



# Hunan Boromond EPT Co.,Ltd

No Organic Wastewater Beyond Treatment

# Company Overview

Hunan Boromond EPT Co.,Ltd is a professional R&D and high-tech Manufacturing enterprise of Born-doped Diamond (BDD) electrodes and integrated equipment, based on Electrochemical Oxidation Technology, which holds multiple patents.

- Established in 2019
- Located in Hunan University S&T Park, Changsha, China.
- Specialize in the Research, Development, Production, and Sales of BDD electrode sheets and integrated equipments for industrial wastewater treatment.
- Products have been exported to over 90 countries including Europe, America, Asia, and the Middle East.

## R&D & Production Capability

**38** R&D Experts

**1000** BDD Electrode Capacity  
**m<sup>2</sup>/year**

**100+** sets of Chemical Vapor  
Deposition (CVD) coating  
equipments

**90+** Invention Patents



# Development History

**1999**

First Lab Established  
at Central South  
University

**2019**

Company Founded.  
First Production Line Built.

**2020**

Pilot Base Built.  
First Project Landed.

**2021**

Grow to National High-  
Tech Enterprise

**2024-Future**

BDD New Applications  
IPO Preparation

Since 2019, Boromond has experienced steady and rapid growth, consistently dedicated to eliminating refractory wastewater of various industries.



## **Mission**

Becoming a leading BDD technology enterprise, providing industrial wastewater solutions.

## **Vision**

No Organic Wastewater Beyond Treatment.

## **Core Values**

Integrity Management, Professional and Innovation, Customer First.

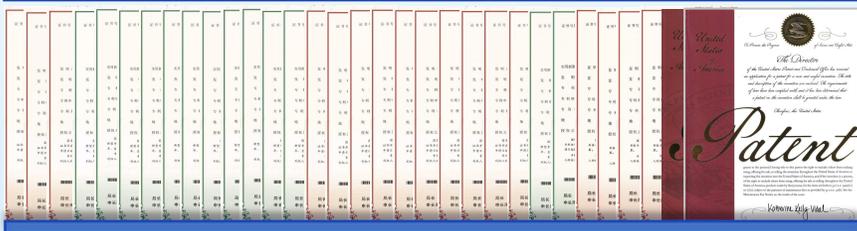
Boromond is committed to become a global leader in BDD electrode and EO technology, providing industrial wastewater solutions to make the world free of refractory wastewater!

# Over 20 years of accumulated experience, 102 independent core patent technologies



### Partial Achievement Details Illustration

1	CN102677019B	一种运动磁场沉积方法	1	CN113149149A	一种废水污染物	10	CN111675421B	一种高效	1	CN213146817U	一种电	7	U	1	CN113881929A	一种金刚石电极
2	CN101856895B	一种金刚石膜涂覆及其制备	2	CN113777142A	一种金属材料/金刚石膜沉积方法	11	CN213738731U	一种电	2	CN214693433U	一种超声	8	U	2	CN215855268U	一种废水电
3	CN109898064B	一种DLC/Me-C涂覆方法	3	CN113804734A	一种掺杂金刚石膜制备方法	12	CN214693433U	一种高	3	CN215855270U	一种废水电	9	U	3	CN215855255U	一种有机废水
4	CN109811298B	一种沉积金刚石合金刀具预处理方法	4	CN11540459A	一种掺杂金刚石膜及其制备	13	CN216336758U	一种电	4	CN215048908U	一种有机废水	10	U	4	CN114101660A	一种有机废水
5	CN109825821B	一种金刚石/CBN合金刀具、制备	5	CN115472898A	一种掺杂金刚石膜及其制备	14	CN111485223B	一种电	5	CN21493807U	一种有机废水	11	U	5	CN215209643U	一种有机废水
6	CN109898051B	一种抗磨损复合薄膜及其制备	6	CN115472898A	一种掺杂金刚石膜及其制备	15	CN111646632B	一种电	6	CN214231134U	一种有机废水	12	U	6	CN218320928U	一种有机废水
7	CN109930129B	一种复合金刚石合金刀具及其制备	7	CN115472898A	一种掺杂金刚石膜及其制备	16	CN111593311B	一种电	7	CN215826972U	一种有机废水	13	U	7	CN218371888U	一种有机废水
8	CN113106414B	一种CVD金刚石基体预处理	8	CN115472898A	一种掺杂金刚石膜及其制备	17	CN111647874B	一种电	8	CN214387386U	一种有机废水	14	U	8	CN218371887U	一种有机废水
			9	CN115472898A	一种掺杂金刚石膜及其制备	18	CN111646811B	一种电	9	CN214387386U	一种有机废水	15	U	9	CN218435131U	一种有机废水



### Evaluation of Achievements from the Fourth China New Materials Industry Development Conference

On October 10, 2023, the achievement "Key Technology and Complete Equipment for Diamond Electrode Preparation" was expertly recommended by the Fourth China New Materials Industry Development Conference as a **New Material Industrialization Achievement**.

In the "2023 Innovation Technology Evaluation and Recommendation Activity in the Field of Water Treatment" organized by the Industrial Water Treatment Committee of the Chemical Industry and Engineering Society of China, "Key Technology and Complete Equipment for Diamond Electrode Preparation" was awarded the **Second Prize for 2023 Innovation Technology in the Field of Water Treatment**.

**5000**m<sup>2</sup>

Manufacturing Plant

**1000**m<sup>2</sup>/year

BDD Electrode Capacity

**100**

Technical Staff



湖南大学 国家大学科技园

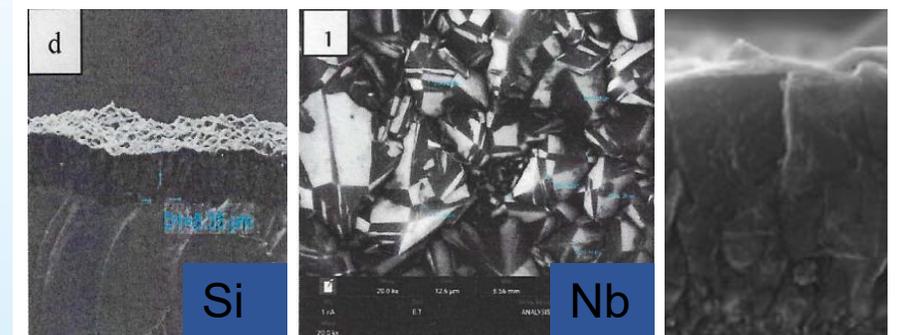
Hunan University National Science Park



## What is BDD Electrode

BDD (Boron-Doped Diamond), is a synthetic diamond material that **incorporates boron atoms into its crystal structure**.

The BDD material is deposited and formed to be a thin film on silicon substrate and the doping process significantly alters the physical and electrochemical properties of diamonds, making BDD a material of great interest in various scientific and industrial fields.



# Advantages of BDD Electrode

As shown in the chart below, BDD Electrode has obvious advantages comparing to other electrodes (MMO, DSA, Platinum, Graphite).

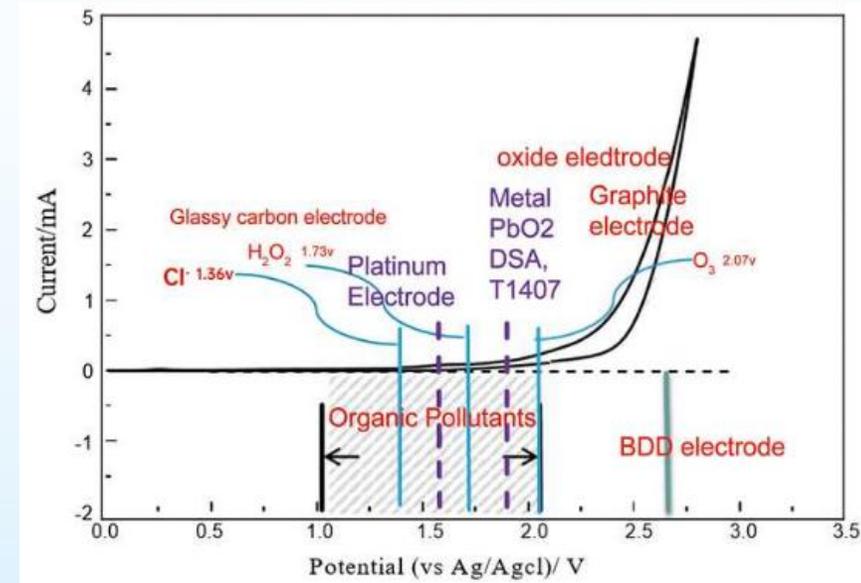
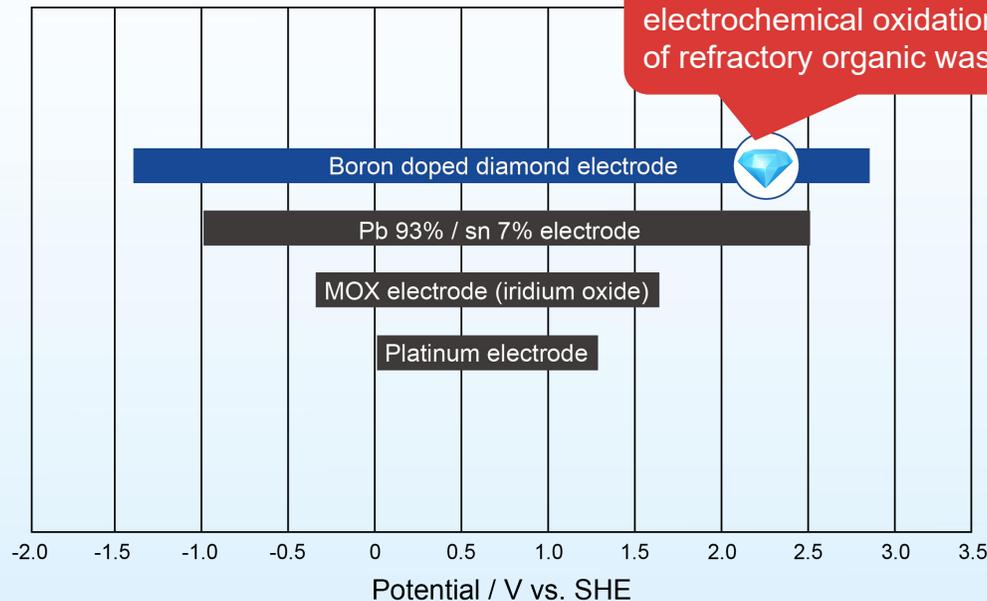
Widest electrochemical window

High oxygen evolution potential

Low hydrogen evolution potential

Strong acid and alkali corrosion resistance

Inert anodes are not consumed



# Reaction Mechanism

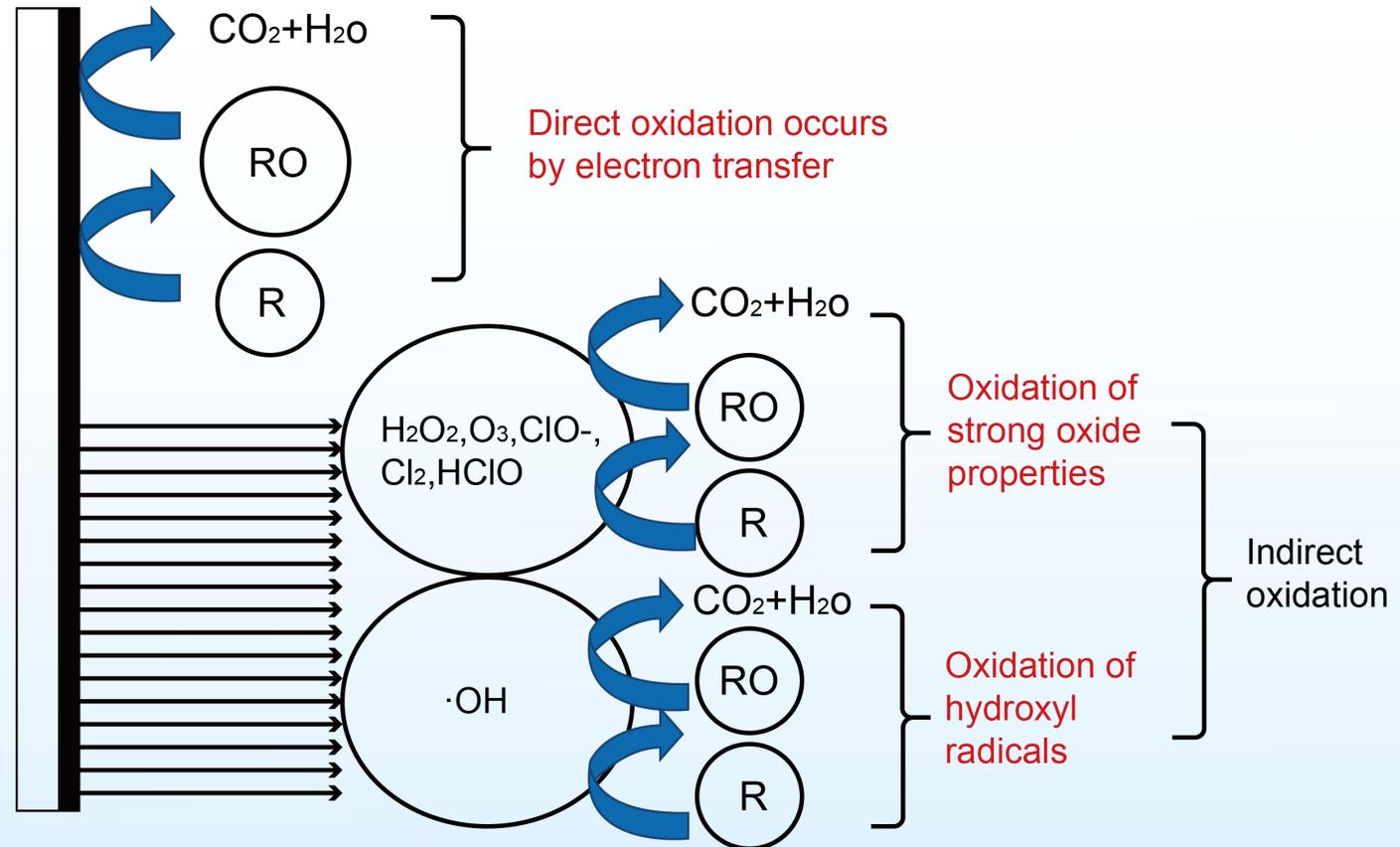
BDD electrode EO Technology degrades organic substance through both direct oxidation & indirect oxidation.

## Direct Oxidation

Contaminants are oxidized directly on the electrode surface via electron transfer.

## Indirect Oxidation

Contaminants are oxidized and degraded indirectly through strong oxidizing intermediates, produced by the electrochemical reaction.



# BDD Technology vs Traditional technologies

Characteristic	BDD Technology	Traditional Biological Methods	Traditional Chemical Oxidation
Treatment Target	<b>Refractory, highly toxic , high-salinity organic wastewater</b>	Readily biodegradable organic wastewater	Restricted specific pollutants
Degradation Level	<b>Complete mineralization (→CO<sub>2</sub>+H<sub>2</sub>O)</b>	Partial degradation may produce intermediates	Partial degradation may produce by-products
Secondary Pollution	<b>Minimal, no chemical sludge</b>	Produces excess biological sludge	May produce chemical sludge or toxic by-products
Operating Conditions	<b>Broad , easy to control</b>	Strict (pH temperature toxicants)	Relatively strict (pH chemical dosage)
Footprint	<b>Small , modular</b>	Large	Medium
Operating Cost	<b>Energy consumption is main cost , decreasing with tech development</b>	Low (mainstream method)	Medium (high chemical cost)



# BDD Electrode

Boromond has developed a large range of boron doped diamond (BDD) electrodes on Silicon substrates. In the facility, high quality diamond coatings are deposited on large-scale in HFCVD reactors. To ensure customer's satisfaction with the highest quality diamond coatings, Boromond has implemented a strong Quality Assurance policy to guarantee customer satisfaction. Electrode specifications are systemically controlled through Boromond's advanced metrology equipments.

Shape: Rectangle/Square/Round

Substrate: Silicon (Si) / Niobium (Nb)

Dimension: 5\*5mm ~ 500\*500mm

Thickness: 0.5-10mm

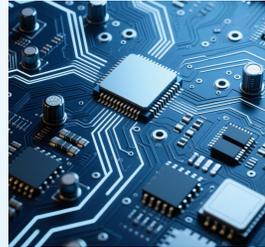
Coating thickness: < 10 μm



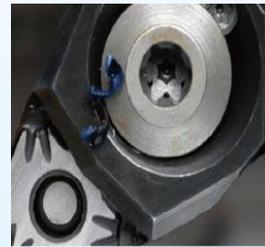
Wastewater Treatment



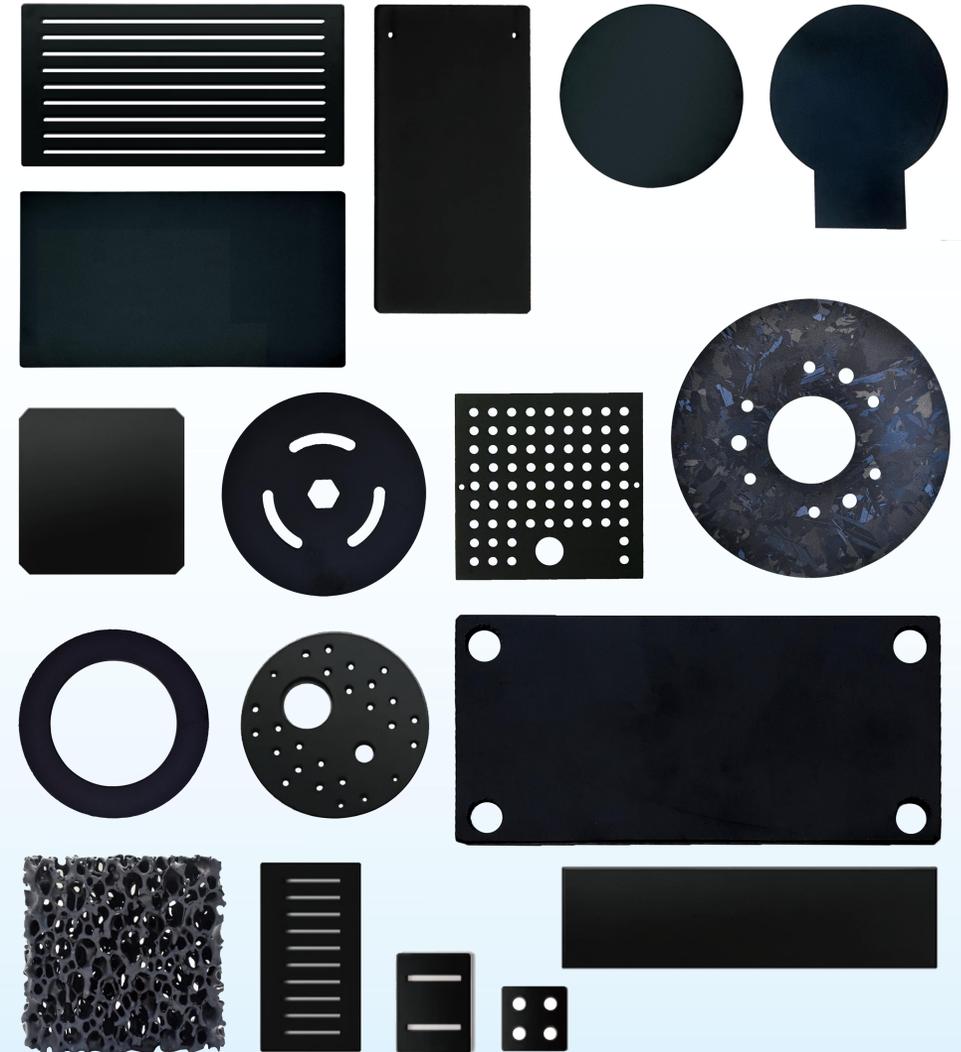
Water Disinfection



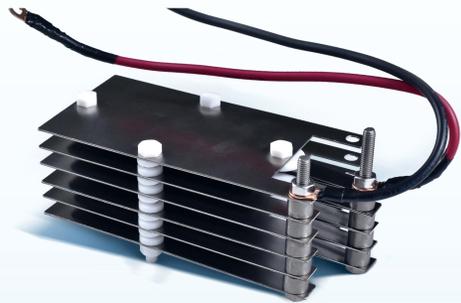
Electronic Packing



TC Insert Coating



# BDD Lab Testing Kits



**MU510**  
**BDD MODULE UNIT**

Water Volume: 2-5 Liter



**BK 1.0**  
**BDD BEAKER MODULE**

Water Volume: 1 Liter



**BK 5.0**  
**BDD BEAKER KIT**

Water Volume: 1 Liter



**PK 3.0**  
**BDD PORTABLE KIT**

Water Volume: 2-5 Liter

# Pilot Modules & Equipments



**BDD Module Unit**

MU724/924/1032/1124



**Modular Electrolyzer**

ME10724/21424/22224



**Modular Case**

MC088

# Pilot Modules & Equipments



**Modular Case**

**MC175**



**Modular Case**

**MC350**



**Modular Case**

**MC700**

# Engineering Equipments System

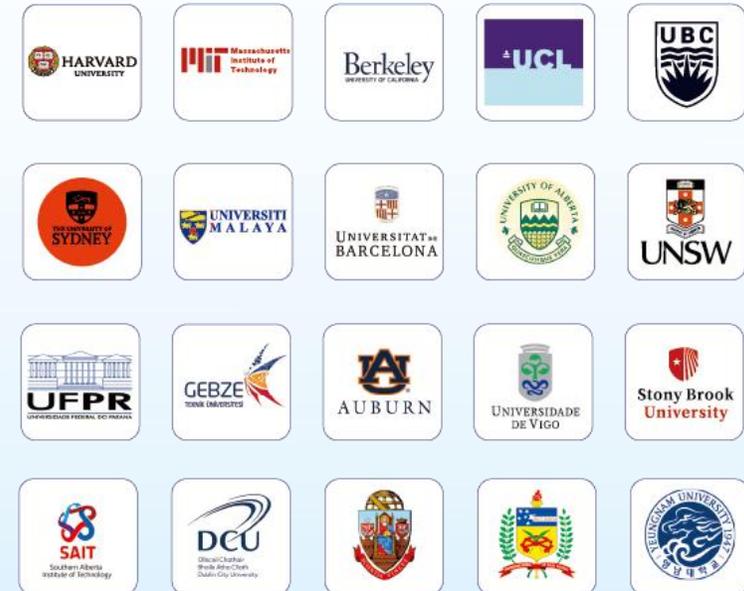


# Global Partners

Boromond products have gained significant recognition from worldwide universities, labs, consulting companies, manufacturing enterprises for scientific research and project application. Currently, our products are exported to over 90 countries across Europe, America, South America, East Asia, etc. Also we have established long-term strategic partnerships with some global renowned water treatment corporations.



## Cooperative Academies



# Boromond Service - What we can do for you

## 01

All our products can be Designed and Customized according to clients' lab testing or project site.



## 02

BDD project solution and technical support



## 03

Installation Service

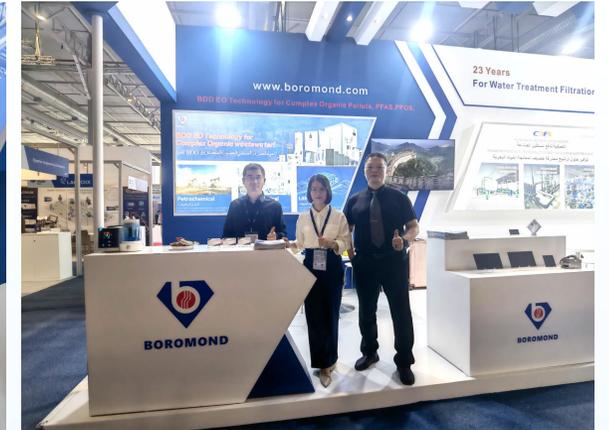
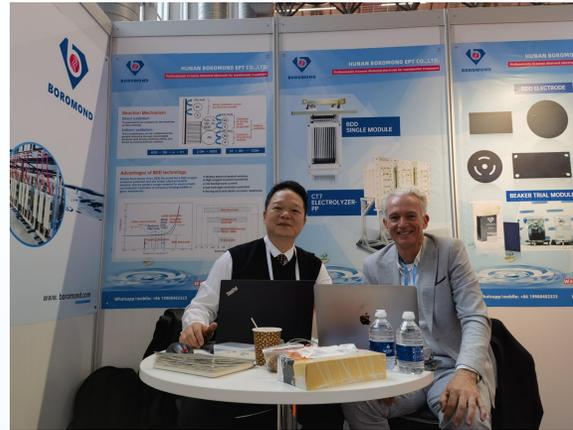


## 04

Operation Service



# Exhibition Show





# Thank You

Hunan Boromond EPT Co. Ltd.

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