C to 40 °C	
Delivery form and packaging	4 cones each of about 4 kg in a carton	
Cord length per cone	[m]	1.500
Sample quantity	Cone of about 1 kg	
Transportation	No dangerous goods (UN-No. is not required)	

Table 2

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