WEIFANG JUDE ELECTRONIC CO., LTD.
------ A Possible Long Term Partner

*Plant of* Piezo Ceramic

Fangzi District, Weifang, Shandong, China

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JUDE Piezo Ceramic (Shandong Location) ——

Military Research & Factory Supplier background

Quartz
LiNbO3
PMN-PT
PZT
PMN
PNA(Nb5622)
PT
BaTiO3
HT(BaTi3O12)
K81
K85
Piezo Ceramic Materials
The Base for our Piezo component

- PZT
- PMN-PT
- PT
- BaTiO$_3$
- Bi$_4$Ti$_3$O$_{12}$
- PLZT

Developed according to customers’ requirements.
# Basic Piezoceramic Materials Datasheet (PZT)

<table>
<thead>
<tr>
<th>Properties</th>
<th>TmO3</th>
<th>PZT-2</th>
<th>PZT-4A</th>
<th>PZT-4B</th>
<th>PZT-4E</th>
<th>PZT-8</th>
<th>PZT-5A</th>
<th>PZT-5B</th>
<th>PZT-5C</th>
<th>PZT-5D</th>
<th>PZT-5E</th>
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<tbody>
<tr>
<td>Dielectric constants</td>
<td>E&lt;sub&gt;Tm&lt;/sub&gt;</td>
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<td>1400</td>
<td>1650</td>
<td>2000</td>
<td>2000</td>
<td>3000</td>
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<td>Drift constant [%]</td>
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<td>0.50</td>
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<td>Coupling coefficients</td>
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<tr>
<td></td>
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<td>Piezoelectric charge</td>
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<td>Poisson’s ratio</td>
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<tr>
<td>Curie temperature [°C]</td>
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<td>Density [g/cm&lt;sup&gt;3&lt;/sup&gt;]</td>
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<td>7.72</td>
<td>7.74</td>
<td>7.66</td>
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</table>
Piezo Elements

- **Sensor Crystals**
  - Knock Sensor
  - Pressure Sensor
  - Accelerometer
  - Others

- **Medical Crystals**
  - Ultrasonic Imaging
  - Micro Pump
  - Others

- **Transducer Crystals**
  - Ultrasonic Cleaner
  - Welding Stack
  - Humidifier
  - Underwater Acoustic
  - Others

- **Others**
  - Igniters
  - Type-casting Parts
  - Custom Products
Piezo Ultrasound

Ultrasonic Cleaner
Welding
Beauty
Fog

Application
Shear & Compression Plates

- Shear & Compression type Accelerometer
- Pressure & High Temp. Sensor
- Vibration/knock Transducer
- Doppler flow meters
- Sound Element and others

Application
Piezo Ultrasonic

- Underwater, Military, Medical

- Fish finder
- Hydrophones
- Projector Transducers
- Underwater Acoustics transducers
- NDT transducers (Transmitter/Receiver)
- High-Power & low Freq. Transducers
Piezo ceramics for motive balancers

- Applied in producing tire balancers
- Stability, consistency, accurate measuring
- Wire: 0.25m, 0.70m, 1.2m, 2.6m
- Quick delivery
Piezoceramic Process (Powder Preparing)

1. Raw material weigh in as each type material directions for producing chemicals or metallurgical products

2. Put into this big stove for full mixturing

3. After testing discs approved, this lot Powder can be entered into mass production.
Piezoceramic Process (Shape)

automatic type

Half-automatic type

*Before this process, the pressure data and pressure time for this lot parts should be calculated by Head Engineer.*
Piezoceramic Process (Sinter)

Temperature Control & Records Workroom

24 hours control

Tunnel Stove
Piezoceramic Process (Machining)
Piezoceramic Process (Electrode Printing & Firing)
Piezoceramic Process (Poling)

Voltage Controller desk  Pole device & High Voltage Generator
Piezoceramic Process (Testing)

D33 Tester
Capcitance and Loss
Frequency and Impedance Analyser
Mission

Manufacturer of Full Range Piezo Ceramics

OEM partner with High Quality & competitive price

Enlarge Focus on Automotive, Marine & Medical Application
Service Policy:

High Quality
Reasonable Price
Best Services
Piezo Ceramic Organization Chart

- Total 65
- Engineers 15
- R&D/Support 6
- Sales 7
- QC 3
- ADM 4
Capability for Piezo Element Manufacturing

- 0.5M pcs monthly Small discs
- 0.3M-0.4M pcs monthly ultrasonic Clearing/Welding Ring
- 0.3M pcs monthly Sensor Crystal element, but it could be increase immediately.
- Others
Anything can we do for you?

Thank you!!!