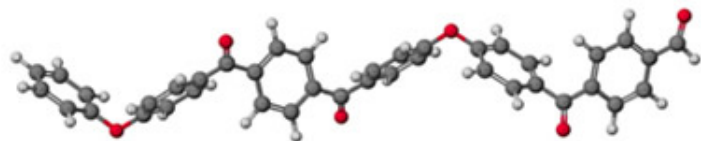


# Polymics



## High Performance Polymer Applications

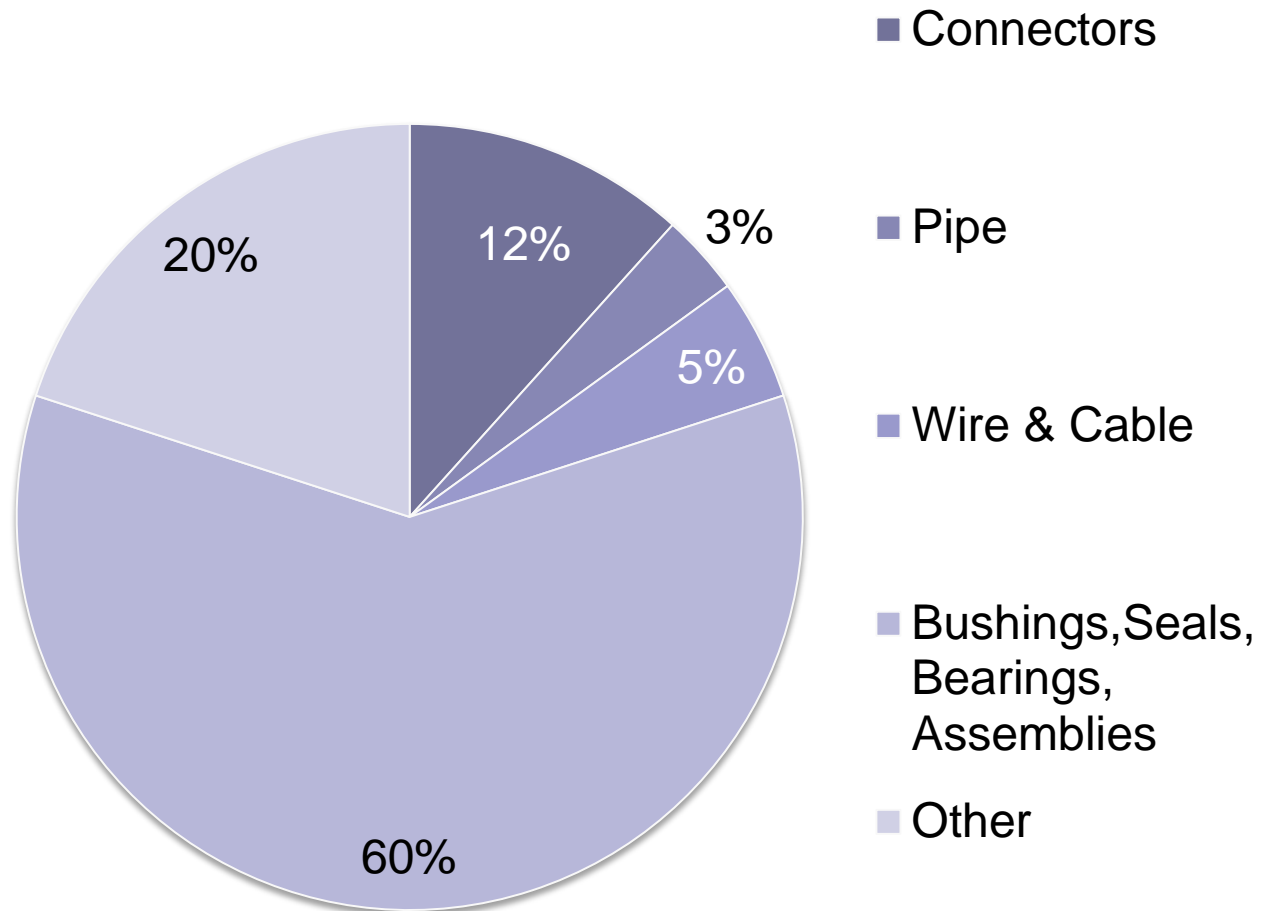


# Oil and Gas Applications



# Global Oil and Gas Market

## High Performance Polymers





# PEEK/PEKK Benefits/Value

- High mechanical strength to withstand high pressures and loads
- High continuous operating temperature – long life at elevated temperatures up to 150°C
- Resistant to chemical attack – provides corrosion resistance
- Wear and creep resistant
- Dimensionally stable over operating range
- Can be compounded with fillers to provide improved properties such as glass fiber to improve dynamic fatigue resistance



# PEEK/PEKK Applications - Compressors

## ■ Reciprocating Compressor Components

- Suction & Discharge Valves: valve plates, valve rings, and poppets
- Piston rings and Rider rings
- Rod packing/Pressure Packing

## ■ Turbo Compressors

- Labyrinth seals and shaft seals

## ■ Linear Compressors

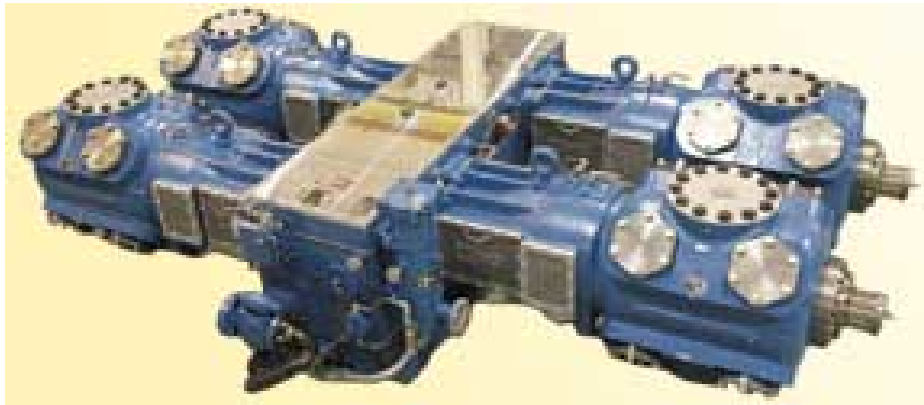
- Discharge valves



# PEEK/PEKK Applications

## ■ Reciprocating Compressor Components

- Suction and Discharge Valve Internals: Valve plates, valve rings, and poppets
- Piston rings
- Rider rings
- Rod packing/Pressure Packing





# PEEK/PEKK Applications

## ■ **Application for Reciprocating Process Compressors**

- Refining, cracking
- Chemical processing
- Air separation

## ■ **Applications for Reciprocating Natural Gas Compressors**

- Wellhead compression for gas lift
- Gas gathering, from well head to processing plant
- Gas processing to clean gas for pipeline
- Gas injection and storage
- CNG filling stations



# PEEK/PEKK Applications

- **Leading Reciprocating Process Compressor Manufactures**
  - **Dresser Rand/Peter Brotherhood**
  - Neuvo Pignoni
  - Neumen and Esser
  - Mitsui
  - Koby Steel
- **Leading Reciprocating Natural Gas Compressor Manufactures**
  - Ariel
  - Cameron
  - GE Gemini



# PEEK/PEKK Applications

- **Valve plates, valve rings and poppets: sealing element inside suction and discharge valves in compressor**
  - Application: High pressure, high temperature, corrosive gases. Refineries, gas processing plants, and gas injection plants
  - Service: For both lubricated and unlubricated compressors.
  - Materials: 30% glass filled PEEK and 30% Carbon fiber filled PEEK are industry standards. Nylon and high temp nylons used in less demanding applications
  - Material sold as injection molded disks to machine shops where they are fabricated into valve plates and ring sets.



# PEEK Applications

- **Rod packing/Pressure Packing: provides seal between piston rod and packing case**
  - Application: High pressure, high temperature, corrosive gases. Refineries, gas processing plants, and gas injection plants
  - Service: Typically, for lubricated compressors. Materials: Wear grade PEEK compounds are industry standards. PTFE is used for less demanding applications
  - Material sold as compression molded tube to machine shops where the tubes are turned and milled to fabricate rod packing



# PEEK/PEKK Applications

- **Piston Ring: provides seal between piston and cylinder**
- **Rider Ring: provides wear surface for piston to ride on against cylinder**
  - Application: High pressure, high temperature, corrosive gases. Refineries, gas processing plants, and gas injection plants
  - Service: Typically, for lubricated compressors. Materials: Materials: Wear grade PEEK compounds are industry standards.
  - Material sold as compression molded tube to machine shops where the tubes are turned and milled into piston rings and rider rings

