

## JARYTHERM® FOR RENEWABLE ENERGIES



Arkema has a strong presence in the field of energy for example as a supplier of raw materials for photovoltaic panels (PVDF film & PMMA acrylic glass to protect front sheet of solar panels) or as a manufacturer of thermoplastic resin for wind turbine blades ... as well as a supplier of heat transfer fluids.

### CONCENTRATING SOLAR POWER

Concentrating solar power (CSP) devices concentrate solar energy to a heat receiver. This heat is then converted into multiple applications such as electricity, water desalination, solar cooling, or is used as a heat source.

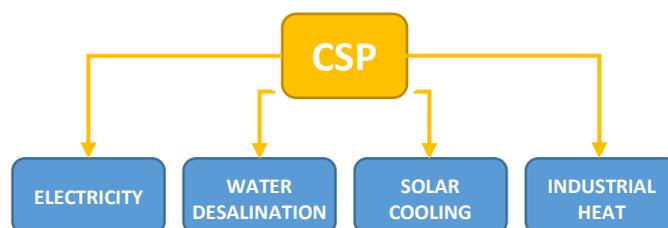
Jarysol® is the perfect choice of heat transfer fluid for small to medium multipurpose (1 to 20 MWh) Concentrating Solar Power (CSP) units.

### PROCESS HEAT

Industrial-size CSP plants also bring cost-effective, clean and reliable energy to the industrial market or for district heating applications. These projects usually operate in a temperature range that fits Jarytherm® fluid capabilities (maximum service temperature not exceeding 300 - 340°C / 570-640°F).

### THERMAL STORAGE

Renewable energies such as solar energy are often providing discontinuous energy. Heat storages help to extend the energy production. Jarytherm® have an outstanding ability to store heat and are though the materials of choice for heat storages and thermocline systems.

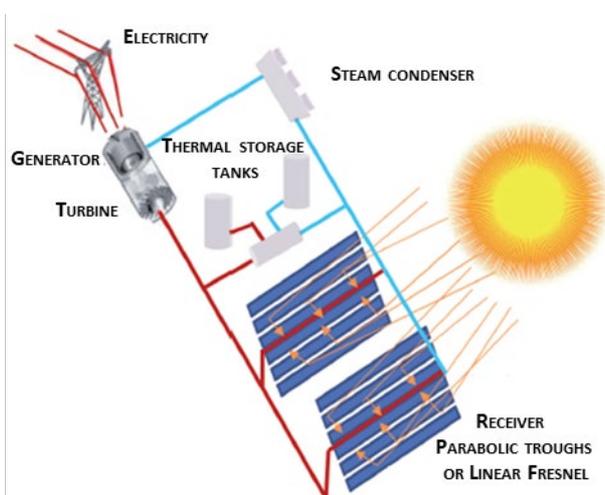


### ORGANIC RANKINE CYCLE (ORC) SYSTEM APPLICATIONS.

The ORC unit is a system based on a closed-loop thermodynamic cycle for the generation of electric and thermal power. It may rely on biomass combustion, waste combustion, valorization of heat from industrial processes or other types of heat sources.

ORC systems require the use of medium to high temperature heat transfer fluids to carry the heat from the source to the thermodynamic cycle.

As for most applications, precise temperature control is key. Jarytherm® heat transfer fluids are perfectly suitable and recognized for ORC projects up to 340°C.





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## WHAT IS JARYTHERM® USED FOR?

The primary purpose of using transfer fluids in a system is to transfer heat from your boiler to the equipment where a well-controlled and constant temperature is needed.

Arkema due to its history has a long experience with heat transfer fluids operating in the range of 200 to 350°C (400 to 575°F).

## GOOD REASONS TO SELECT JARYTHERM®

- Reduced CAPEX**    Low pressure requirement: High fluid boiling point  
Standard material use: Non-corrosive toward carbon steel
- Optimized OPEX**    Efficient heat transfer: High calorific power  
Long fluid ageing life: High thermal stability  
Low maintenance: Limited fouling thanks to high heavies solubility  
Low energy consumption: Low fluid viscosity over temperature range
- Process Safety**    Non fire risks: High flash point  
Limited top up: Low formation of light impurities even at high process temperature

## HOW TO MAINTAIN THE BEST QUALITY OF JARYTHERM® IN YOUR PROCESS?

All units using heat transfer fluids should operate using a proactive maintenance plan. Arkema is there to recommend solutions which encompass regular system analysis and fluid management (top-up, flash point control ...).

Arkema also provides regular technical service to its customers. Arkema gives advice on the right fluid selection versus expected life time. Arkema has also developed partnerships with boiler manufacturers and EPC for the best assistance.

## ARKEMA JARYTHERM® PRODUCT RANGE

Arkema has manufactured and commercialized Jarytherm® products for decades. They are synthetic aromatic based and made on purpose with a stable composition over years.



Characteristics	Jarytherm® BT06	Jarytherm® DBT
High boiling point/ ignition point	✓✓	✓✓✓
Low pour point and viscosity	✓✓✓	✓✓
Good thermal stability	✓✓✓	✓✓
Good heat transfer properties	✓✓✓	✓✓✓
Non-corrosive to materials	✓✓✓	✓✓✓
High flash point & auto-ignition temperature	✓✓	✓✓✓

## JARYTHERM® PROGRAM

Arkema proposes different programs according to customer's requirements. We guarantee a long and cost effective heat transfer fluid use in your equipment. Our customer designed programs range from product supply to full fluid management.

For more details please contact us through our website ([www.arkema.com](http://www.arkema.com)).

## JARYTHERM® ANALYTICAL SERVICE

Arkema provides analyses of the Jarytherm® fluid in-use.

This allows end-users to operate in safe conditions and maximize fluid lifetime.

The analyses give a clear view on the fluid ageing. Based on the results, the operating conditions and the history of the circuit, Arkema provides technical recommendations.

Characteristics	Standard method
<b>Gas Chromatography</b>	<i>Internal method</i>
Low boiling components %	
Jarytherm® fraction %	
High boiling components %	
<b>Viscosity at 20°C (cSt)</b>	ASTM D445
<b>Flash point (open cup) °C</b>	ASTM D92
<b>Acidity (meq H<sup>+</sup> /100 g)</b>	ASTM D664
<b>Water content (ppm)</b>	ASTM D6304
<b>Insoluble materials (ppm)</b>	-



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