

# Heat Cured

Linings and Coatings





SÄKAPHEN have been setting the standards in the field of corrosion protection since 1954 offering nearly 70 years of experience as a leading manufacturer and applicator of high quality linings and coatings, protecting critical assets on a multitude of substrates including carbon steel, stainless steel, super duplex, copper-nickel, complex alloys and concrete. These high quality linings have proven to reduce corrosion, fouling and incrustation due to their excellent performance characteristics, offering extended service life compared to non-lined or non-coated items.

Our linings and coatings prevent chemical and galvanic corrosion, potentially dangerous incrustation and fouling when applied tube-side or shell-side within tube bundle Heat Exchangers, Condensers and Coolers and have earned the brand name SÄKAPHEN a worldwide reputation. SÄKAPHEN linings and coatings also protect a vast array of other critical assets which include ISO Tank Containers, Process Vessels, Silos, Turbines, Pipework and Box Coolers to name a few.

SÄKAPHEN linings and coatings are manufactured as heat-cured and cold-cured resin combinations according to own recipes. They are applied in multiple layers in special process technologies forming a chemically resistant thermosetting film.

This brochure focuses on one component thermally hardening coatings, also called heat-cured coatings, which are applied in a multilayer process by flooding or spraying and cured in special polymerization ovens at temperatures up to 220°C. Following thermal curing, the single-component thermosetting linings and coatings form a homogenous, hard but flexible, hydrophobic protective film. These products are applied solely by SÄKAPHEN in Gladbeck, Germany and its international network of authorized applicators.

**Your perfect partner for corrosion protection**

# SÄKAPHEN

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# Heat Cured Linings and Coatings

## High-End Corrosion Protection and Carbon Footprint Reduction.

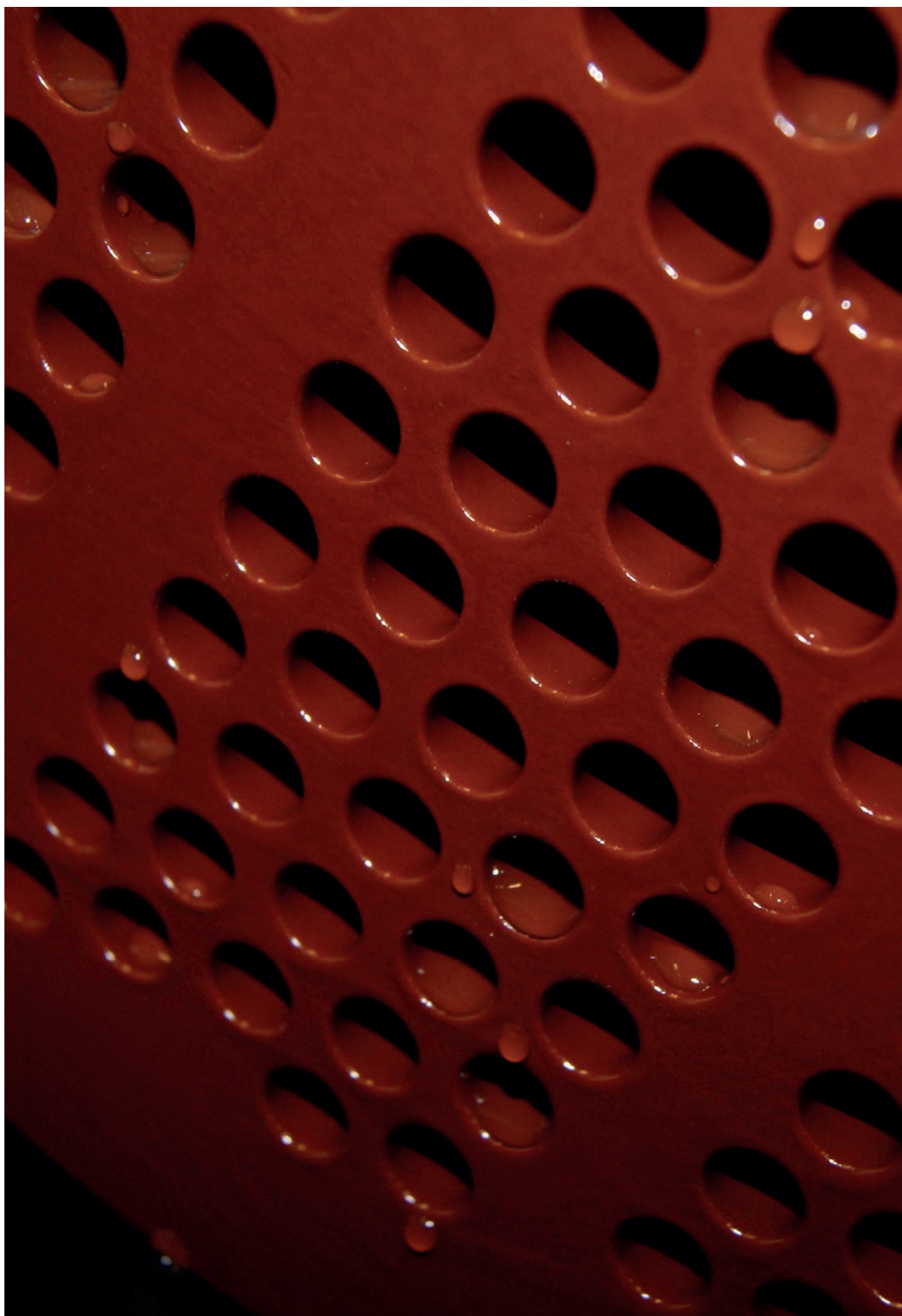
When utilised in Heat Exchangers, Condensers and Coolers, the phenolic and epoxy-phenolic resin combinations prevent incrustation and fouling offering further corrosion protection. The effect of our range of baked phenolics and epoxy-phenolics on the heat transfer rate is measured in W/mK and is proven to be a minimal value. The overall heat transfer rate of carbon steel together with SÄKAPHEN lining exceeds most inorganic alternatives such as stainless steel and others. Consequently, investment and maintenance costs are reduced with the additional benefit of a lowering of the carbon footprint.

When evaluating the lifetime Total Cost of Ownership (TCO) as a financial estimate to establish both direct and indirect costs of a Heat Exchanger consisting of 600 tubes (25mm o/d x 2.6mm wall thickness x 6m length) constructed from Carbon Steel (CS) and protected with SÄKAPHEN Si 570 AR, a baked epoxy-phenolic lining and exposed to river water, direct comparisons can be made with the same Heat Exchangers constructed from other materials.

For example, a Carbon Steel (CS) SÄKAPHEN Si 570 AR lined Heat Exchanger when compared directly to Heat Exchangers constructed from Stainless Steel (SS), Copper-Nickel (Cu-Ni) or Titanium (Ti), clearly shows the initial investment costs for a Carbon Steel (CS) SÄKAPHEN lined Heat Exchanger, are by far the most economical, and when taking into account the operational costs of cleaning, repair or even replacement over an 8 year period this is proven even more so.

This is evidenced even further when comparing exposure to saline sea water, where an unlined Heat Exchanger incurs additional increased cleaning costs due to enhanced incrustation, fouling and eventually a reduced life cycle. Dependent on specific service duty, a Carbon Steel (CS) SÄKAPHEN lined Heat Exchanger outperforms not only an untreated Carbon Steel (CS) Heat Exchanger during the observation period of 8 years. In conclusion, SÄKAPHEN is a cost efficient method of enhancing asset protection.





# Laboratory

## Research and Development of Bespoke Solutions for Heavy Duty Corrosion Protection.

A crucial principle of SÄKAPHEN's corporate structure is continued extensive research, development and professional administration of our bespoke products best suited for our customer needs, including technical and legal requirements.

SÄKAPHEN linings and coatings have never been more essential and in demand than they are today. The world's chemical processing infrastructure is rapidly evolving with the industry demanding increasingly efficient processes, logistics and energy production. Linings and coatings play a crucial role for a multitude of equipment, vital for the safety and reliability of plant operation, without well-developed linings and coatings, equipment would fall susceptible to rapid corrosion and deterioration.

SÄKAPHEN's ultimate goal is supplying lasting high quality lining and coating products, continuously being developed and refined to achieve maximum results and return on investment (ROI). We work alongside our customers across the world, to provide the best solutions to all their corrosion protection challenges, ensuring reduced maintenance costs and increased operational efficiency.

Conducting frequent resistance tests, customer research and development within our laboratories to further advance our lining and coating products as much as to develop new products adding value to our customers facilities. Prior to release to our authorized applicators, the products are thoroughly tested within our workshops and finally approved. The resulting linings and coatings are administered as bespoke solutions, best meeting our client's needs and requirements.





# Authorized Applicators

SÄKAPHEN works together with powerful partners, who offer expert advice, service and reliability when it comes to optimum corrosion protection.

## Europe

### **Germany**

SÄKAPHEN Germany

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### **Italy**

Donelli Alexo S.r.l.

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### **Norway**

Kinera Coating AS

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### **Norway**

Multi Solutions AS

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### **Spain**

Talleres Landaluce S.A.

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### **UK and Ireland**

Lithgow SAEKAPHEN Ltd./KUE Group

## Asia and Oceania

### **Australia**

Multi Solutions Australia Pty. Ltd.

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### **China**

Jiangsu Simijia Tank Service Co., Ltd

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### **India**

Sri Krishna Descalers Pvt Ltd

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### **Singapore**

Multi Eco Solutions Asia Pte. Ltd.

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### **South Korea**

SAEKAPHEN Korea

## Middle East

### **Kingdom of Saudi Arabia**

DLPS Diversified Lines of Petroleum Service

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### **Kingdom of Bahrain**

DLPS Diversified Lines of Petroleum Service

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### **Pakistan**

Advanced Oil and Gas Technologies (PVT.) Ltd.

## USA

### **USA**

Curran International

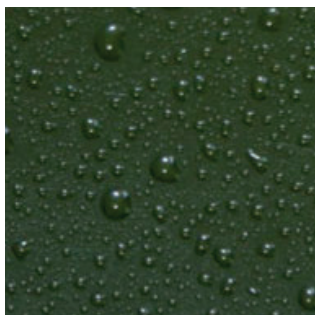
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### **USA**

Gartner Coatings







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# Si 14 E

Phenolic Based Heat Cured Hydrophobic Lining for Highly Acidic to Weak Alkali Media. High Gloss, Dark Green Finish.

SÄKAPHEN Si 14 E is a high-quality hydrophobic single-component phenolic based thermosetting heat cured lining. Si 14 E is self-priming and formulated and developed for direct to metal application.

Si 14 E is chemically resistant to organic and inorganic acids, salt solutions, aliphatic and aromatic hydrocarbons, fume gases, alcohols and cooling water including brackish, river, sea and deionized. Si 14 E is also resistant to temperature fluctuations.

The lining film surface is hard elastic with exceptional hydrophobic properties, preventing caking, fouling and incrustation.

All of the SÄKAPHEN heat cured range of products once polymerized are fully machinable.

For the lining and coating of Heat Exchangers, Condensers, Coolers, Air Coolers, Turbines, Impellers, Pipework, Meter Provers (Prover Loops), Desalination Plants, Centrifuges, ISO Tank Containers, Vessels and Storage Tanks.

SÄKAPHEN Si 14 E is the lining that started the SÄKAPHEN journey, the original and still the best.





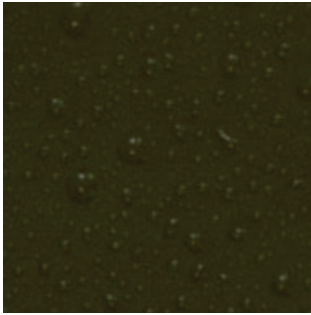
## Product Data

### Si 14 E

Number of components	1
Color	Dark Green
pH Range	1 - 8 pH
Total dry film thickness	180-200 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	≤ ΔT 30°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	(VDE 0304): 33*10-6 mm/mm°C
Pore testing	67,5 Volt
Pendulum hardness acc. to König	213 sec (6°)
Shore D Hardness	94 Shore D
Adhesion Test	> 20 N/mm² [MPa]
Salt spray test	1400 hours
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	0,89 µm Ø 3 readings
Surface tension	> 28 < 35 mN/m

Product certificates are available for download on [www.saekaphen.com](http://www.saekaphen.com).

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# Si 14 E BKW

Phenolic-Based Heat Cured Hydrophobic Lining for use as Top Coat for Si 14 E for Highly Acidic to Weak Alkali Media, especially Chlorinated Hydrocarbons. High Gloss, Clear Finish.

SÄKAPHEN Si 14 E BKW is a high-quality hydrophobic single-component phenolic based thermosetting heat cured lining, developed as a top coat for Si 14 E.

Si 14 E BKW is chemically resistant to organic and inorganic acids, salt solutions, aliphatic and aromatic chlorinated hydrocarbons. Si 14 E BKW is also resistant to temperature fluctuations and once polymerized is fully machinable.

The lining film surface is hard elastic with excellent hydrophobic properties, preventing caking, fouling and incrustation.

Free from fillers and pigmentation as a final top coat for SÄKAPHEN Si 14 E, particularly for the internals of ISO Tank Containers, Vessels and Storage Tanks where protection from Chlorinated Hydrocarbons is required.

**SÄKAPHEN - 60 years of first-rate knowledge and applied experience.**







## Product Data

### Si 14 E BKW

Number of components	1
Color	Clear (Topcoat on green)
pH Range	1 - 8 pH
Total dry film thickness	25-30 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	≤ ΔT 30°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	214 sec (6°)
Shore D Hardness	94 Shore D
Adhesion Test	> 20 N/mm² [MPa]
Salt spray test	Under examination
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	0,53 µm Ø 3 readings
Surface tension	> 28 < 35 mN/m

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# Si 14 EG

Diffusion resistant, Phenolic Based Heat Cured Lining for Highly Acidic to Weak Alkali Media. Matt Red Finish.

SÄKAPHEN Si 14 EG is a high-quality single-component phenolic based thermosetting heat cured lining that is resistant to water vapor diffusion ( $\Delta T$  85°C). Si 14 EG is self-priming and developed for direct to metal application.

Si 14 EG is chemically resistant to weak acidic to light alkaline aqueous liquids and vapors, organic and inorganic acids, fume gases, aromatic and aliphatic solvents and cooling water including brackish, river and sea water. Si 14 EG is also resistant to temperature fluctuations.

The lining film surface is hard elastic and once polymerized is fully machinable.

For the lining of Condensers, Condensate Receivers, Evaporators, Thermal Degassers, Hot Water and Steam Stressed Plant Parts and Uninsulated Tanks. Especially suitable for plant parts that are exposed to hot water and steam in neutral and acidic environments. Si 14 EG is also resistant to water vapor diffusion.

Extended customer value applied as lining.





## Product Data

### Si 14 EG

Number of components	1
Color	Red
pH Range	3 - 8 pH
Total dry film thickness	250 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	$\leq \Delta T$ 85°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	134 sec (6°)
Shore D Hardness	94 Shore D
Adhesion Test	> 20 N/mm² [MPa]
Salt spray test	Under examination
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	2,00 µm Ø 3 readings
Surface tension	n/a

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# Si 17 E

Phenolic Based Heat Cured Hydrophobic Lining for Highly Acidic to Weak Alkali Media. Electrically conductive. Satin Olive Finish.

SÄKAPHEN Si 17 E is a high-quality hydrophobic single-component electrically conductive phenolic based thermosetting heat cured lining. The lining is self-priming and developed for direct to metal application. The electrical volume resistance is below  $10^7 \Omega$

Si 17 E is chemically resistant to various liquid and gaseous media, including but not limited to organic and inorganic acids, aliphatic and aromatic hydrocarbons, salt solutions, oils and greases and acidic to weakly alkaline liquids up to max. pH 8. The lining is also resistant to temperature fluctuations.

Si 17 E also provides high impact and abrasion resistance. The surface contains exceptional hydrophobic properties, preventing caking, fouling and incrustation and is resistant to water vapor diffusion ( $\leq \Delta T 85^\circ\text{C}$ ). Si 17 E once polymerized is fully machinable.

For the lining of Containers and Process Vessels for storing and transporting chlorinated hydrocarbons and flammable liquids, classified as dangerous according to class AI / AII and B and water endangering media (aliphatic and aromatic chlorinated hydrocarbons) due to an electrical volume resistance below  $10^7 \Omega$ .

**SÄKAPHEN sets standards  
in processes and plant safety.**





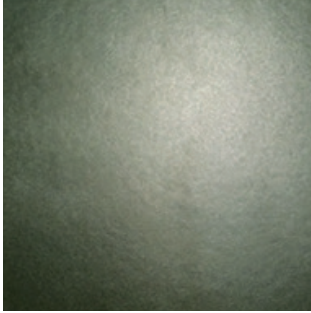
## Product Data

### Si 17 E

Number of components	1
Color	Olive
pH Range	1 - 8 pH
Total dry film thickness	180-200 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	≤ ΔT 85°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	9 Volt
Pendulum hardness acc. to König	134 sec (6°)
Shore D Hardness	95 Shore D
Adhesion Test	> 30 N/mm <sup>2</sup> [MPa]
Salt spray test	1250 hours
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	2,8 µm Ø 3 readings
Surface tension	> 38 < 41 mN/m

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# Si 17 N

Phenolic Based Heat Cured Lining for Highly Acidic to Weak Alkali Media and Metal Oxychlorides. Satin Grey Olive Finish.

SÄKAPHEN Si 17 N is a high-quality single-component phenolic based thermosetting heat cured, abrasion and impact resistant lining. Si 17 N is self-priming and developed for direct to metal application.

Si 17 N is chemically resistant to metal oxychlorides ( $\text{VOCL}_3$ ), 40% hydrofluoric acid, organic and inorganic acids, fume gases, chlorinated aromatic and aliphatic hydrocarbons, oils and greases. The lining is also resistant to temperature fluctuations.

The surface contains exceptional smooth properties, preventing caking, fouling and incrustation. Si 17 N is resistant to water vapor diffusion ( $\Delta T 85^\circ\text{C}$ ) and once polymerized is fully machinable

For the lining of Storage, Transportation and Process Vessels, Pipework, Rotating Equipment and others where excellent chemical resistance, enhanced abrasion resistance and / or resistance against diffusion is needed.

Extensive knowledge and experience for individual lining solutions.







## Product Data

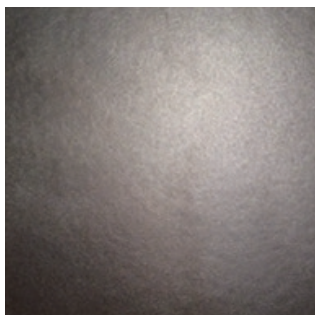
### Si 17 N

Number of components	1
Color	Grey - olive
pH Range	1 - 8 pH
Total dry film thickness	180-200 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	$\leq \Delta T$ 85°C
Overcoating Waiting Time	no limitations
Chemical Curing	after final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	153 sec (6°)
Shore D Hardness	95 Shore D
Adhesion Test	> 30 N/mm <sup>2</sup> [MPa]
Salt spray test	1250 hours
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	1,27 µm Ø 3 readings
Surface tension	> 38 < 41 mN/m

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# Si 17 TC

Phenolic Based Heat Cured Hydrophobic Lining for Acidic to Weak Alkali Media. Satin Anthracite Finish.

SÄKAPHEN Si 17 TC is a high-quality abrasion and impact resistant hydrophobic single-component phenolic based thermosetting heat cured coating, with enhanced permeation resistance ( $\Delta T$  65°C). Si 17 TC is self-priming and formulated for direct to metal application.

Si 17 TC is chemically resistant to a variety of mediums ranging from strongly acidic to weakly alkaline aqueous liquids and vapors, fume gases, organic and inorganic acids, chlorinated aromatic and aliphatic hydrocarbons, all types of cooling water including brackish, river and sea water, as well as deionized water, oils and greases. Si 17 TC is also resistant to temperature fluctuations.

The surface contains outstanding hydrophobic properties, preventing caking, fouling and incrustation and once polymerized the lining is fully machinable.

For the coating of ISO Tank Containers, Process Vessels, Pipework, Rotating Equipment and other equipment where exceptional chemical and abrasion resistance as well as enhanced permeation resistance is required.

**SÄKAPHEN: where unrivalled corrosion protection against acids and hydrocarbons is required.**





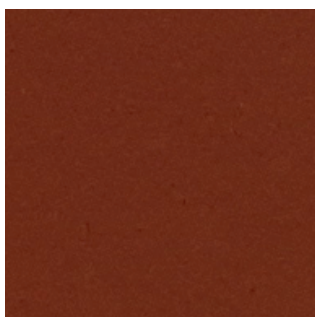
## Product Data

### Si 17 TC

Number of components	1
Color	Anthracite
pH Range	1 - 8 pH
Total dry film thickness	180-200 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	≤ ΔT 65°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	153 sec (6°)
Shore D Hardness	95 Shore D
Adhesion Test	> 30 N/mm <sup>2</sup> [MPa]
Salt spray test	1250 hours
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	1,27 µm Ø 3 readings
Surface tension	> 38 < 41 mN/m

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# Si 17 TC **Antibacterial**

Phenolic-Based Heat Cured Hydrophobic Food Grade Lining for Acidic to Weak Alkali Media. Actively Germicidal. Satin Reddish Finish.

SÄKAPHEN Si 17 TC Antibacterial is a high-quality abrasion and impact resistant hydrophobic single-component phenolic based thermosetting heat cured lining. The lining is self-priming and developed for direct to metal application.

Si 17 TC Antibacterial contains active germicidal properties and is approved as food grade as per §§ 30, 31 (1) German Food Law (LFGB) and EU guideline Art. 3 (EG) Nr. 1935/2004.

Si 17 TC Antibacterial is chemically resistant to various mediums ranging from strongly acidic to weakly alkaline aqueous liquids and vapors, fume gases, organic and inorganic acids, chlorinated aromatic and aliphatic hydrocarbon, all types of cooling water (including brackish, river and sea water, as well as deionized water, oils and greases. The lining is also resistant to temperature fluctuations.

The lining film surface has outstanding hydrophobic properties, preventing caking, fouling and incrustation and once polymerized the lining is fully machinable.

For the lining of ISO Tank Containers, Process Vessels, Pipework, Rotating Equipment and other equipment where excellent chemical resistance, as well as abrasion resistance is needed in combination with antibacterial properties and/or food grade quality.

**SÄKAPHEN is breaking new ground  
with innovative high-performance  
functional linings.**







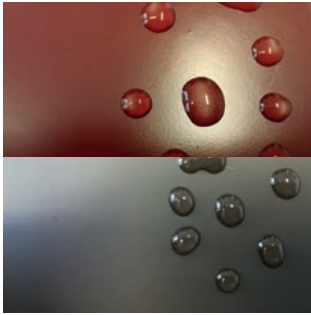
## Product Data

### Si 17 TC Antibacterial

Number of components	1
Color	Reddish
pH Range	1 - 8 pH
Total dry film thickness	180-200µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	$\leq \Delta T \text{ } 65^{\circ}\text{C}$
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	153 sec (6°)
Shore D Hardness	95 Shore D
Adhesion Test	> 30 N/mm <sup>2</sup> [MPa]
Salt spray test	1250 hours
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	1,27 µm Ø 3 readings
Surface tension	> 38 < 41 mN/m

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# TC Lining

Phenolic-Based Heat Cured Hydrophobic Lining offering Three-Dimensional Cross Linking and certified by Bureau Veritas for Highly Acidic to Weak Alkali Media. Matt Red Finish.

SÄKAPHEN TC-Lining is a high-quality heat cured hydrophobic single-component high build phenolic based lining system, consisting of a Base and Top Coat (Grund & Deck). Formulated on a modification of thermoset polymers with a close-meshed bond of the macromolecule. This three-dimensional chemical bonding of the resin, the TC-Lining is highly cross-linked after thermal polymerization (heat cure). The combination of various fillers and pigments in differing compositions, offers exceptional lining properties. TC-Lining is self-priming and formulated for direct to metal application.

TC-Lining is chemically resistant to a range of strongly acidic to weakly alkali mediums, aliphatic and aromatic chlorinated hydrocarbons, as well as organic and inorganic salt solutions - certified by Bureau Veritas. In addition the lining is also resistant to temperature fluctuations.

The lining film is hard elastic and contains exceptional hydrophobic properties. With a relative high dry film thickness of up to 400 microns, the lining offers long-lasting protection against abrasion, caking and incrustation. Furthermore, once polymerized the lining is fully machinable.

For the lining of various Transportation and Storage Containers, ISO Tank Containers, Process Vessels and Pipework.

**SÄKAPHEN R&D - here to solve all your lining challenges.**





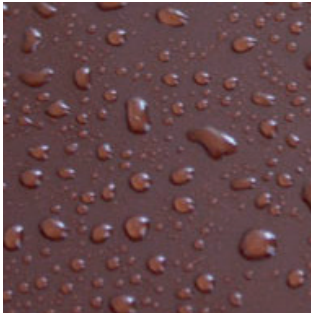
## Product Data

### TC Lining

Number of components	1
Color	Red (Top coat)
pH Range	1 - 13 pH
Total dry film thickness	350 - 400 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	≤ ΔT 30°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	195 sec (6°)
Shore D Hardness	93 Shore D
Adhesion Test	> 30 N/mm² [MPa]
Salt spray test	n/a
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	<1 µm Ø 3 readings
Surface tension	<28 mN/m

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# Si 57 E

Epoxy-Phenolic based Heat Cured Hydrophobic Lining for Strong Alkalies to Weak Acidic Media. High Gloss, Brown Finish.

SÄKAPHEN Si 57 E is a high-quality hydrophobic single-component epoxy-phenolic based thermosetting heat cured lining. Si 57 E is self-priming and developed for direct to metal application.

Si 57 E is chemically resistant to a variety of substances ranging from strong alkalies to weak acidic media, salt solutions, greases, oils and gases and all types of cooling water including brackish, river, sea water and deionized water. Si 57 E is also resistant to temperature fluctuations.

The lining film surface is hard elastic with exceptional hydrophobic properties, preventing caking, fouling and incrustation. Once polymerized, the lining is fully machinable with a formaldehyde concentration level of less than 0.1%.

For the lining and coating of Heat Exchangers, Turbines, Impellers, Pipework, Meter Provers (Prover Loops), Waste Water Treatment Plants, Centrifuges and Tanks.

Si 57 E when applied to carbon steel provides outstanding ROI (Return On Investment) and efficient plant operation.





## Product Data

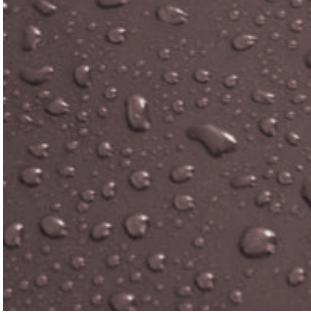
### Si 57 E

Number of components	1
Color	Brown
pH Range	3 - 14 pH
Total dry film thickness	180-200 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	$\leq \Delta T$ 30°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	200 sec (6°)
Shore D Hardness	94 Shore D
Adhesion Test	> 30 N/mm <sup>2</sup> [MPa]
Salt spray test	1400 hours
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	1,11 µm Ø 3 readings
Surface tension	> 28 mN/m

Product certificates are available for download on [www.saekaphen.com](http://www.saekaphen.com).

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# Si 57 EL

Epoxy-Phenolic-based Heat Cured Hydrophobic Lining for Strong Alkalis to Weak Acidic Media. For the Coating of Finned (Air) Coolers. High Gloss, Dark Brown Finish.

SÄKAPHEN Si 57 EL is a high-quality hydrophobic single-component epoxy-phenolic thermosetting heat cured lining specifically formulated for the coating of finned air coolers as used in HVAC and HVAC-R equipment. The lining is self-priming and formulated for direct to metal application. The coating can be applied on coolers being operated either onshore and or offshore in an aggressive marine environment. In marine environment, the polyurethane topcoat is recommended.

Si 57 EL is chemically resistant to fumes, mist (also in droplets) of strong alkaline to weak acidic media, salt solutions, greases, oils and gases and all types of cooling water (including brackish, river, sea water and deionized water) and when used in conjunction with a polyurethane topcoat offers UV protection. Si 57 EL is also resistant to temperature fluctuations.

The lining film surface is hard elastic with outstanding hydrophobic properties, preventing caking, fouling and incrustation. Once polymerized, the lining is fully machinable with a formaldehyde concentration level of less than 0.1%.

Optimized for coating of Finned Air Coolers as used in HVAC and HVAC-R equipment, due to extremely low viscosity.

**Extending the life of HVAC and HVAC-R Equipment around the world in the harshest of conditions.**





## Product Data

### Si 57 EL

Number of components	1
Color	Dark Brown
pH Range	3 - 14 pH
Total dry film thickness	30-80 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	$\leq \Delta T$ 30°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	200 sec (6°)
Shore D Hardness	94 Shore D
Adhesion Test	> 30 N/mm <sup>2</sup> [MPa]
Salt spray test	1400 hours
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	1,12 µm Ø 3 readings
Surface tension	> 28 mN/m

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# Si 57 EG

Epoxy-Phenolic-based Heat Cured Lining for Strong Alkalies to Weak Acidic Media. Matt, Brown Finish.

SÄKAPHEN Si 57 EG is a high-quality single-component epoxy-phenolic thermosetting heat cured lining, resistant to water vapor diffusion ( $\leq \Delta T 85^\circ\text{C}$ ). Si 57 EG is self-priming and formulated for direct to metal application.

Si 57 EG is chemically resistant to aqueous alkaline to weak acidic media and vapors of all types of cooling water including brackish, river and sea water.

The film lining surface is hard elastic and once polymerized, the lining is fully machinable with a formaldehyde concentration level of less than 0.1% and is also resistant to temperature fluctuations.

Fields of application: For the lining of Heat Exchangers, Condensers and Evaporators, Turbo Machinery Housings, Uninsulated Tanks, Process Tanks and Vessels, Condensate Tanks, Desalination Plant, Thermal Degasifiers and Pipelines. Suitable for items that are exposed to hot water and steam in neutral and alkaline environments. Si 57 EG is also resistant to water vapor diffusion.

For the lining of Heat Exchangers, Condensers and Evaporators, Turbo Machinery Housings, Uninsulated Tanks, Process Tanks and Vessels, Condensate Tanks, Desalination Plant, Thermal Degasifiers and Pipelines. Suitable for items that are exposed to hot water and steam in neutral and alkaline environments. Si 57 EG is also resistant to water vapor diffusion.

**SÄKAPHEN provides absolute long term protection against corrosion and incrustation.**







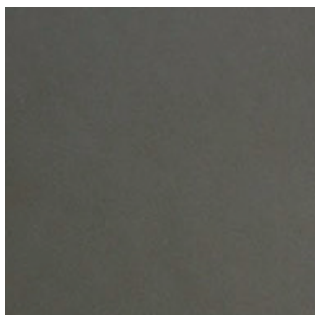
## Product Data

### Si 57 EG

Number of components	1
Color	Brown
pH Range	4 - 13 pH
Total dry film thickness	250 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	$\leq \Delta T$ 85°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	112 sec (6°)
Shore D Hardness	94 Shore D
Adhesion Test	> 20 N/mm <sup>2</sup> [MPa]
Salt spray test	Under examination
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	1,95 µm Ø 3 readings
Surface tension	n/a

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# Si 57 DCS

Epoxy-Phenolic-based Heat Cured Lining for Strong Alkalies to Weak Acidic Media. Satin, Olive Grey Finish.

SÄKAPHEN Si 57 DCS is a high-quality single-component epoxy-phenolic based thermosetting heat cured lining. Uniquely formulated for customer specific needs to meet end user requirements in the petrochemical and oil and gas industry. Si 57 DCS is self-priming and formulated for direct to metal application.

Si 57 DCS is chemically resistant to aqueous alkaline to weak acidic media and vapors of all types of cooling water including brackish, river and sea water. With a 9 Moh's hardness, Si 57 DCS fillers make the lining almost as hard as diamonds which have a hardness of 10 Moh's.

The lining film surface is hard elastic with excellent hydrophobic properties, preventing caking, fouling and incrustation and once polymerized, the lining is fully machinable with a formaldehyde concentration level of less than 0.1%.

Especially suitable for the lining of Heat Exchangers, Condensers and Coolers.

SÄKAPHEN caters to provide bespoke lining solutions to meet client specific needs.







## Product Data

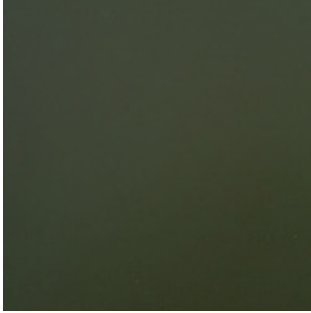
### Si 57 DCS

Number of components	1
Color	Olive grey
pH Range	3 - 14 pH
Total dry film thickness	180-200 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	$\leq \Delta T$ 30°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	130 sec (6°)
Shore D Hardness	94 Shore D
Adhesion Test	> 30 N/mm <sup>2</sup> [MPa]
Salt spray test	Under examination
Impact Strength	> 800 mm (1 kg)
Surface smoothness (Ra)	1,2 µm Ø 3 readings
Surface tension	n/a

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# Si 570 AR

Epoxy-Phenolic-based Heat Cured Hydrophobic Lining for Strong Alakis to Weak Acidic Media. Offers excellent Abrasion Resistance. Satin, Dark Grey Finish.

SÄKAPHEN Si 570 AR is a high-quality single-component hydrophobic epoxy-phenolic thermosetting heat cured coating. Si 570 AR as self-priming and formulated and developed for direct to metal application. The lining offers excellent abrasion resistance making it the ideal coating solution for rotating equipment.

Further the product offers an enhanced heat conductivity. The lining offers 30% more performance in convection compared to regular linings. This has been tested and certified by a third party laboratory.

Si 570 AR is chemically resistant to liquids, fumes and mist (also in droplets) of strong alkaline to weak acidic media, salt solutions, greases, oils and gases and all types of cooling water including brackish, river, sea water and deionized water.

The coating surface is hard elastic containing exceptional hydrophobic properties, preventing caking, fouling and incrustation. Once polymerized, the lining is fully machinable with a formaldehyde concentration level of less than 0.1%.

For the particular use of coating Impellers, including machinery exposed to aggressive and abrasive alkaline substances at high temperatures.

**30% enhanced heat conductivity  
3rd party tested.**





## Product Data

### Si 570 AR

Number of components	1
Color	Dark Grey
pH Range	4 - 13 pH
Total dry film thickness	180-200 µm
Temperature resistance dry (dry air oven)	-20°C - +180°C/200°C
Temperature resistance wet (water)	-20°C - +180°C/200°C
Resistance to water vapor diffusion	≤ ΔT 30°C
Overcoating Waiting Time	No limitations
Chemical Curing	After final bake
Linear Thermal Expansion	n/a
Pore testing	67,5 Volt
Pendulum hardness acc. to König	132 sec (6°)
Shore D Hardness	94 Shore D
Adhesion Test	> 30 N/mm² [MPa]
Salt spray test	n/a
Impact Strength	> 1000 mm (1 kg)
Surface smoothness (Ra)	1,94 µm Ø 3 readings
Surface tension	< 28 mN/m

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Your perfect partner for corrosion protection



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