

Product Information

FELDER-ISO-Cream® "Clear"

No-Clean solder paste for an excellent wetting on all known surfaces.

Flux according EN ISO 9454:2016 ,1231; DIN EN 61190-1-3 / IPC J-STD-004B, RELO

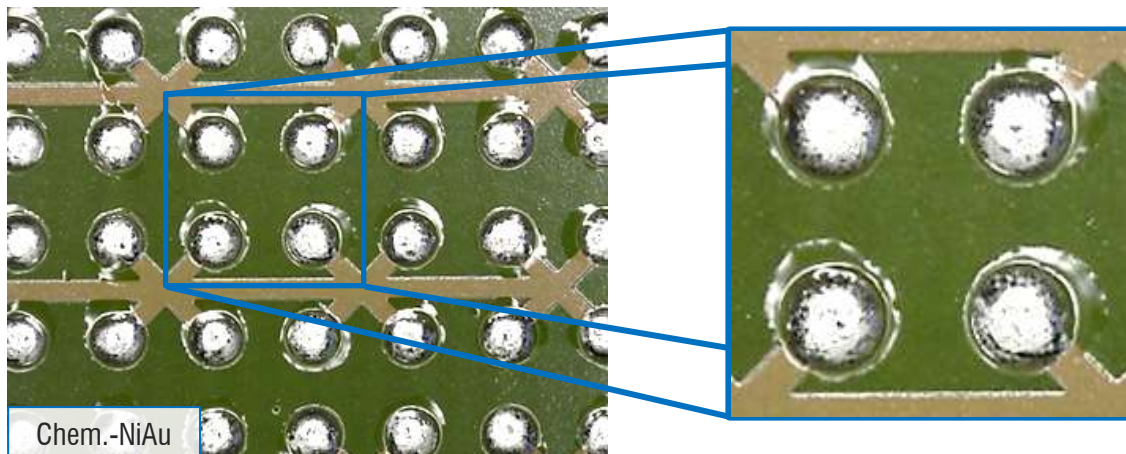
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All information about our products are the result of our long standing experience which we would like to pass on to our customers as application support. However, as we do not have any influence on the application of the works carried out with our products, please see the warranty claims in our conditions of sale because our liability is limited.

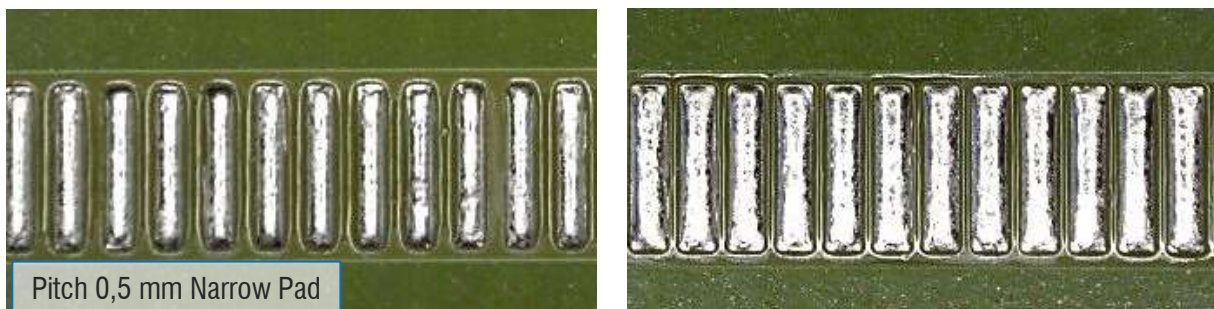
This product information does not constitute warranted properties.

Description

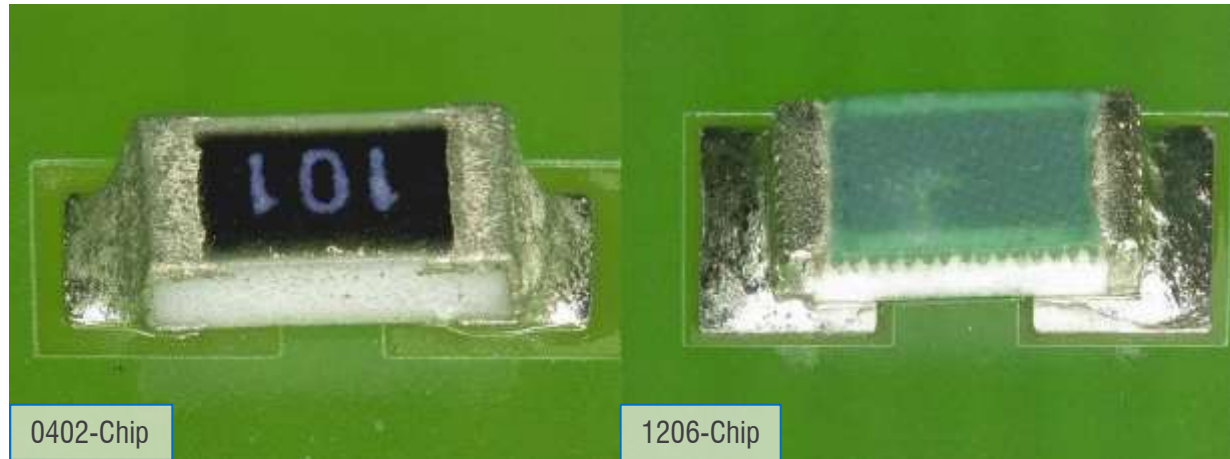
Solder paste **ISO-Cream® "Clear"** is a homogenous, ready-made, odourless mixture made of metal powder, binding agents, solvents and fluxes. It is free of any thixotropic agents; therefore, a steady viscosity is guaranteed. This paste has excellent wetting qualities and is also excellent for soldering of difficult solderable surfaces as chem. Ni/Au, chem. Ag or OSP.



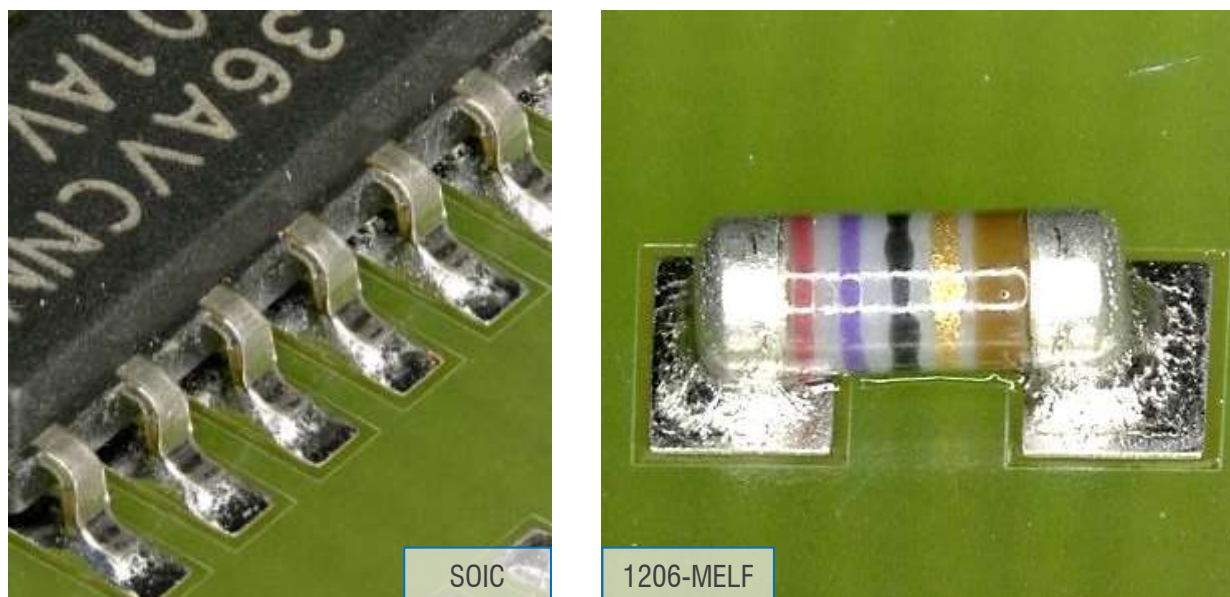
Even components with slightest pad gaps can be processed without any problem.



Soldering Results



The solder paste **ISO-Cream® "Clear"** is insensitive against humidity and temperature. It shows no tendency for formation of solder balls at chip-resistances and capacitors. Excellent soldering results with clear flux residues with very high surface resistivity values.



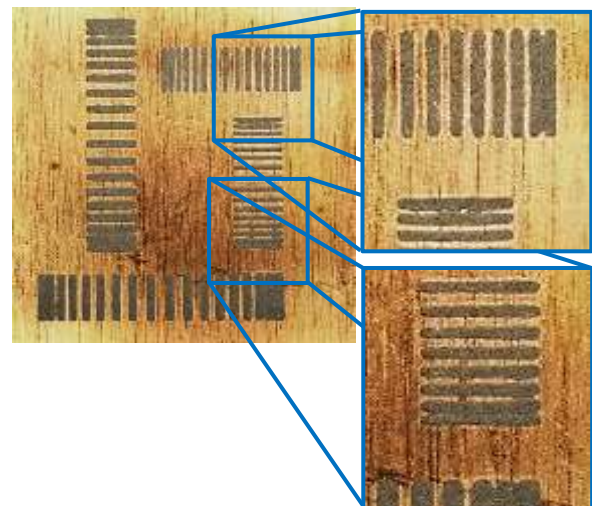
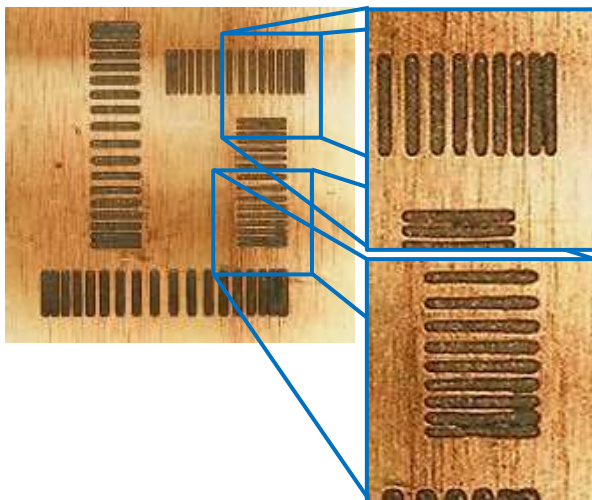
The flux residues of **FELDER ISO-Cream® SMD** soldering paste have a very limited expansion (the flux does not flow over the edge of the solder resist mask). Thus, the pseudo failure quote, especially with AIO-controlling systems, is significantly reduced, as reflecting flux residues could be interpreted as solder bridges (wrong).



Contour Stability (Slump) 0,1mm stencil

15 min. after paste print at 25°C / 50% RF		
horizontal	0.33 x 2.03	0.10 mm free
	0.2 x 2.03	0.10 mm free
vertical	0.33 x 2.03	0.125 mm free
	0.2 x 2.03	0.10 mm free

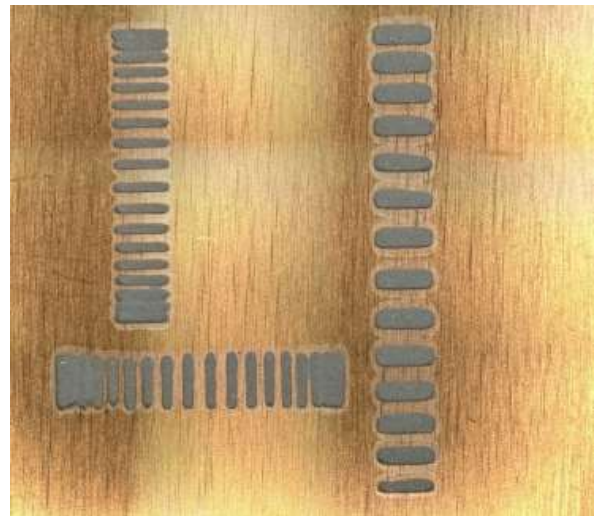
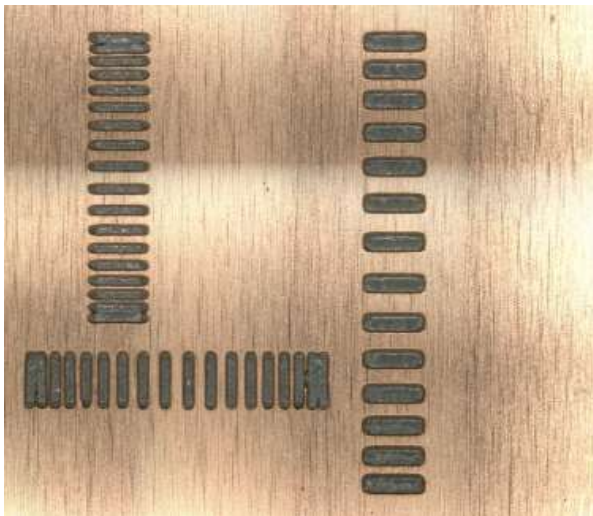
15 min. after paste print at 150°C		
horizontal	0.33 x 2.03	0.15 mm free
	0.2 x 2.03	0.10 mm free
vertical	0.33 x 2.03	0.15 mm free
	0.2 x 2.03	0.10 mm free



Contour Stability (Slump) 0,2 mm stencil

15 min. after paste print at 25°C / 50% RF		
horizontal	0.33 x 2.03	0.10 mm free
	0.2 x 2.03	0.10 mm free
vertical	0.33 x 2.03	0.125 mm free
	0.2 x 2.03	0.10 mm free

15 min. after paste print at 150°C		
horizontal	0.33 x 2.03	0.15 mm free
	0.2 x 2.03	0.10 mm free
vertical	0.33 x 2.03	0.15 mm free
	0.2 x 2.03	0.10 mm free



Tack Time

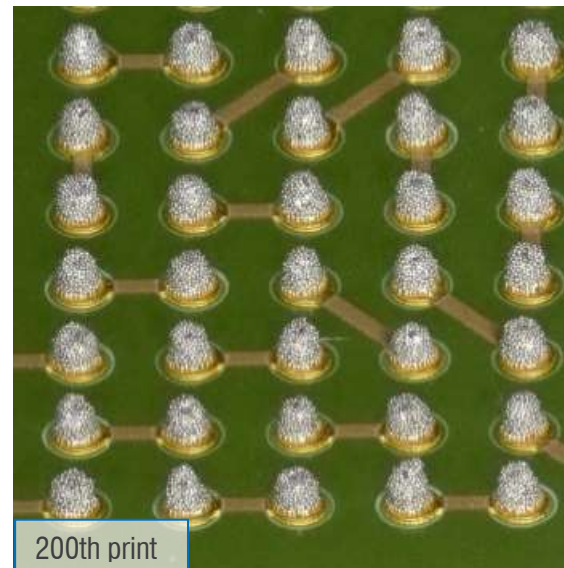
FELDER ISO-Cream® "Clear" has a very high wet adhesive strength and is also suitable for very high print speeds.

Adhesiveness (Tack Time)	at least 72 hours
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The paste has a very long stencil time and may be applied on printing machines with a temperature control unit (very strong ventilation).

Rheology

The rheology of this paste has been optimised to achieve excellent printing qualities at narrow openings as well as a very good first print after longer breaks. Laboratory tests have shown that the first print after a break of 8 hours was unobjectionable. The paste remains in perfect condition up to 72 hours so that the adhesiveness allows a mounting and the solder results are still perfect.

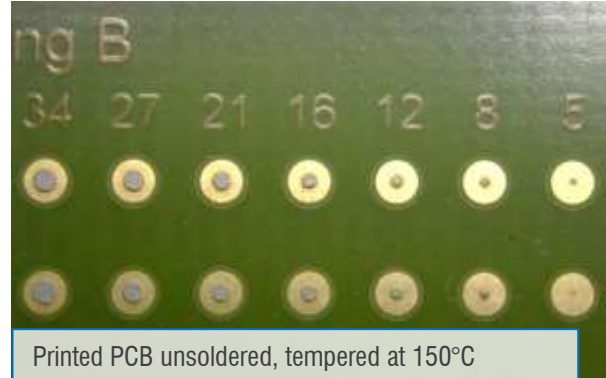


Solder Ball Test

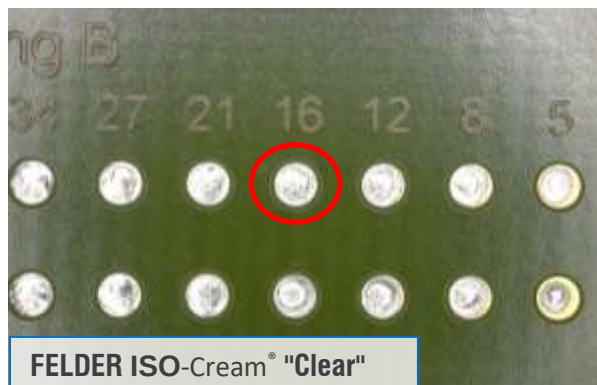


Wetting test on Ni/Au

Here a test PCB is printed with different quantities of solder paste. The cutout of the printing stencil is increasingly reduced from pad to pad up to a part of surface of 5 % of the pad area. After remelting of the paste the wetting is evaluated.



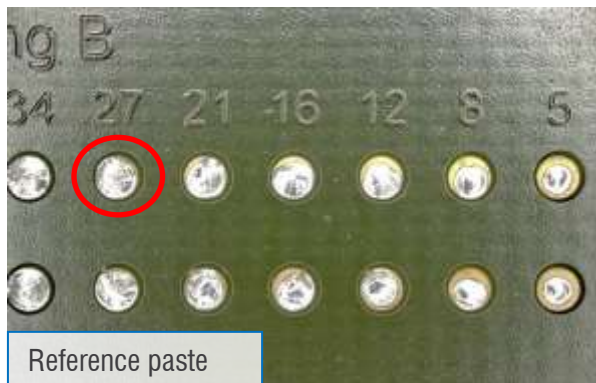
Printed PCB unsoldered, tempered at 150°C



FELDER ISO-Cream® "Clear"

As this example shows the paste has excellent wetting qualities in comparison to a conventional solder paste (here on Ni/Au). Even with low solder paste application (here 16 % of the pad area) a 100 % wetting of the solder surface is reached.

Conventional lead-free pastes reach a complete wetting up to a stencil cutout of 27 % of pad size!



Reference paste

Properties

Alloys	Melting point	Metal powder form	Metal content
Sn96,5Ag3Cu0,5	217-220 °C	ball-shaped	85 – 89 %
Sn95,5Ag3,8Cu0,7	217 °C		
Sn96,5Ag3,5	221 °C		
Sn99Ag0,3Cu0,7	217-227 °C		
Sn100Ni+ / Sn100 ⁴⁰³ C (Sn99,25Cu0,7Ni0,05)	227 °C		
Sn97Cu3	227-310 °C		

Grain sizes : 2 = 45-75 µm
acc. IPC J-STD-005 3 = Fine-Pitch 25-45 µm
4 = Superfine-Pitch 20-38 µm
5 = Superfine-Pitch 15-25 µm

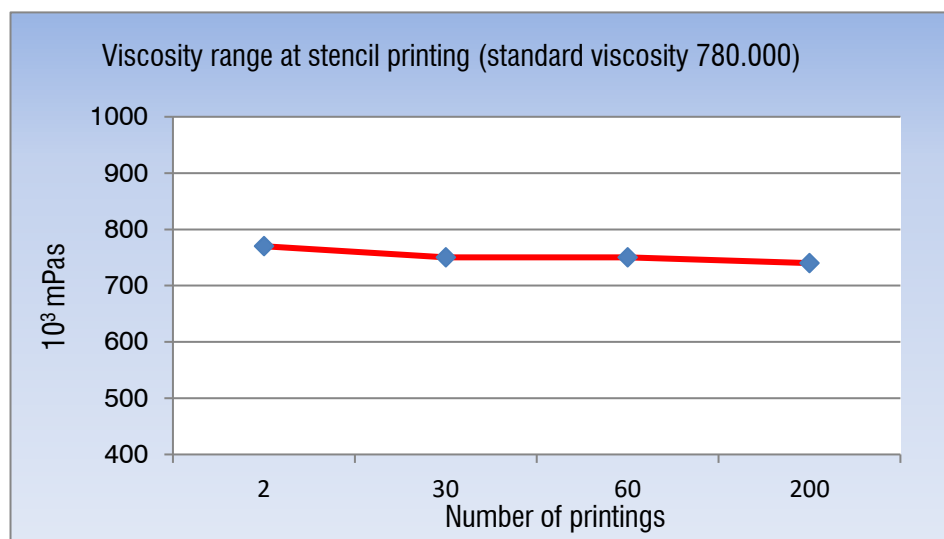
Viscosities : low = 680.000 mPas
Standard = 780.000 mPas
High = 880.000 mPas

Flux : EN ISO 9454, 1231 ; DIN EN 61190-1-3 / IPC J-STD-004B, RELO

Recommended stencil strength : Fine-Pitch = 100-150 µm
Superfine-Pitch = 75-125µm

Organic Carrier Materials

The composition of ISO-Cream® "Clear" solder paste avoids largely excludes encrustation when stored properly and ensures excellent printability and long-lasting, constant viscosity.



SIR-Test according to DIN EN 61189-5, IPC-TM-650 2.6.3.3

The flux residues show a very high surface insulation resistance:

Test duration	ISO-Cream® "Clear" 40°C/93%RF	Blank test 40°C/93%RF
after 24 hours	$2.67 \times 10^{11} \Omega$	$7.10 \times 10^{11} \Omega$
after 96 hours	$2.91 \times 10^{11} \Omega$	$6.23 \times 10^{11} \Omega$
after 168 hours	$6.78 \times 10^{10} \Omega$	$8.35 \times 10^{10} \Omega$

Advantages

- uncoloured flux residues
- low flux expansion
- excellent wetting on all known surfaces
- low volatiles fraction $\Rightarrow$ larger cleaning intervals of the reflow oven
- real no-clean-quality
- excellent printing quality $\Rightarrow$ high stencil time of at least 72 hours
- unobjectionable soldering results with all common soldering profiles
- insensitive against environmental influences
- constancy of the viscosity also with longer printing breaks

Processing Instructions

- The paste should reach room temperature before opening the jar so that there will be no condensed water on the paste.
- Before usage stir **ISO-Cream® "Clear"** slowly and well.
- **FELDER ISO-Cream® "Clear"** stays in its sticky consistency over a long period of time, which allows a trouble-free assembling of the circuit board even after 72 hours. The exact period depends on the ambient conditions, size, and form of the components as well as the printing speed of the machine.
- The exact soldering peak temperature depends inter alia to the warmth capacity of the components.
- **FELDER ISO-Cream® "Clear"** may be soldered under normal atmosphere or inert gas.
- Do not return the used solder paste (e. g. leavings on the stencil) in the jar, because the durability of the remaining paste will be reduced considerably. Keep the used solder paste separately in an empty jar and if necessary, mix it just before usage with fresh solder paste.

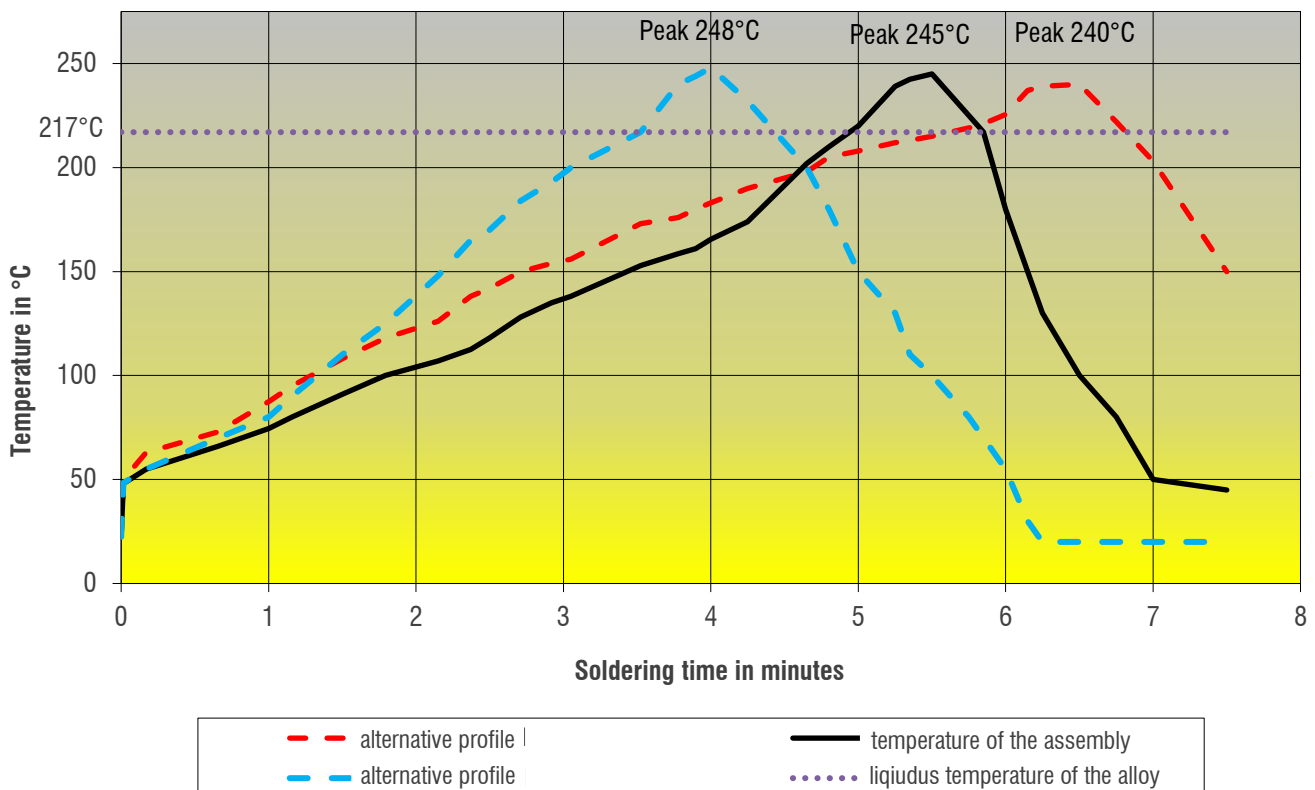
Because of the high "No-clean-level" this solder paste reaches, the flux residues may remain on the soldered circuits and don't have to be cleaned. Nonetheless the residues can be removed e.g., in conventional washing plants.

Recommended Process Parameter

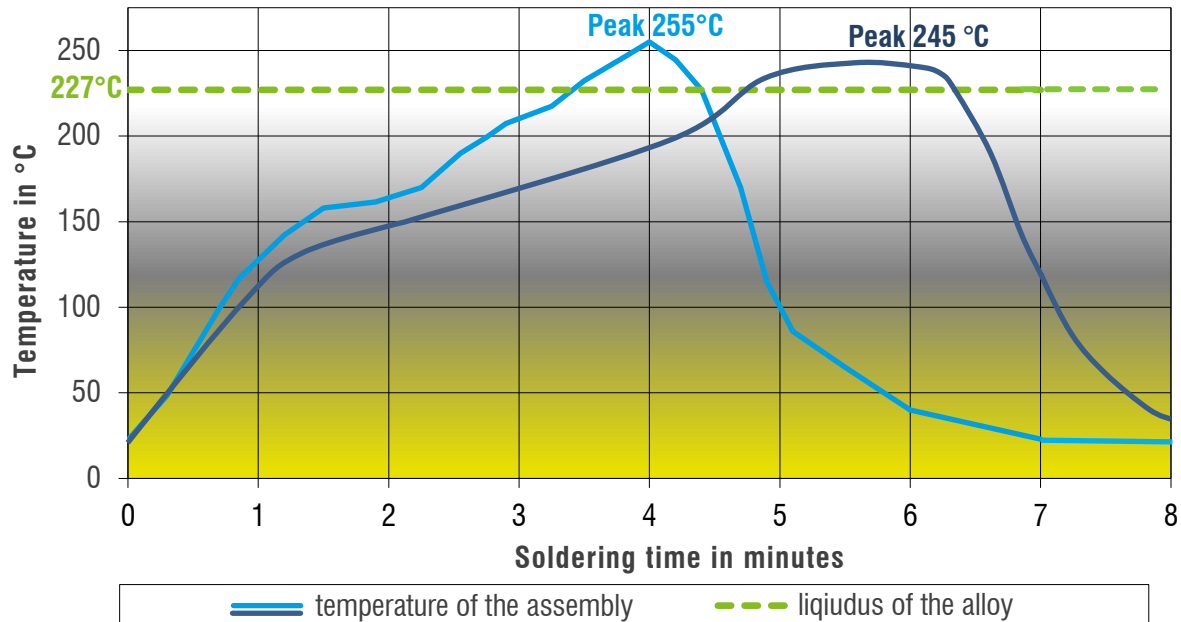
Alloy	Starting ramp time (Start - 150 °C)	Soak time (150 – 200 °C)	Time above liquidus	Peak temperature
SAC387 / SAC405	120 – 210 sec.	50 – 120 sec.	60 – 90 sec.	240 – 248 °C
Sn100Ni+ / SN100 ⁴⁰³ C	80 – 120 sec.	70 – 150 sec.	60 – 100 sec.	245 – 260 °C

Recommended Solder Profiles

ISO-Cream "Clear", Sn95.5Ag3.8Cu0.7 / Sn95.5Ag4Cu0.5



ISO-Cream® "Clear" Sn100Ni+ / SN100⁴⁰³C



Technical Data

Category	Values			Target/standard
	printing (Low/Standard/High)	dispensing	dipping	
Metal powder content	88/ 88.5/ 89 %	85 %	70 %	DIN EN 61189-6
Density of the paste	ca. 3.9 g/cm ³	ca. 3.7 g/cm ³	ca. 3.1 g/cm ³	-
Flux residues	clear, colourless, not sticky			DIN EN 61189-5
Viscosity (Brookfield) (RVT spindle TF, 5rpm, 25°C ± 10%)	680/ 780/ 880 Pas	450 Pas	230 Pas	DIN EN 61189-5, IPC J-STD-005
Stencil time	> 8 h			-
Wetting	No indications of de-wetting resp. non-wetting			DIN EN 61189-5
Mounting	min. 72 hours			-
Corrosiveness	Copper-Mirror-Test: passed (L)			DIN EN 61189-6, IPC-TM-650 2.3.32
Halide content	<0.001 %			DIN EN 61189-6, IPC-TM-650 2.3.28.1
Flux type	RELO			DIN EN 61190-1-3, IPC J-STD-004
Surface resistance SIR	40° C/93 %RF: 6.78E+11			DIN EN 61189-5, IPC-TM-650 2.6.3.3
Durability	12 months at 5 - 15° C / 6 months at room temp.			-

Dispenser Specific Properties

FELDER ISO-Cream® "Clear" in the dispenser version can be exactly applied continuously with all common dosage methods:

- Manual Dosage
- Standard dosage equipment with constant air-pressure
- Dosage devices with impulse air-pressure
- Dosage by scroll valves
- Pin-Transfer resp. dipping
- Micro dosage

Recommended pin diameter: 0.58 mm for grain size 3
0.41 mm for grain size 4
0.34 mm for grain size 5

We recommend a dosage pressure between 1 and max. 3 bar.

The special ISO-Cream® "Clear"-formulation avoids the separation of the solder paste and guarantees so a constant viscosity until complete emptying of the cartridge.

Note

Lead-free FELDER ISO-Cream® "Clear" SMD solder pastes do not contain any substances for which there are restrictions in Directive 2011/65 / EU ("RoHS") (lead content <0.04%).

Notes for use in medical technology

This paste does not contain phthalates or latex.

Storage Advices

Store in tightly closed containers secured against humidity, insolation and warmth effect ISO-Cream® "Clear" is storable for at least 12 months (storage at constant temperature 5 - 15° C), storable at least 6 months (storage at room temperature 20 - 25° C). All cartridge shapes have to be stored upright (i.e. blanking plug down and end cap up).

Delivery Forms

Jars	:	0.250 and 0.500 kg
Cartridges	:	6 and 12 oz Semco®
Dispenser cartridges	:	10 g (5 cm³), 30 g (10 cm³), 100 g (30 cm³)