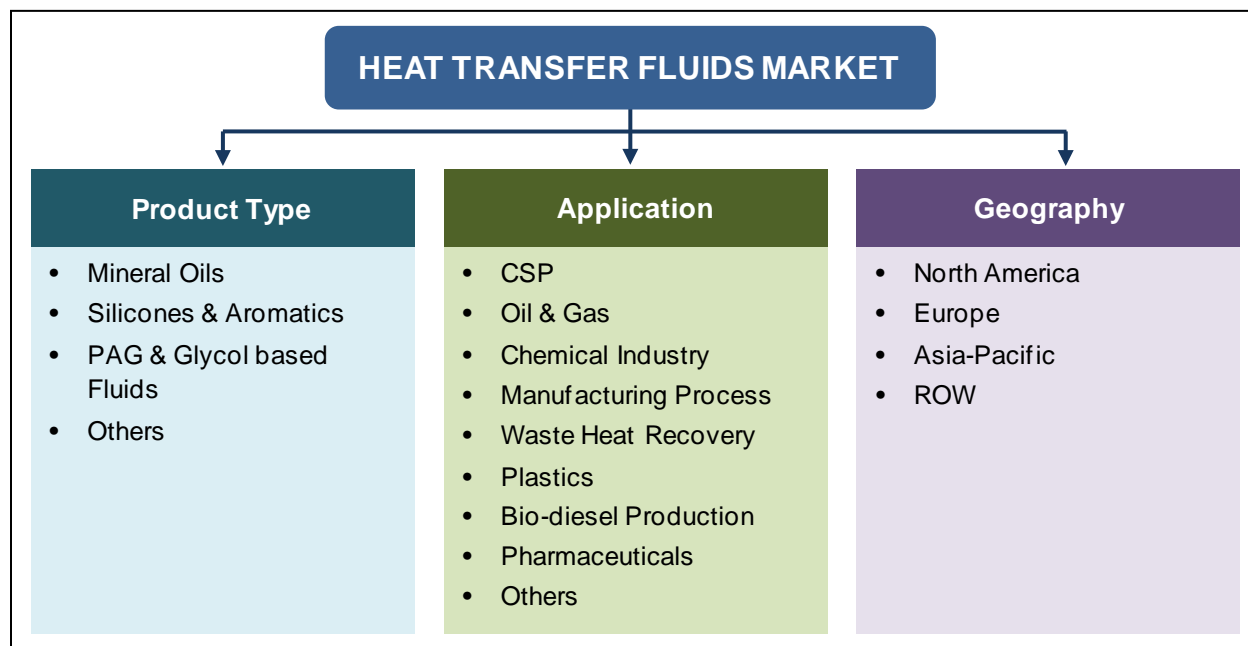


### 3.1 INTRODUCTION

Heat transfer fluid is that substance (gas or liquid) which can store heat energy to prevent over-heating of any thermal device by circulating through its mechanical parts and transfer the heat energy produced from one device to another. These fluids have a wide range of applications in the industries that operate in the extreme temperature ranges such as manufacturing processes, chemical industry, automotives, solar power plants, petroleum processing, etc. There are various kinds of heat transfer fluids used in the industries depending upon the applications. Some of them are mineral oils, Polyalkylene glycol, silicone and aromatics, molten salts, HFPE, etc. The figure below depicts the market segmentation for global heat transfer fluids market:

**FIGURE 3**

#### HEAT TRANSFER FLUIDS MARKET SEGMENTATION



Source: MarketsandMarkets Analysis

The characteristics features of an ideal heat transfer fluid are large volumetric heat capacity, low viscosity even at low operating temperatures, thermal stability, good oxidation stability,

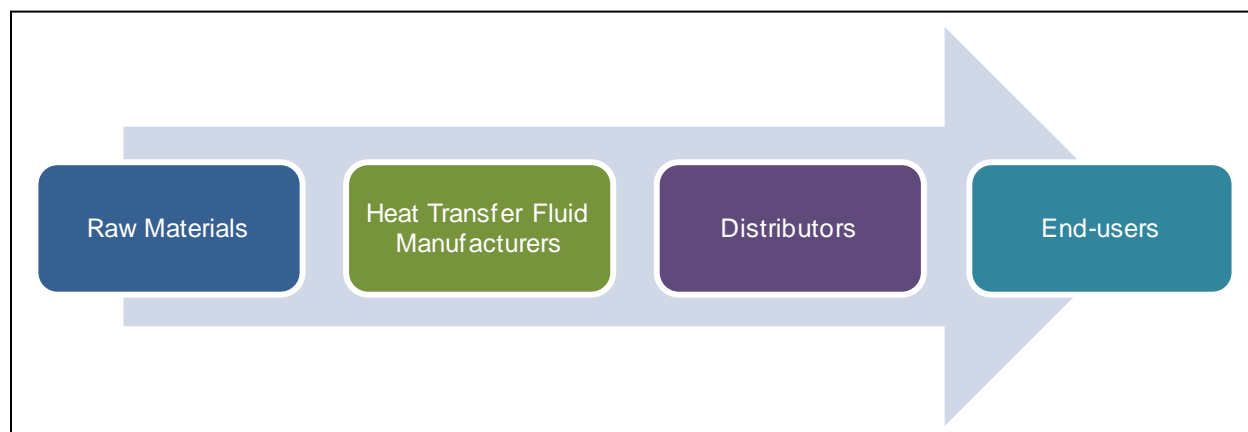
good corrosion preventive properties etc. There is growing demand for heat transfer fluids in solar power, oil and gas refining, manufacturing processes, chemical industry etc. The management of heat in the industrial and residential applications has become the necessity with the growing thirst of energy. There are a variety of synthetic heat transfer fluids to satisfy this requirement. Petroleum or synthetic based fluids derived from mineral oils, paraffinic oils, aromatics, silicones, and fluorocarbons are increasingly being used in the industrial processes owing to their advanced properties and superior performance.

### 3.2 VALUE CHAIN ANALYSIS

The heat transfer fluids value chain ranges from raw materials such as benzene, phenol, paraffins, naphthenes, and other petroleum based products all the way to end-user industries such as concentrated solar power, oil and gas processing, pharmaceuticals, food processing, etc. The value chain for the heat transfer fluids is as shown in the figure below:

**FIGURE 4**

#### HEAT TRANSFER FLUIDS VALUE CHAIN ANALYSIS



Source: ICIS, Chemical Week Magazine, Dow Chemical, Solutia, Primary Interviews, MarketsandMarkets Analysis

Benzene and phenol are the key feed-stocks used in the manufacturing of heat transfer fluids. The heat transfer fluid industry is dominated by a few big players and these are fully integrated companies. Heat transfer fluids are used in a host of industries. Most of the major suppliers are

forward integrated and they market their products mostly through local and regional distribution channels and also work with trading houses and local distributors who are responsible for business with small customers. Production units in North America and Europe supply globally, especially into Asia-Pacific. In every country there are few local players that contribute substantially to the regional market as they could have bigger market shares in their own region compared to the global players of the heat transfer fluids.

The market participants focus on providing customized formulations according to the end-user requirements owing to the high degree of customization in the market. Refining and grading of the fluid happens at the manufacturer's end before it reaches the distributors. The brands are then sold to the end-user industries. The value derived by the end-use customer is significantly important in formulating the distribution strategy in the heat transfer fluids market. Selecting the mode of distribution and whether to use distributors or not completely depends on how value is delivered to the targeted end-use customer. There are a large number of local players for the low-temperature fluids when compared to the high-temperature fluids where the industry is more favorable for global players.