



# CHEVRON HEAT TRANSFER OIL ISOCLEAN<sup>®</sup> Certified Lubricant Grades 22, 46

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## PRODUCT DESCRIPTION

Chevron Heat Transfer ISOCLEAN<sup>®</sup> Certified Lubricants are mineral oil-type transfer oils for use in heat transfer systems with forced circulation. Chevron ISOCLEAN Certified Lubricants have been certified to meet specified ISO Cleanliness standards at point of delivery using industry leading filtration and testing technology. ISOCLEAN Certified products are the first step for contamination control and maximizing component life.



assure minimal thermal cracking at high temperatures or in repeated cycling from low to high temperatures.

- **Ease of pumping and circulation** — Excellent stability helps assure minimal oxidation and helps prevent sludging or deposit formation inside piping.
- **Minimized makeup oil** — Low vapor pressure combined with low volatility and high flash point means minimum evaporative loss.

## CUSTOMER BENEFITS

Chevron Heat Transfer ISOCLEAN Certified Lubricants deliver value through:

- **Ready to use** — Enables users to meet stringent original equipment manufacturers' cleanliness standards for fill lubricants.
- **Flexibility** — ISO Cleanliness targets can be customized to fit your business application needs.
- **Peace of mind** — Each delivery of Chevron ISOCLEAN Certified Lubricant includes an ISOCLEAN Certificate of Analysis.
- **OE fluid cleanliness requirements** — Customized to meet specific equipment manufacturers' fluid cleanliness requirements.
- **Excellent thermal efficiency and stability** — Helps ensure long oil life through outstanding thermal and oxidation stability which helps prevent sludging or deposit formation inside piping.
- **Good rust and corrosion protection** — Help prevent rusting or corrosive problems in circulating oil system.
- **Excellent performance at temperature extremes** — Outstanding thermal stability helps

## FEATURES

Chevron Heat Transfer ISOCLEAN Certified Lubricants are mineral-type transfer oils for use in secondary or indirect heating systems.

They are formulated with premium base oil technology.

Chevron Heat Transfer ISOCLEAN Certified Lubricants are noncorrosive, low odor level, excellent seal compatibility fluids that can absorb heat quickly and transport it to the material or fluid requiring heat.

Their excellent thermal and oxidation stability promotes long service life and clean heat exchanger systems.

There are many uses of heat in processing materials. There are also many ways of transferring heat to the material or fluid that needs to be heated. Chevron Heat Transfer ISOCLEAN Certified Lubricants are excellent for this purpose and offer many advantages. They can be used at low pressures. In most applications, the equipment required to apply the oils is relatively inexpensive. The application equipment can also be portable and, therefore, used where it is needed.

Product(s) manufactured in the USA, Colombia and El Salvador.

Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

A **Chevron** company product

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IO-100 ISOCLEAN

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### APPLICATIONS

Chevron Heat Transfer ISOCLEAN® Certified Lubricants are recommended for use in heat transfer systems where fuel oil, gas, or electricity is used to heat a fluid, which then transfers the heat to the point of application.

In closed, forced circulation systems equipped with expansion tanks, Chevron Heat Transfer ISOCLEAN Certified Lubricant **Grade 22** can be used with bulk oil temperatures up to 316°C (600°F) and skin temperatures up to 343°C (650°F) where good thermal stability and pumpability are required. Chevron Heat Transfer Oil Grade 22 is also ideal where high heat transfer rates combine with high flow rates, and for systems where repeated heating and cooling cycles are required.

In closed or open systems with forced circulation, Chevron Heat Transfer ISOCLEAN Certified Lubricant **Grade 46** can be used where bulk oil temperatures do not exceed 288°C (550°F) and skin temperatures may be as high as 316°C (600°F). The oil surface in contact with air in open systems should not exceed 107°C (225°F).

Copper and copper alloys should not be used in heat transfer systems with a hydrocarbon fluid unless air (oxygen) is excluded from contact with the fluid by hermetic sealing and/or an inert gas "blanket."

Consult with your Chevron Lubricant Representative or Chevron ISOCLEAN Certified Lubricants Marketer to set specific ISO Cleanliness targets for your business application.

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## TYPICAL TEST DATA

Grade	22	46
Product Number	231707	231710
SDS/MSDS Number		
USA	4610	37644
Colombia	32552	33472
El Salvador	32551	33473
API Gravity	33.8	32.0
Viscosity, Kinematic		
cSt at 40°C	23.1	41.1
cSt at 100°C	4.47	6.32
Viscosity, Saybolt		
SUS at 100°F	120	212
SUS at 210°F	41.3	47.4
Viscosity Index	104	101
Flash Point, °C(°F)	210(410)	240(464)
Fire Point, °C(°F)	229(444)	271(520)
Autoignition Point, °C(°F), ASTM E659	345(653)	359(678)
Pour Point, °C(°F)	-13(+9)	-15(+5)
Ramsbottom Carbon Residue, wt %	0.04	0.05

Minor variations in product typical test data are to be expected in normal manufacturing.

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**THERMAL PROPERTIES**

**Chevron Heat Transfer Oil Grade 22**

<b>Temperature, °C(°F)</b>	<b>0(32)</b>	<b>40(104)</b>	<b>50(122)</b>	<b>100(212)</b>
Viscosity, Kinematic, cSt	197.75	23.10	16.03	4.47
Gravity				
Specific	0.8680	0.8401	0.8330	0.8003
kg/L	0.8649	0.8396	0.8331	0.8000
Specific heat				
BTU/lb-°F, Calories/gm/°C	0.443	0.490	0.502	0.556
Thermal conductivity				
BTU/hr-ft-°F	0.0758	0.0725	0.0717	0.0676
Vapor Pressure, mm-Hg	Nil	0.000003	0.0001	0.0011
Coefficient of Thermal Expansion, °C	0.00072	0.00077	0.00078	0.00084
Volume Change from 60°F, %	-1.13	+1.86	+2.65	+6.89

<b>Temperature, °C(°F)</b>	<b>150(302)</b>	<b>200(392)</b>	<b>250(482)</b>	<b>300(572)</b>	<b>350(662)</b>
Viscosity, Kinematic, cSt	2.09	1.25	*	*	*
Gravity					
Specific	0.7658	0.7290	0.6916	0.6550	0.6083
kg/L	0.7655	0.7294	0.6914	0.6512	0.6083
Specific heat					
BTU/lb-°F, Calories/gm/°C	0.608	0.655	0.698	0.738	0.774
Thermal conductivity					
BTU/hr-ft-°F	0.0635	0.0594	0.0553	0.0512	0.0471
Vapor Pressure, mm-Hg	0.065	0.75	8	19	50
Coefficient of Thermal Expansion, °C	0.00092	0.00102	0.00113	0.00127	0.00146
Volume Change from 60°F, %	+11.71	+17.24	+23.68	*	*

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**Chevron Heat Transfer Oil Grade 46**

<b>Temperature, °C(°F)</b>	<b>0(32)</b>	<b>40(104)</b>	<b>50(122)</b>	<b>100(212)</b>
Viscosity, Kinematic, cSt	489.96	41.10	27.02	6.32
Gravity				
Specific	0.8745	0.8473	0.8425	0.8105
kg/L	0.8742	0.8491	0.8428	0.8101
Specific heat				
BTU/lb- F, Calories/gm/°C	0.440	0.488	0.499	0.554
Thermal conductivity				
BTU/hr-ft- °F	0.0758	0.0725	0.0717	0.0676
Vapor Pressure, mm-Hg	Nil	0.0000004	0.00003	0.0002
Coefficient of Thermal Expansion, °C	0.00071	0.00075	0.00076	0.00082
Volume Change from 60°F, %	-1.18	+1.82	+2.59	+6.73

**Chevron Heat Transfer Oil Grade 46**

<b>Temperature, °C(°F)</b>	<b>150(302)</b>	<b>200(392)</b>	<b>250(482)</b>	<b>300(572)</b>	<b>350(662)</b>
Viscosity, Kinematic, cSt	2.70	1.54	*	*	*
Gravity					
Specific	0.7763	0.7416	0.7032	0.6680	0.6215
kg/L	0.7760	0.7404	0.7030	0.6635	0.6215
Specific heat					
BTU/lb- F, Calories/gm/°C	0.606	0.653	0.697	0.737	0.773
Thermal conductivity					
BTU/hr-ft- °F	0.0635	0.0594	0.0553	0.0512	0.0471
Vapor Pressure, mm-Hg	0.017	0.35	5	16	40
Coefficient of Thermal Expansion, °C	0.00090	0.00099	0.00109	0.00123	0.00140
Volume Change from 60°F, %	+11.41	+16.77	+22.98	*	*

\*Estimated values. Values for shaded areas are not shown, as values would represent extrapolation beyond reasonable accuracy.

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