

French Trial Series

Gray dish



Ashtrays are essential refractory materials used in fire assays for separating gold and silver and absorbing molten lead. Their main function is to absorb molten lead and its oxide (PbO) under high-temperature oxidizing conditions, thereby enriching precious metals such as gold and silver on the surface of the ashtray for subsequent weighing or colorimetric analysis. Ashtrays are typically used in conjunction with fire assay clay crucibles and are indispensable core consumables in precious metal analysis experiments. 1. Material Composition Ashtrays are typically made by pressing and sintering the following materials:

• Bone ash or

magnesium oxide (MgO)\*\* as the main component; • Highly absorbent porous

structure; • Good refractoriness and oxidizing properties.

Cremation ash dishes have excellent absorption properties; magnesium ash dishes have a more stable structure and higher mechanical strength, making them suitable for mass production

analysis. 2. Operating Temperature

Range • **Recommended operating temperature: 900~1050** •

Typical process temperature: around 950 (may vary slightly depending on lead content and furnace type)

The ash pan can withstand prolonged operation under high-temperature oxidation conditions without softening or collapsing.

3. Key Functions and Performance Characteristics

• High absorbency: Rapidly absorbs large amounts of PbO, leaving precious metals on the surface of the ash dish to form gold and silver particles; •

Good refractoriness: The structure remains stable at high temperatures; • Excellent oxygen

affinity: Promotes the oxidation reaction of lead, improving separation efficiency; • Uniform pore structure: Ensures

consistent absorption rate, preventing the pores of the ash dish from rupturing due to excessively rapid absorption; • High chemical purity: Ensures

extremely low background interference from precious metals in fire assay analysis. 4. Typical application scenarios Ash

dishes are key consumables in the

"Cupellation" step of the fire assay analysis process, commonly used in: • Detection of gold, silver, and platinum group metal content • Mining and

metallurgical industry laboratories

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Alloy material composition analysis

- High-temperature oxidation absorption experiment in scientific research institutes

#### 5. Instructions for Use and Precautions

- Ash containers should be dried or preheated at a low temperature before use to prevent them from cracking due to moisture.
- After loading the lead-containing pellets, the temperature should be gradually increased to the ash blowing temperature according to the process curve;
- When a gray dish absorbs lead, it will show a distinct "white center" or "halo," which is a normal phenomenon.
- After absorption, the gold and silver particles will remain in the center of the ash dish and can be used for subsequent evaluation;
- Ash dishes are not reusable and should be replaced according to the experimental procedures.

	Trademark H1 - mm	Top outer diameter D2 - mm	Bottom diameter D2' - mm	Top inner diameter D3' - mm	Darken H1' - mm	Upper edge high layer H2' - mm	medium box	Cardboard boxes/pallets plate
	17	19	19	18	8	4.5	1008 54	
	20	26	20		5.5	8	500	54
		27	20		6	7.5	500	54
		29			6	8	486	54
	26	35	26	27	8	6.5	324	75
	26	40	30	31.2	11.8	6	300	60
	29	40	30	31.2	11.8	9	240	75
	32	40	30	31.2	11.8	12	200	75
							300	48
X)	35	40	30	31.2	11.8	15	200	75
							300	48
5	32	40	30	32	15	12	300	48
	27.1	44.3	34.6	34.2	8.5	9	240	48
	35	45	37	38	13	13	200	50
	35	45	37	33	12	15	200	48
	40	44	34	38	14	13	200	48

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	30	51	43	40	11	5	120	75
	34	60	49.7	52.6	11.5	14	120	75
	30.2	56.8	48.8	47.8	14.8	10	80	75
	70	110	88	80		14	12	75
40	32	40	40	-	-	-	200	60

Composition and technical parameters of magnesia ash dish

## I. Chemical Composition (%)

Element	content
MgO	89.04%
CaO	2.13%
SiO <sub>2</sub>	2.31%
Al <sub>2</sub> O <sub>3</sub>	1.71%
Fe <sub>2</sub> O <sub>3</sub>	0.72%
BaO	0.2%
Na <sub>2</sub> O	0.2%
other	3.69%

## II. Physical and Process Parameters

project	parameter
Physical properties	off-white solid
density	2.8 g/cm <sup>3</sup>
Particle size distribution	190-220 mesh
Processing pressure	30 MPa

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Alumina absorption rate	70%-75% of the gray pan's own weight
precious metal recovery rate	99.5%

## clay crucible



Fire assay clay crucibles are a type of high-temperature refractory ceramic container specifically designed for fire assay processes. They are primarily used for the separation, collection, and determination of precious metals (such as gold, silver, and platinum group metals) during high-temperature melting, oxidation, and reduction processes. These crucibles possess excellent refractoriness, thermal shock resistance, and chemical stability, and can maintain their structural integrity under repeated thermal cycling conditions.

### 1. Material Composition

Fire assay clay crucibles are typically made from the following material ratios:

- High-alumina clay or refractory clay matrix; • Appropriate amounts of minerals such as quartz and feldspar as fluxing and reinforcing components; • Dense ceramic structure formed by high-temperature sintering.

This formula ensures that the crucible maintains good chemical stability under high temperatures and the action of strong oxidizing fluxes (such as borax, soda ash, lead oxides, etc.).

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高新技术企业/专精特新企业  
专业的高温加热制造工厂 (-60°C~2600°C)

中国热处理行业协会理事单位  
ISO9001:质量管理体系认证  
欧盟CE产品认证



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## 2. Operating temperature range

Recommended operating temperature: 1150y-1300y • Maximum

temperature resistance: up to 1350y (depending on the formulation and sintering density)

In the gold and silver fire test process, the crucible is usually used at around 1200y for a long time to withstand the thermal shock caused by rapid temperature rise and fall.

## 3. Main performance characteristics

- Stable high-temperature resistance: Maintains shape and mechanical strength even under near-melting-point conditions;
- Strong thermal shock resistance: Adaptable to cyclic processes involving frequent charging, heating, and unloading;
- Resistant to chemical corrosion: Exhibits good resistance to fluxes commonly used in fire assays, such as borates, carbonates, and lead oxide;
- Low coefficient of expansion: Reduces high-temperature deformation or cracking;
- Moderate porosity: Facilitates flux penetration while maintaining crucible strength.

## 4. Typical Application Scenarios

Fire assay clay crucibles are mainly used for:

- Precious metal testing: quantitative analysis of gold, silver, and platinum group elements;
- Pyrometallurgical assays for mineral samples: including oxidation smelting, absorption, and separation steps;
- Metallurgical industry laboratories: testing of gold ores, silver ores, and alloy materials;
- Scientific research experiments: high-temperature reactions such as small-scale and pilot-scale pyrometallurgical smelting.

## 5. Instructions for Use and Precautions

- The crucible can be preheated at a low temperature before use to reduce thermal shock;
- Avoid a sudden rise in furnace temperature to full power; the high-temperature range should be increased slowly to protect the life of the crucible;
- After use, allow it to cool naturally to avoid rapid cooling that could cause cracks;
- When in long-term contact with highly corrosive fluxes, the wall thickness and integrity of the crucible should be checked regularly.

Model Number:	Outer Diameter (mm),	Bottom Diameter (mm),	Height (mm),	Quantity/Wooden Crate/Small Cabinet	
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GWDL 30 85		56	105	2574	20
GWDL 40 90		56	135	2000	20
GWDL50 105		56	150	1530	20
GWDL55 90		56	155	1500	20
GWDL65 105		56	165	1400	20
GWDL75L 120		75	160	1000	20
GWDL75S 110		60	200	840	20
GWDL75I 125		61	210	672	20
GWDL C 1 105		56	130	880	20
GWDL C2 110		70	130	880	20
GWDL0355 95		56	140	40	-

## Technical indicators

Element	Proportion
silicon dioxide	60%-65%
magnesium oxide	<0.2%

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Calcium oxide	<0.6%
Alumina	30%-34%
iron oxide	<2%
Titanium oxide	<2%
Sodium oxide	<0.1%
potassium oxide	<0.5%

Thank you for contacting us!

Thank you to get in touch with us!

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