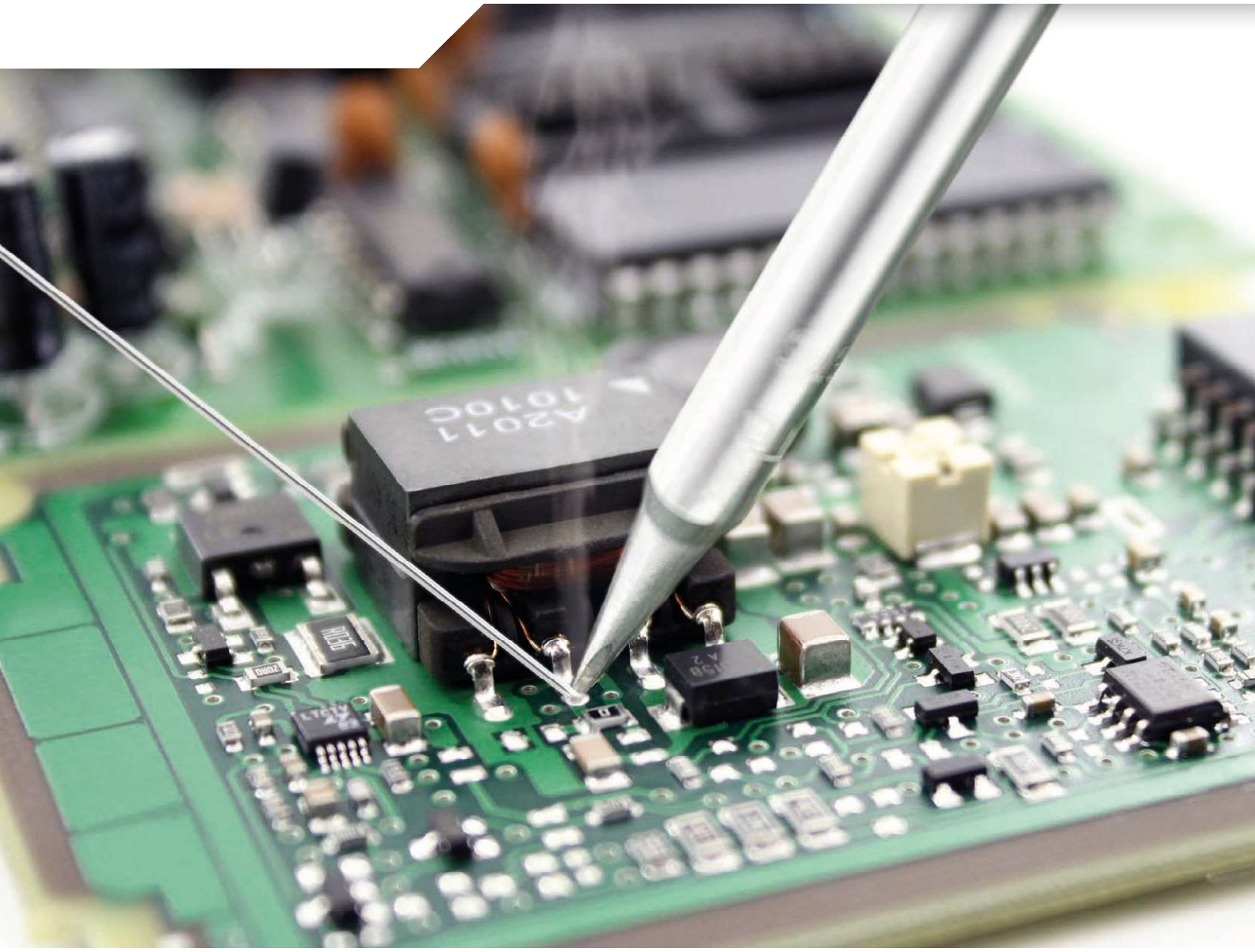


SOLDER WIRES

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.

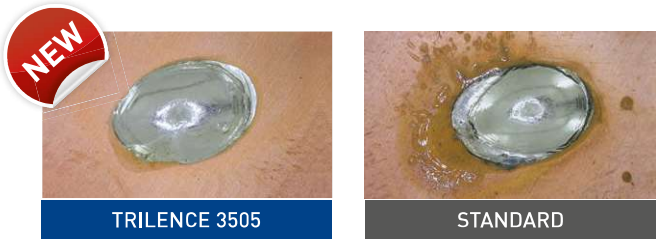
Solder wires can be flux-cored or solid. A flux is necessary for the soldering process to remove oxides and other impurities and to guarantee a reliable connection. Flux-cored solder wires already contain the correct amount of flux. Different fluxes are used, depending on the soldering task. The selection of a suitable alloy also plays an important role for the solder joint.

For selection of the alloy, please refer to page 7 and 13 of this catalogue. 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.

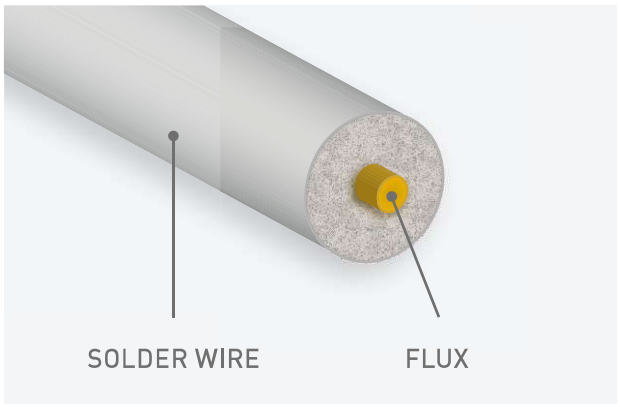
HALIDE CONTAINING FLUXES FOR SOLDER WIRES

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 different halide containing solder wire fluxes which can be used in the electronics industry as No-Clean products.

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



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



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 of solder wires is manufactured as a standard with one flux core.

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.

New in this series will be the **KRISTALL 611**. This new flux is characterized by high activity and at the same time very low flux spitting behaviour, similar to the Trilence series.

The flux **HS10** is a solder wire flux based on rosin which has proven to be successful for decades. Short wetting times on common surfaces are achieved with this flux. This 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 solder 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.

Stannol made a completely new approach during the development of the solder wire **ALU1** for soldering on aluminium: Non-toxic activators were combined with each other in order to enable a good solder joint and wetting of soft solder on aluminium. The residues are non-corrosive and do not have to be removed.

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 good 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.

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 at high temperatures.

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 very low flux spitting can considerably reduce the maintenance intervals and thus the downtime of soldering machines. The Trilence 3500 contains a halide- and rosin-free flux which is based on a matrix of synthetic resins. The Trilence 3500 solder wire can be used just like conventional solder wires.

ZV16 solder wire is certainly one of the most interesting innovations. It is halide-free and based on chemically modified resins. Its good activity is depending on the used combination of different organic acids. Only a relatively low amount of flux content in the wire is required to achieve a good solder joint. The most important property of the rosin-free flux is, that it leaves minor amounts of soft residues after soldering. These residues can be brushed off easily to achieve a clean, residue free solder joint.

ORGANIC FLUXES FOR SOLDER WIRES

In addition to solder wires for electronics, Stannol also provides flux-cored solder wires with special organic fluxes which have been developed for difficult wettable surfaces. These include either wires with water-washable residues or fluxes, such as ALU1, which ensures safe wetting on aluminium.

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.

The **WS2213** is a new solder wire with water-soluble residues. It was developed for surfaces in electronics that are difficult to solder. Simple and fast wetting, short cycle time and also fast removal of residues are the main features of this wire.

Stannol made a completely new approach during the development of the solder wire **ALU1** for soldering on aluminium: Non-toxic activators were combined with each other in order to enable a good solder joint and wetting of soft solder on aluminium. The residues are non-corrosive and do not have to be removed.

SOLDER WIRE FLUX PROPERTIES

	SOLDER WIRE FLUX	FLUX CONTENT	HALIDE CONTENT	NO-CLEAN	DIN EN ISO 9454-1	J-STD-004	DIN 8511 F-SW	S-Sn60Pb40	S-Sn60Pb39Cu1	S-Sn63Pb37	S-Sn62Pb36Ag2	S-Pb93Sn5Ag2	FLOWTIN TSC	FLOWTIN TSC305	FLOWTIN TSC0307	FLOWTIN TC	ECOLOY TS	ECOLOY TSC	ECOLOY TSC305	ECOLOY TSC0307	ECOLOY TC	ECOLOY TC300	SN100C®	FAIRTIN
		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						SN100C®	
								Sn60Pb40	Sn60Pb39Cu1	Sn63Pb37	Sn62Pb36Ag2	Sn93Pb5Ag2	Sn95.5Ag3.8Cu0.7 + FLOWTIN	Sn96.5Ag3.0Cu0.5 + FLOWTIN	Sn99Ag0.3Cu0.7 + FLOWTIN	Sn99.3Cu0.7 + FLOWTIN	S-Sn96Ag4	S-Sn95Ag4Cu1	S-Sn96Ag3Cu1	S-Sn98Cu1Ag	S-Sn99Cu1	S-Sn97Cu3	Sn99.3Cu0.7+NiGe	
		MELTING RANGE						183 – 190°C	183 – 190°C	183°C	179°C	296 – 301°C	217°C	217 – 222°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						•	•	•	•		•	•		•		•	
	Kristall 611	2.52%	1.1%	•		REM1								•		•								•
	HS10	2.5%	1.0%	•	1.1.2	ROM1	26	•	•	•	•	•					•	•	•		•	•		
	2630	2.0 / 2.2%	1.7%	•	1.1.2	ROM1	26		•									•			•			
	ALU1	3.5%	0.06%		2.1.2	REM1															•			
HALIDE-FREE	HF32 SMD	1.0%	0.0%	•	1.1.3	ROL0	32	•			•													
	Kristall 400	2.2%	0.0%	•	1.2.3	REL0	33	•			•		•		•	•		•	•		•		•	
	Kristall 600	2.2%	0.0%	•		REL0								•		•							•	•
	HF32	3.5%	0.0%	•	1.1.3	ROL0	32	•	•		•							•			•			
	Trilence 3500	3.5%	0.0%	•		REL0								•		•								
	ZV16	1.6%	0.0%	•		REL0													•					
ORGANIC	S321	2.0%	>5.0%		2.1.2	ORH1	24	•													•			
	WS2213	2.2%	1.3%		2.1.2	ORH1															•			
	Solid							•		•			•	•	•	•	•	•	•	•	•	•	•	

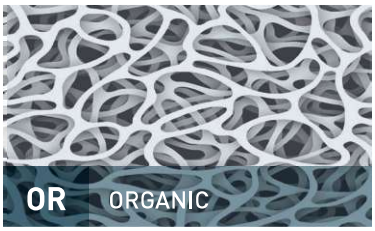
(X) Must be checked in each individual case.

(1) (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 rvisit our homepage www.STANNOL.de
Additional flux / alloy combinations are also possible, partially on a production-related minimun order quatity - please feel free to contact us!

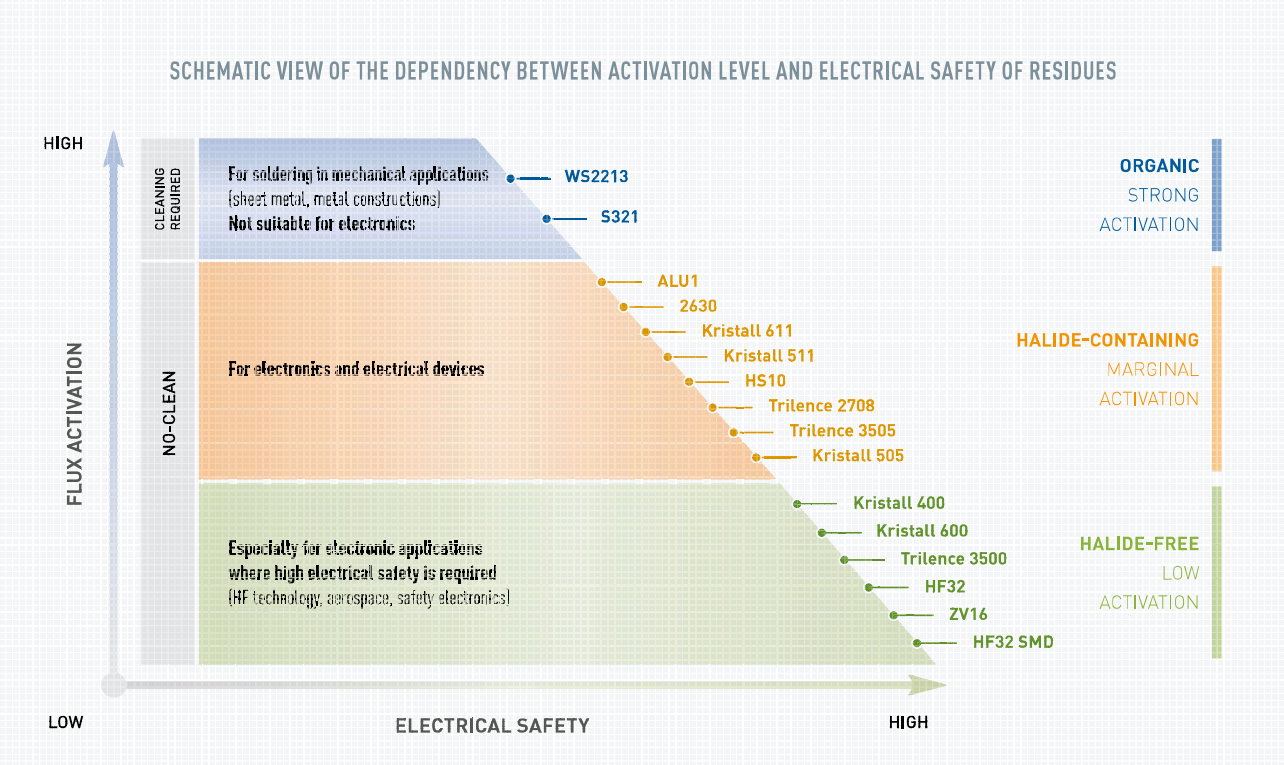
FLUX CLASSIFICATION ACCORDING TO J-STD 004

INGREDIENTS IN FLUXES	ACTIVITY	MAX. HALIDE CONTENT	CLASSIFICATION	FULL DESIGNATION
	Low	0%	L0	ROL0
	Low	<0.5%	L1	ROL1
	Moderate	0%	M0	ROM0
	Moderate	0.5-2.0%	M1	ROM1
	High	0%	H0	ROH0
	High	>2%	H1	ROH1
	Low	0%	L0	REL0
	Low	<0.5%	L1	REL1
	Moderate	0%	M0	REM0
	Moderate	0.5-2.0%	M1	REM1
	High	0%	H0	REH0
	High	>2%	H1	REH1
	Low	0%	L0	ORL0
	Low	<0.5%	L1	ORL1
	Moderate	0%	M0	ORM0
	Moderate	0.5-2.0%	M1	ORM1
	High	0%	H0	ORH0
	High	>2%	H1	ORH1
	Low	0%	L0	INL0
	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 ACCORDING TO DIN EN 61190-1-1

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	No 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		

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.