



STANNOL



SOLDER WIRES

SOLDER PASTES

FLUXES

SOLDER BARS

SOLDERING EQUIPMENT

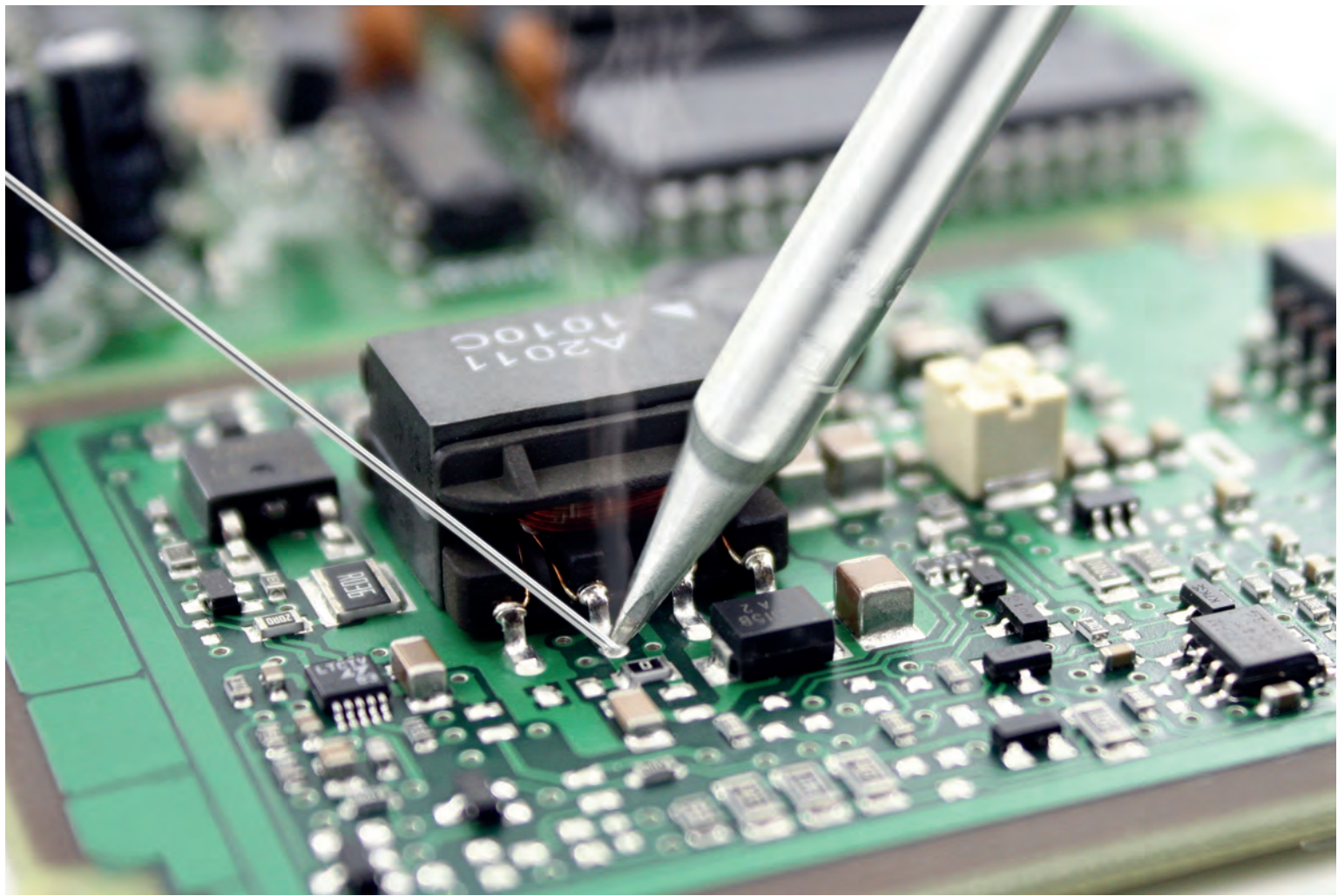
MEASUREMENT AND TESTING SYSTEMS

CONFORMAL COATINGS

ACCESSORIES

SOLDER WIRES

FOR ELECTRONICS MANUFACTURING



WE HAVE THE RIGHT SOLDER WIRE FOR EVERY APPLICATION.

IN ELECTRONICS, A SOLDER WIRE IS USED TO CONNECT COMPONENTS TO EACH OTHER WITH ELECTRICAL CONDUCTIVITY. HOWEVER, A SOLDER WIRE CAN ALSO BE USED TO FORM A MECHANICAL SOLDER JOINT ON MANY DIFFERENT SOFT SOLDERABLE SURFACES. DUE TO THE MANY DIFFERENT APPLICATIONS AND APPLICATION AREAS, WE PROVIDE A WIDE RANGE OF MANY DIFFERENT SOLDER WIRES.

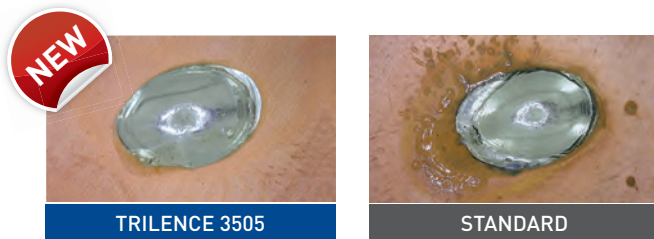
Solder wires can be flux-cored or solid. A flux is necessary for the soldering process to remove oxides and other impurities and to guarantee a reliable connection. Flux-cored solder wires already contain the correct amount of flux. Different fluxes are used depending on the soldering task. The selection of a suitable alloy also plays an important role for the solder joint. For selection of the alloy, we refer to the catalogue: **SOLDER BARS**. In the following, we would like to introduce the different types of fluxes, which can be used inside solder wires for different applications.

We are pleased to present our complete product overview, available delivery forms such as fluxes, diameters and reel sizes in a personal meeting.

HALIDE CONTAINING FLUXES FOR SOLDER WIRES

There are two groups of different activation levels to choose from: Halide containing and halide free fluxes for solder wires. The fluxes with higher activity usually contain halides. Stannol provides five halide containing solder wire fluxes which can be used in the electronics industry as No-Clean products.

The new solder wire **TRILENCE** has been developed to fulfil the highest requirements. The extremely low tendency to create flux spitting is one of the major advantages, besides the good wetting activity and the transparent residues.



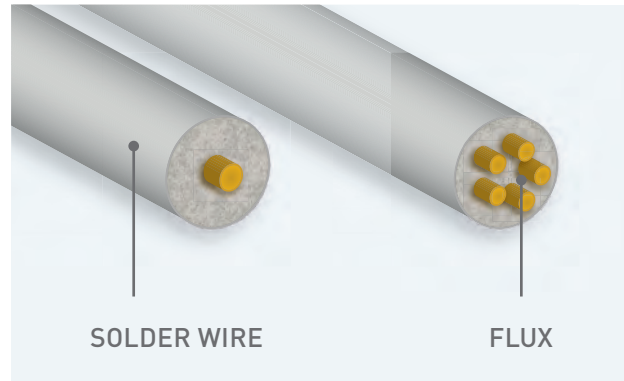
The different behaviour of the residues of lead-free solder wires can be clearly seen on a copper surface. The Trilence 3505 features a low spitting behavior, bright residues and optimum wetting.

If clear residues are required, the proven **KRISTALL SERIES** of solder wires from Stannol should be selected. These fluxes have been developed to leave transparent residues on the circuit board. The **KRISTALL 511** flux has a slightly higher activation than the HS10 flux and can be used as an option if transparent residues are required.

The **KRISTALL 505** flux differs from Kristall 511 by its lower activity. This requires better solderable surfaces; however this achieves a little higher electrical safety of the residues on the circuit board.

SOLID SOLDER WIRES

Besides the flux-cored solder wires, Stannol also has many solid solder wires in its product range. Amongst others, these wires are used e.g. to refill selective solder baths. Most alloys are available as solid solder wires.



An important part of the solder wires is the flux, which is responsible for the removal of oxides from the metal surfaces. The Stannol range includes solder wires with 1 and 5 flux cores.

The flux **HS10** is a solder wire flux containing rosin which has proven to be successful for decades. Short wetting times on common surfaces are achieved with this flux. The flux is suitable for both manual soldering and robot soldering with fast cycle times.

Flux type **2630** provides the highest activity of our No-Clean wire fluxes. It is used for surfaces with poor solderability and for larger solder areas which may require a higher thermal input to the solder joint.

The NSL alloys take a special position here. The NSL have a very low melting point and will be used for special applications. NSL stands for lead-free bismuth-alloys.

HALIDE-FREE SOLDER WIRE FLUXES

Halide-free solder wire fluxes are used if halides are not permitted in the manufacturing process and if higher electrical safety of the residues is required. In comparison with the halide containing fluxes, these fluxes provide lower activity and require well solderable surfaces.

The **KRISTALL 400** solder wire flux is the halide-free version of the Kristall series from Stannol. Characteristical for these fluxes are transparent residues and good activity with which outstanding soldering results can be achieved.

The **KRISTALL 600** is the second halide-free version of the KRISTALL series from STANNOL. Additional to the transparent residues and the good activity this flux has a lower tendency of flux spitting when soldering with high temperatures.

The **KS100** solder wire flux is the halide-free version for soldering processes which are thermally more challenging. A further benefit of the KS100 is the production of low solder fumes; the number of flux spatters is also strongly reduced.

The halide-free wire flux **HF32** combines high activity with good wetting characteristics and low residues on the circuit board in an outstanding way. The HF32 can be used for manual and robot soldering.

The **TRILENCE 3500** solder wire was developed for challenging soldering applications. The maintenance intervals and thus the downtime of soldering machines can be considerably reduced by the very low spatter. The TRILENCE 3500 consists a halide- and rosin-free flux which is based on a matrix of synthetic resin. The TRILENCE 3500 solder wire can be applied just like conventional wires to solder.

The **ZV16** flux is certainly one of the most interesting innovations from STANNOL. The ZV16 is halide-free and based on chemical modified resins. The rosin-free flux leaves soft residues behind which can be brushed off very easily. Its activity is based on organic acids. Only a relatively low amount of flux content in the wire is required to achieve a good solder joint.

ORGANIC SOLDER WIRE FLUXES

In addition to solder wires for electronics, Stannol also provides flux-cored solder wires with special fluxes which have been developed for hardly wettable surfaces. All residues are water soluble which makes the required cleaning easy.

The HF34 flux is the most active halide-free flux from Stannol. Its activity is based on organic acids. Only a relatively low amount of flux content in the wire is required to achieve a good solder joint. As a result, only a very low amount of residues

remains on the circuit board. However, due to the special composition, it must be checked whether these are permitted to remain on the circuit board or need to be cleaned.

The **S321** solder wire flux is particularly suitable for soldering metal and sheet metal. Tinned surfaces as well as brass or iron can also be processed well with this solder wire.



HALIDES

If a solder wire flux contains halides, it is usually higher activated than a halide-free one. Activated wire fluxes containing halides are usually distinguished by better wetting during the soldering process. Halide-free wire fluxes and their residues are usually

considered as significantly less susceptible to corrosion on the solder joint. Halide containing solder wires are widely used as No-Clean fluxes. There is no need to remove the residues in most applications.

SOLDER WIRE FLUX PROPERTIES

SOLDER WIRE FLUX	FLUX PROPERTIES						LEAD-CONTAINING ALLOYS				FLOWTIN SERIES ⁽¹⁾ lead-free alloys with micro alloy additions				ECOLOY SERIES ⁽²⁾ lead-free alloys without micro alloy additions								
	FLUSSMITTELANTEIL	HALOGENANTEIL	NO-CLEAN	DIN EN 29454-1	J-STD-004	DIN 8511 F-SW	S-Sn60Pb40	S-Sn60Pb39Cu1	S-Sn63Pb37	S-Sn62Pb36Ag2	S-Pb93Sn5Ag2	FLOWTIN TSC Sn95.5Ag3.8Cu0.7 + FLOWTIN	FLOWTIN TSC305 Sn96.5Ag3.0Cu0.5 + FLOWTIN	FLOWTIN TSC105 Sn98.5Ag1.0Cu0.5 + FLOWTIN	FLOWTIN TSC0307 Sn99Ag0.3Cu0.7 + FLOWTIN	FLOWTIN TC Sn99.3Cu0.7 + FLOWTIN	ECOLOY TS S-Sn96Ag4	ECOLOY TSC S-Sn95Ag4Cu1	ECOLOY TSC305 S-Sn94Ag3Cu1	ECOLOY TSC0307 S-Sn98Cu1Ag	ECOLOY TC S-Sn99Cu1	ECOLOY TC300 S-Sn97Cu3	SN100C® Sn99.3Cu0.7+Ni6e
	MELTING RANGE						183 - 190°C	183 - 190°C	183°C	179°C	2% - 301°C	217°C	217 - 222°C	217 - 224°C	217 - 227°C	227°C	221°C	217°C	217 - 220°C	217 - 227°C	227°C	227 - 310°C	227°C
HALIDE-CONTAINING	Trilence 2708	2.7%	0.8%	•		REM1						•			•								
	Trilence 3505	3.5%	0.5%	•		REL1						•			•								
	Kristall 505	3.0%	0.5%	•	1.2.2	REM1	26	•															
	Kristall 511	2.7% / 3.0%	1.1%	•	1.2.2	REM1	26						•		•	•	•	•	•	•	•	•	•
	HS10	2.5%	1.0%	•	1.1.2	ROM1	26	•	•	•	•			•			•	•	•		•	•	
	2630	2.0% / 2.2%	1.7%	•	1.1.2	ROM1	26		•									•			•		
HALIDE-FREE	HF32 SMD	1.0%	0.0%	•	1.1.3	ROLO	32	•		•													
	Kristall 400	2.2%	0.0%	•	1.2.3	RELO	33	•		•				•	•		•	•			•		•
	Kristall 600	2.2%	0.0%	•		RELO							•		•				•	•	•		
	KS100	3.0%	0.0%	•	1.2.3	RELO	33					•	•			•							
	HF32	3.5%	0.0%	•	1.1.3	ROLO	32	•	•	•							•				•		
	Trilence 3500	3.5%	0.0%	•		RELO							•	•		•							
	ZV16	1.6%	0.0%	•		RELO													•				
	HF34	1.6%	0.0%	x	2.2.3	ORM0	34	•					•										
ORGANIC	S321	2.0%	>5.0%		2.1.2	ORH1	24	•													•		
	solid							•	•		•	•		•	•	•	•	•		•	•	•	•

(X) Must be checked in each individual case

(1) The micro-alloyed **FLOWTIN** solders have been developed by Stannol to achieve the lowest possible dissolution rate of copper and iron. Depending on the general conditions, an increase in the life time of soldering tips of up to 50% is possible.

(2) All ultra pure, lead-free standard alloys are designated as **ECOLOY**.

For further information about the characteristics of the alloys, please visit our homepage www.STANNOL.de or refer to the brochure: **SOLDER BARS**. Additional flux / alloy combinations are also possible, partially on a production-related minimum order quantity - please feel free to contact us!



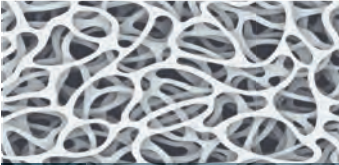

NO-CLEAN SOLDER WIRE FLUXES

The residues of so called No-Clean fluxes can remain at the solder joint. Corrosive reactions at the solder joint are not expected. When using highly activated fluxes, the residues may have to be removed after the soldering, otherwise corrosion at and around the solder joint can occur.

SYNTHETIC AND MODIFIED RESINS

These resins are distinguished by the fact that they are thermally stable in comparison with natural rosins. They will leave in general brighter residues on the solder joint, if the application instructions are observed.

FLUX CLASSIFICATION ACCORDING TO J-STD 004

INGREDIENTS IN FLUXES	ACTIVITY	MAX. HALIDE CONTENT	CLASSIFICATION	FULL DESIGNATION
 RO ROSIN	Low	0%	L0	ROLO
	Low	<0.5%	L1	ROL1
	Moderate	0%	M0	ROM0
	Moderate	0.5-2.0%	M1	ROM1
	High	0%	H0	ROH0
	High	>2%	H1	ROH1
 RE RESIN	Low	0%	L0	RELO
	Low	<0.5%	L1	REL1
	Moderate	0%	M0	REM0
	Moderate	0.5-2.0%	M1	REM1
	High	0%	H0	REH0
	High	>2%	H1	REH1
 OR ORGANIC	Low	0%	L0	ORLO
	Low	<0.5%	L1	ORL1
	Moderate	0%	M0	ORM0
	Moderate	0.5-2.0%	M1	ORM1
	High	0%	H0	ORH0
	High	>2%	H1	ORH1
 IN INORGANIC	Low	0%	L0	INLO
	Low	<0.5%	L1	INL1
	Moderate	0%	M0	INM0
	Moderate	0.5-2.0%	M1	INM1
	High	0%	H0	INH0
	High	>2%	H1	INH1

FLUX CLASSIFICATION	COPPER MIRROR TEST	SILVERCHROMATE PAPER TEST	FLUORIDES BY SPOT TEST	QUANTITATIVE HALIDE CONTENT (CL & BR)	FLUX CORROSION	CONDITIONS FOR PASSING THE 100 MOHM TEST CRITERIA
L0	No signs of breakthrough	Pass	Pass	<0,01 %	No signs of corrosion	Cleaned or not cleaned
L1		Pass	Pass	<0,5 %		
M0	Breakthrough in maximum 50% of the area	Pass	Pass	<0,01 %	Minor signs of corrosion	Cleaned or not cleaned
M1		Fail	Fail	0,5 - 2,0 %		
H0	Breakthrough in more than 50% of the area	Pass	Pass	<0,01 %	Major corrosion can be expected	Cleaned
H1		Fail	Fail	>2,0 %		

Classification according to DIN EN 61190-1-1

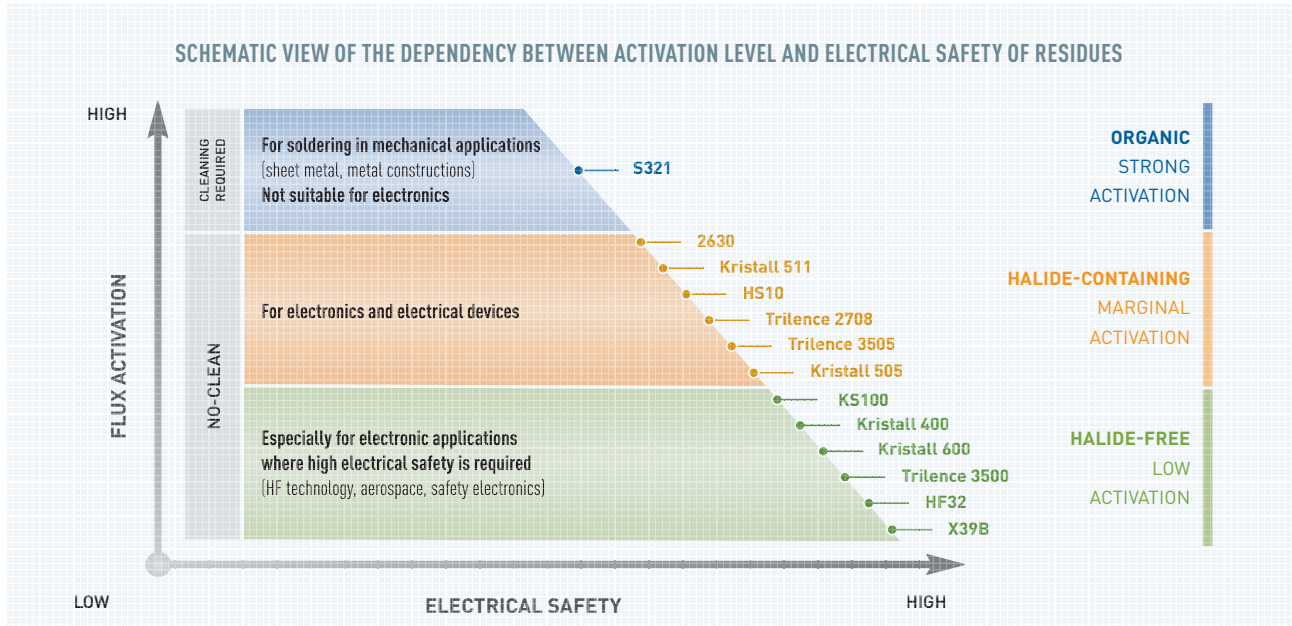
RESINS

Synthetic resins, used in solder wire fluxes, show much better thermal stability over time, compared to standard rosin products. By following the soldering process recommendations, solder wires with synthetic resins will leave much brighter and transparent residues.

DIN AND EN STANDARDS

The standards classify a solder wire flux according to specific criteria. The fluxes are assessed according to the ingredients whereby conclusions can be drawn about, for example, the activity of the flux.

ACTIVATION MATRIX



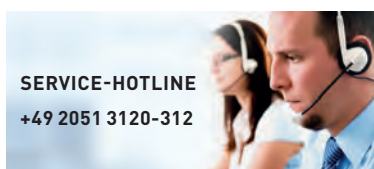
In this chart the dependency of the flux activation level to the electrical safety of the flux residues is shown. The lower the flux activation level can be chosen, the higher the electrical safety of the flux residues after soldering can be expected. When using the activated flux Kristall 511 for example, high electrical safety can be achieved after soldering – as a No-Clean flux without a subsequent cleaning process.

THE STANNOL COLOR CODE

Stannol uses a unique colour code for easy differentiation between the different groups of solder wires. The colour code is based on two parts: the first part is the colour of the reel, the second part is the colour on the label. This ensures an easy error prevention in mixed manufacturing areas.



OTHER AVAILABLE SOLDER WIRES



In this brochure we can only show a limited product selection and have therefore focused on our top sellers. Our complete product range of flux cored solder wires is significantly more extensive. Other products can be found through our innovative product selector at www.STANNOL.de. Selecting the site "Products" you can choose the products according to many different criteria.



STANNOL

TRADITION AND INNOVATION.

SOLDERING TECHNOLOGY SINCE 1879 – MADE IN GERMANY



SOLDER WIRES



FLUXES



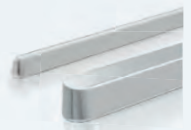
SOLDERING STATIONS



SOLDER PASTES



ACCESSORIES



SOLDER BARS



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