



KRAHN

SPECIALTY FLUIDS

EXCEPTIONAL ENERGY EFFICIENT
HEAT TRANSFER FLUIDS FOR
SUSTAINABLE OUTCOMES

NON-TOXIC, READILY
BIODEGRADABLE, CHEMICALLY
STABLE AND SAFE



CRANE Temper[®]



REDUCED ENERGY CONSUMPTION
RESULTING IN SIGNIFICANT LONG
TERM SAVINGS

DRIVING ENVIRONMENTAL
CHANGE FOR A GREENER FUTURE

CRANE Temper®

WORLD CLASS PRODUCTS MADE IN SWEDEN

KRAHN Specialty Fluids is the new name for Temper Technology, a recognised market leader, renowned for its products, innovation and technical excellence. Established in 1996, Temper Technology serves a wide range of industries with Fire Protection and Refrigeration fluids for businesses large and small, all of whom rely upon our technical leadership to deliver products and solutions that are energy efficient and reduce

environmental impact, now and for future generations. In early 2021, Temper Technology AB was acquired by the KRAHN Chemie group, a family-owned and internationally renowned chemical distribution business with a history spanning 100 years. This acquisition presents an exciting future for our customers and distributors, strengthening our geographical reach, technical expertise and market know-how.

WHAT IS CRANE TEMPER?

CRANE Temper is the product of choice for a wide range of refrigeration applications. The ready-mixed and non-toxic organic salt solution is readily biodegradable, has a very low viscosity, high specific heat capacity and outstanding thermal conductivity.

ADVANTAGES WITH CRANE TEMPER?

This world class range, manufactured in Sweden, combines chemical stability with exceptional energy efficiency resulting in significant long term savings and sustainable outcomes. Unlike glycol based products, CRANE Temper will not degrade over time resulting in an exceptional long life span. CRANE Temper also has a high specific heat capacity (eg 3.3kJ/kg+ K for CRANE Temper -20 °C at 20 °C) and outstanding thermal conductivity compared with propylene glycol.

Since the viscosity of CRANE Temper is relatively low compared with glycol, pumps and pipe work can be smaller without compromising performance. This cuts cost of purchasing, installing and running the system. CRANE Temper can, due to the low viscosity, be used at low temperatures down to -60 °C. It is available throughout the world in seven different versions from -10 °C to -60 °C.

- LOW VISCOSITY
- HIGH THERMAL CONDUCTIVITY
- REDUCED ENERGY COST
- READILY BIODEGRADABLE
- ADAPTED FOR THE FOOD INDUSTRY
- ADVANCED INHIBITOR TECHNOLOGY
- PERSONALIZED TECHNICAL SUPPORT

CRANE TEMPER, THE IDEAL HEAT TRANSFER FLUID

The secret behind CRANE Temper's excellent fluid and environmental properties lies in the optimal mix of organic salts giving it its very low viscosity. This in turn reduces the overall energy consumption and makes it ideal for industrial refrigeration and food industry. The fluid contains an advanced organic adsorption inhibitor package to ensure an optimal corrosion protection.

CRANE Temper is colourless to yellowish and it is free from nitrites, borates, phosphates, molybdates and silicates. To ensure the high quality of the product, CRANE Temper is always supplied ready-to-use and is available in seven different versions with freezing points from -10 °C to -60 °C.

PERFORMANCE / ENERGY SAVING

CRANE Temper's excellent fluid properties in terms of viscosity, specific heat and thermal conductivity make it the ideal choice of Heat Transfer Fluid (HTF) at very low temperatures. The great fluid properties not only enable you to use smaller pumps and heat exchangers but also significantly reduce the total energy consumption. This applies especially at very low temperatures.

PACKAGING

CRANE Temper is supplied in the following packaging, as well as bulk deliveries:



25L blue canister made of PE with sealed cap, the canister's weight is 1,2 kg.



1000L black IBC, the IBC weight is 70,0 kg. Outlet valve NW 50.



208L blue barrel made of PE, with a sealed cap, the barrel's weight is 9,0 kg.



Bulk deliveries for larger volumes.

TESTIMONIALS



**INNOVATION, COLLABORATION, SUCCESS.
WE BRING IT TOGETHER.**



HILTON FOOD GROUP



COOLED STORAGE ROOM FOR FOOD READY FOR SHIPPING

CRANE TEMPER -30

One of the most modern meat production and packaging centers in Europe - total investment of 5m euros for refrigeration and ventilation - with 22 packaging lines and high quality distribution throughout Sweden.

It demanded an unbroken cold chain and utilises an indirect cooling system with i.e. Ammonia (NH₃) as a refrigerant and CRANE Temper as heat transfer fluid, providing a powerful and environmental refrigeration solution.

Used in many secondary cooling systems across the world, CRANE Temper is non-toxic and registered in NSF Nonfood Compounds Program.

A system with secondary loops can easily be extended/ adapted without affecting ongoing cooling activities, by just adding an additional loop. After expanding the mid-Sweden facility in 2016, the CRANE Temper -30 volume is now 50 m³ and continues to achieve optimum performance.

LA FARM



FOOD LOGISTIC CENTER

CRANE TEMPER -15

When it was time to invest in a new 14,000 m² refrigerated logistics center, the Greece Feta cheese business looked to KRAHN Specialty Fluids for a safe and energy efficiency solution with low environmental impact.

CRANE Temper -15 is used as secondary fluid cooled from return temperature of -2°C down to a supply of -6°C. With a secondary system, the end user avoids the use of ammonia circulating the cold storage plant (people working area). In addition to the increased safety, the favorable thermal properties of CRANE Temper results in lower pressure drop and improved heat transfer compared with alternative heat transfer fluids.



ACG EUROPE



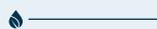
PHARMAUETICAL INDUSTRY

CRANE TEMPER -20

A hard capsule manufacturer, ACG Europe in Croatia, is producing capsules for the pharmaceutical industry. This high demanding industry is dependent on a reliable process. In this case it is including a cooling step, in which CRANE Temper is applied as a heat transfer fluid in a secondary system and also acts as protection against freezing.



CLIMATE SIMULATION



ENVIRONMENTAL TEST CENTER

CRANE TEMPER -60

To simulate outdoor climate, test chambers are widely used in the automotive industry for low temperature testing of both vehicles, components and parts such as engines, batteries, heating systems and lubricants.

Low temperature testing is also performed in other industrial applications such as IT, Telecoms and Healthcare.

CRANE Temper products are ideal at creating extreme temperature conditions (down to -60°C) as a heat transfer fluid in an indirect system in combination with a primary refrigeration unit.

MARTINEZ LORIENTE



WASTE HEAT BRINE DEFROSTING

CRANE TEMPER -55

The CO_2 air cooler at this Spanish meat processing and packaging center requires regular defrosting. To significantly reduce energy costs, electrical defrosting has been replaced with brine defrosting utilizing CRANE Temper products. The defrosting process is more efficient and benefits from a short payback period. In addition, the solution provides the cold store with an energy-efficient system and significantly reduces CO_2 emissions.



HOW SAFE IS CRANE TEMPER?



CRANE Temper is an environmentally adapted heat transfer fluid which fulfills the highest environmental requirements. It is readily biodegradable, this means that 97% of the fluid will be consumed after 7 days compared to glycols where only 70 to 85% is consumed after 28 days. CRANE Temper is non-toxic and can be used in refrigerating plants within the food sector. It is neutral (pH 8-9) and does not require any special handling or storage. CRANE Temper contains no nitrates or phosphates and is classified as non-hazardous to health and the environment.

MATERIAL COMPATIBILITY

Most of the common materials can be used such as copper, bronze, brass (dezincification resistant), steel, stainless steel, cast iron, as well as plastic pipes (ABS, PE). Plastic materials must be suitable for the system's minimum and maximum temperatures. High temperatures involve an increased risk of corrosion. Selection of materials must therefore take into account the operational temperature within the system. The higher the temperature, the better the quality of the materials is recommended. Galvanized steel is not recommended to be used together with CRANE Temper.

CORROSION PROTECTION

CRANE Temper is a high quality product based on potassium salts with an optimal concentration of corrosion inhibitors. The optimal corrosion package creates, and only when necessary, a local temporary and very thin protective layer with a minimal (monomolecular) thickness at the metal surface. This allows very good heat transfer. To quantify the corrosion protection efficiency, different corrosion tests are used.

CRANE Temper is tested according to ASTM D 1384, this is the most frequently used corrosion test protocol for heat transfer fluids.

ENVIRONMENT

CRANE Temper has very good environmental properties: it is readily biodegradable, non-toxic and non-flammable. CRANE Temper does not contain nitrites, borates, phosphates, molybdates or silicates.

Non-toxic to mammals
LD50 (oral, rat) > 5000 mg/kg

Non-toxic to aquatic animals
OECD TG 203: LC50/96 = 13 900mg/l

Microtox
Not acute toxic

Readily biodegradable
OECD 301A: 99% after 28 days

Bioaccumulation
Do not bio-accumulate

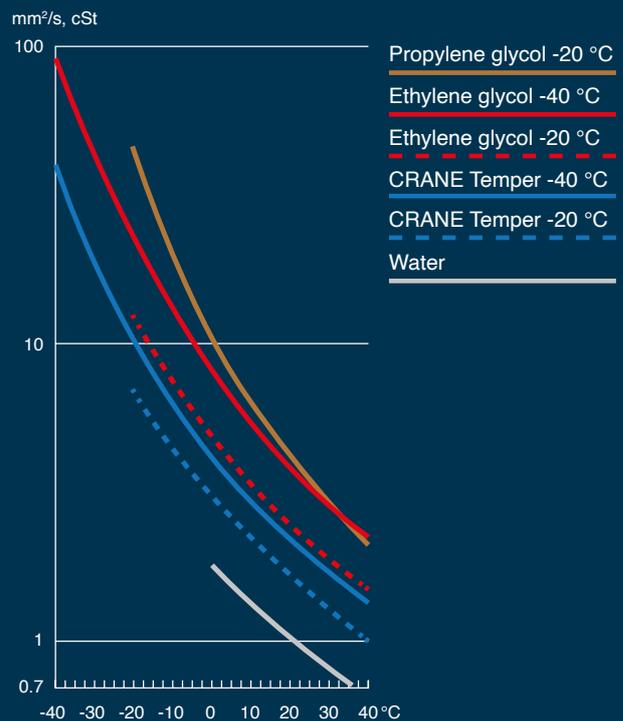
The freezing point depression substances in CRANE Temper contain mainly that of potassium acetate, which is used as a food preservative.

ANALYSIS & TECHNICAL SUPPORT

It is recommended to regularly check the fluid in respect of parameters such as pH, freezing point (density), metal ions and corrosion inhibitor level. With a test kit you may easily check freezing point (density) and pH value. More advanced analysis can be performed, such as metal ions concentration and corrosion inhibitor to secure system functionality. Along with the test result, a complete report with conclusion and recommended actions is always provided.

To make the best possible use of CRANE Temper, our experienced technical support team is available to guide you through the entire project (planning, installation, operation and maintenance) to ensure smooth system operation for many years to come.

KINEMATIC VISCOSITY OF TEMPER AND GLYCOL



THERMOPHYSICAL PROPERTIES

Measurements are performed @ +20 °C

	Unit	T-10	T-15	T-20	T-30	T-40	T-55	T-60
Density	kg/m ³	1086	1114	1142	1177	1207	1240	1260
Specific heat	KJ/kg · K	3,577	3,447	3,315	3,124	3,012	2,817	2,820
Thermal conductivity	W/m · K	0,544	0,525	0,508	0,486	0,465	0,441	0,440
Dynamic viscosity	mPa · s	1,48	1,62	1,79	2,17	2,76	4,06	4,28
Kinematic viscosity	mm ² /s	1,37	1,45	1,57	1,84	2,29	3,27	3,40



AREAS OF USE



FOOD INDUSTRY



DISTRIBUTION & LOGISTICS



SUPERMARKETS



DEFROSTING OF CO₂ AIR COOLERS



CLIMATE TEST CENTERS



FUEL CELL/HYDROGEN TANKING STATION



SPORTS INSTALLATIONS

HOW CAN CRANE TEMPER BE USED?

CRANE Temper can be used whenever a heat transfer fluid is required, in stationary or mobile installations for secondary refrigeration systems. CRANE Temper is suitable for medium as well as low temperature refrigeration systems and is effectively used at temperatures between -60 °C up to +180 °C in pressurized systems. CRANE Temper offers particular advantages as an alternative to glycol mixtures in the area of indirect cooling at low temperatures.

EXCELLENT DISTRIBUTION NETWORK



HOW CAN WE HELP YOU?



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