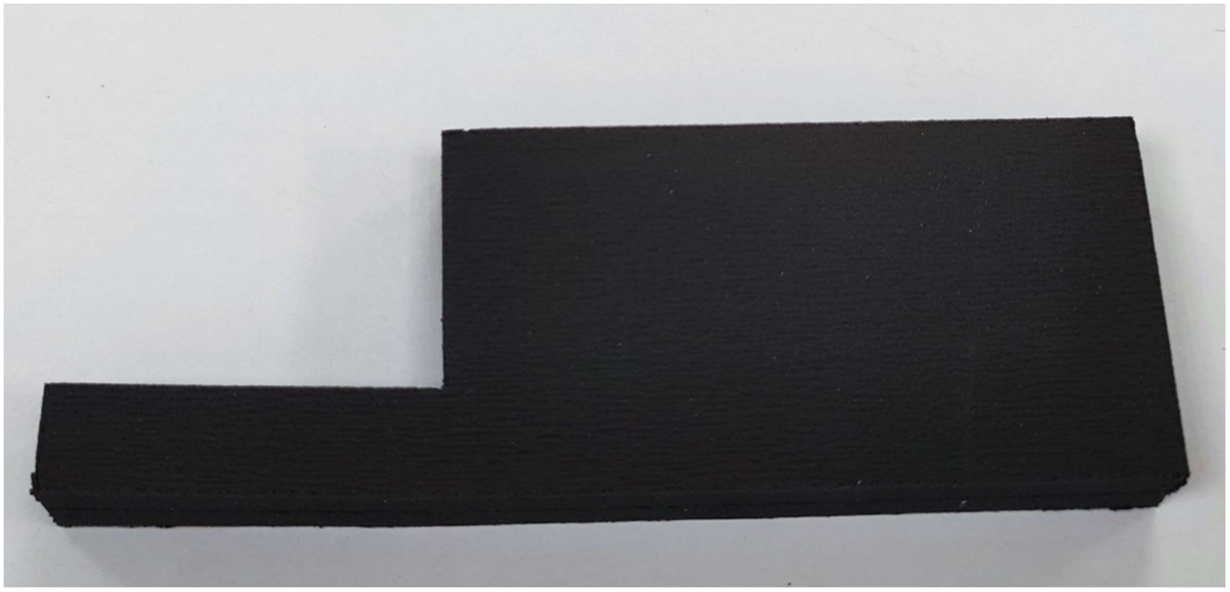





設計驗證
工程課
2023.12.20
發行
宏偉科技開發股份有限公司

# 承　　認　　書

## SPECIFICATION FOR APPROVAL

客戶:鈺緯科技開發股份有限公司

品名:ML32 單背 3M9448

規格:10.3T(含膠)*100mm*35mm

料號:3MD616SP010 (M3483)

設計驗證
工程課
2023.12.20
發行
鈺緯科技開發股份有限公司

| 主 管 | 審 查 | 製 作 |
|---|---|---|
| 游鈺衡 | 游鈺崧 | 王瀞融 |


俐 元 企 業 股 份 有 限 公 司

俐 誠 企 業 股 份 有 限 公 司

LI YUN ENTERPRISE CO.LTD.

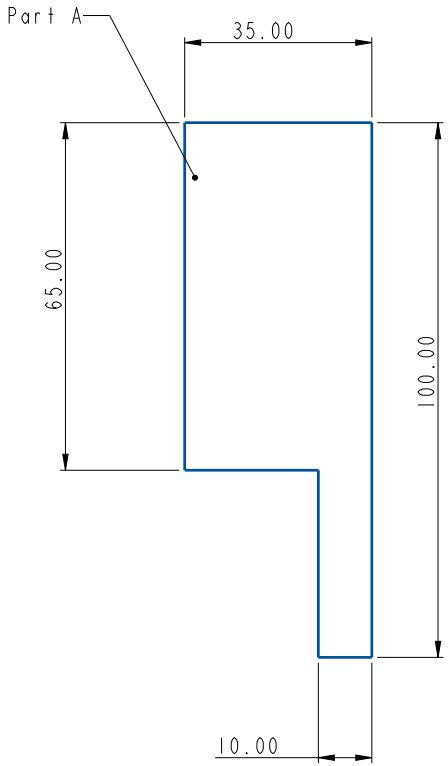
LI CHENG ENTERPRISE CO.LTD.

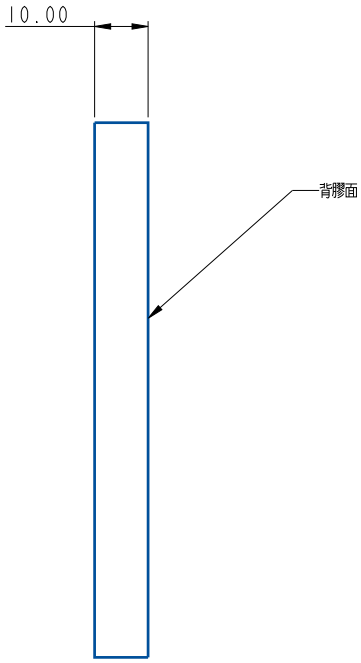
地址:新北市樹林區三龍街 20-1 號

電話:(02)8688-8680　　傳真:(02)8688-8678


中 華 民 國 112 年 12 月 07 日

| REV. | DATE | DESCRIPTION | BY | APVD |
|---|---|---|---|---|




NOTE:
1.Material: TL3503, T=5+5+Adhesive
2.RoHS Compliant.

設計驗證
工程課
2023.12.20
發行
鈺緯科技開發股份有限公司

| RANGE OF DIMENSION | TOLERANCE CLASS DESIGNATION f | m | V c | THIRD ANGLE PROJECTION | UNITS:mm | SCALE: 1/1 | SHEET: 1 OF 1 | MODEL NO.: |
|---|---|---|---|---|---|---|---|---|
| | | | | | MATERIAL: | | TREATMENT: | |
| UP TO 30 | ±0.10 | ±0.20 | ±0.50 | DSGD by Laslie | 2023-10-12 | PART NAME: SPACER | | |
| ABOVE 30~120 | ±0.15 | ±0.30 | ±0.80 | CHK by Ferris | 2023-10-12 | | | |
| ABOVE 120~315 | ±0.20 | ±0.50 | ±1.20 | APVD by Laslie | 2023-10-13 | PART NO.: 3MD616SP010 | | REV. 0 |
| ABOVE 315~1000 | ±0.30 | ±0.80 | ±2.00 | APVD NO.: (M3483) | 3D FILE NAME: SPONGE_PIIC_REWORK | DIA Laboratories ,Ltd. | | |
| ANGLE ±1° | ±1.75/100 | | | | | | | |

# 俐元企業股份有限公司
# 俐誠企業股份有限公司

## 成品出廠檢驗表

表單編號：FM-42A

| 客戶名稱 | 鈺緯科技開發股份有限公司 | 訂單號碼 | | 交貨數量 | |
|---|---|---|---|---|---|
| 料號 | 3MD616SP010(M3483) | 品名規格 | ML32單背3M9448<br>10.3T(含膠)*100*35 | 檢驗日期 | |

| 序號 | 規　格 | 檢　驗　值 | | | | | 檢驗結果 | |
|---|---|---|---|---|---|---|---|---|
| | 依客戶圖面檢驗 | 1 | 2 | 3 | 4 | 5 | OK | NG |
| 1 | 10.3 T± 0.5 | 10.14 | 10.13 | 10.12 | 10.15 | 10.11 | ✓ | |
| 2 | 100 ± 0.5 | 100.20 | 100.22 | 100.19 | 100.21 | 100.22 | ✓ | |
| 3 | 35 ± 0.5 | 35.20 | 35.30 | 35.27 | 35.29 | 35.30 | ✓ | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

主管: 游閔智　　品管組長: 黃惠珍　　品檢員: 林素后

技術資料 Technical data sheet

# 一般物性
Physical properties

| 項目 Item | 単 位 Unit | PORON ML-32 | 測定方法 Test Method |
|---|---|---|---|
| 厚み Thickness | mm | 1.5~6.0 | Thickness gauge |
| 密度 Density | kg/m$^3$ | 320 | JIS K 6401 |
| | g/cm$^3$ | 0.32 | |
| 引張強度 Tensile strength | MPa | 0.68 | JIS K 6251 |
| | kg/cm$^2$ | 6.9 | |
| 伸び Tensile elongation | % | 110 | JIS K 6251 |
| 引裂強度 Tear strength | N/mm | 2.1 | JIS K 6252 |
| | kg/cm | 2.1 | |
| 25%圧縮荷重 25% Compression Load Deflection | MPa | 0.072 | JIS K 6254 |
| | kg/cm$^2$ | 0.73 | |
| 圧縮残留歪 Compression Set | % | 2.0 | JIS K 6401 |
| 難燃性 Flame resistance | – | HBF (1.5mm≦) | UL94 |

上記は全て代表値であり、保証値ではありません。
The figures all indicate representative values.

3M

# Technical Data Sheet

テープ及び関連製品

# 両面粘着テープ

# Y-9448HK,Y-9448HKB

1. 概　　要: 両面粘着テープY-9448HKは、柔軟性に富む不織布基材の両面に接着性に優れたアクリル系感圧性粘着剤を塗布した工業用の両面貼り合わせ用テープです。
Y-9448HKBはY-9448HKの黒色タイプで、Y-9448HKと同等の性能を有しております。

2. 構　　造:




3. 特　　長:
(1)各種素材への接着性が優れる。
(2)P.P.やP.E.等の低表面エネルギープラスチックにも優れた接着力を有する。
(3)低温においても初期タックが低下しにくい。
(4)粗面への接着性が他のテープに比べ優れる。
(5)ダイカット(全抜き)、ハーフカット(半抜き)性に優れた剥離紙を使用。
(6)ギャッピング、テレスコ等のロール変形が起きにくい。

4. 用　　途:
(1)電子機器内のフィルム、発泡材、ゴム材などの取り付け用。
(2)家電製品のスイッチ、ディスプレイ部のデコレーションパネルの取り付け用。
(3)金属、プラスチック銘板の取り付け用。
(4)自動車、車輌用の内装下地材の固定。
(5)玩具、楽器、レジャー用品の緩衝材、すべり防止用ゴム材の取り付け。
(6)サインプレート、切り文字の仮固定用。

5. 一般特性:

| 製品番号 | | Y-9448HK | Y-9448HKB |
|---|---|---|---|
| 色 | テープ | 無色半透明 | 黒 |
| | 剥離紙 | 白色平面紙(3Mロゴ入り) | |
| 厚　み (mm) | テープ | 0.150 | |
| | 剥離紙 | 0.120 | |
| 180度方向剥離力(N/cm) | | 5.88 | |
| 90度方向剥離力(N/cm) | | 4.41 | |
| 剪断接着力(N/cm²) | | 93 | |

＜試験方法＞
厚み:　直径5mmのﾀﾞｲﾔﾙｼｯｸﾈｽｹﾞｰｼﾞ使用。
180度方向剥離力:
対ｽﾃﾝﾚｽ(SUS 304)#280研磨面2kgﾛｰﾗｰ圧着1往復、20～40分放置後300mm/分で測定。
90度方向剥離力:
対ｽﾃﾝﾚｽ(SUS 304)BA仕上げ面2kgﾛｰﾗｰ圧着1往復、20～40分放置後300mm/分で測定。
剪断接着力:
対ｽﾃﾝﾚｽ(SUS 304)BA仕上げ面5kgﾛｰﾗｰ圧着1往復、24時間放置後300mm/分で測定。

6. 接着特性:

①被着体別90度方向剥離力 （単位:N/cm）

| 被着体 | ステンレス(BA) | アルミニウム | アクリル | ポリエチレン | ポリプロピレン | ABS | ポリカーボネート | 硬質塩ビ |
|---|---|---|---|---|---|---|---|---|
| Y-9448HK | 4.41 | 5.00 | 5.53 | 2.16 | 2.82 | 6.59 | 5.10 | 7.84 |

試験方法: 2kgローラー1往復圧着、20～40分放置後300mm／分で測定。

②被着体別剪断接着力 （単位:N/cm²）

| 被着体 | ステンレス(BA) | アルミニウム | アクリル | ポリエチレン | ポリプロピレン | ABS | ポリカーボネート | 硬質塩ビ |
|---|---|---|---|---|---|---|---|---|
| Y-9448HK | 92 | 107 | 122 | 70 | 97 | 121 | 130 | 141 |

試験方法: 5kgローラー1往復圧着、24時間放置後300mm/分で測定。

7. 温度別剪断接着力: （単位:N/cm²）

| 温度 | 5℃ | 23℃ | 50℃ | 75℃ | 100℃ |
|---|---|---|---|---|---|
| Y-9448HK | 181 | 92 | 44 | 21 | 11 |

試験方法: 対ステンレス(SUS 304)BA仕上げ面、5kgローラー1往復圧着、24時間放置後、各温度雰囲気下で充分養生後300mm/分で測定。

8. 剪断保持力: 落下又はずれ/25mmX25mm・2kg

| 条件 | 40℃ | 80℃ |
|---|---|---|
| Y-9448HK | 34分 | 9分 |

試験方法: 対ステンレス(SUS 304)＃280研磨面、2kgローラー1往復圧着、24時間放置後、各温度雰囲気下に1時間放置後2kg重りをかけ1時間後のずれ(mm)または落下までの時間を測定。

**9．タック（3M法）** **（単位：㎜）**

| 温度 | 5℃ | 25℃ |
|---|---|---|
| Y-9448HK | 200 | 15 |

**試験方法： ポリアセタール樹脂製の回転体をスロープの上から、平面上に糊面を露出させたテープの上へ転がし、停止した位置を、基点より測定する。**

**注 意 ： 数値が小さい方がタックが高いことを意味する。**

**以上**

注）本データーシートの測定データは全てSI単位系にて表記されております。他の単位系での数値が必要な場合は換算の上ご検討下さい。

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3M テープ製品 お問い合わせセンター
（工業用・包装用・建築用）
0120-633-011
受付時間／9:00～18:00 月～金（土・日・祝日は除く）
http://www.mmm.co.jp/tape/

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住友スリーエム株式会社 テープ製品事業部 本社 158-8583 東京都世田谷区玉川台2-33-1

人がいる。夢がある。 3M

**ROGERS INOAC CORPORATION**
No.2-70 Jinno-cho, Atsuta-ku, Nagoya, Aichi 456-0068 Japan
TEL:+81-52-682-5851 FAX:+81-52-682-1720

# MATERIAL SAFETY DATA SHEET

## SECTION Ⅰ － PRODUCT IDENTIFICATION

TRADE NAME: PORON ML-32 (Color: Black)
Micro cellular polyurethane foam

HMIS RATING : H-0, F-1, R-0

CHEMICAL FAMILY: Polyurethane

CAS NUMBER: 9009-54-5 (PUR)

EMERGENCY PHONE: 81-52-682-5851

## SECTION Ⅱ － COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS No. | METI No. | wt%<br>(in the whole material) |
|---|---|---|---|
| Carbon black | 1333-86-4 | 5-5222 | 0.55 |
| Other compounds | - | - | 15 |

The remaining ingredients are not defined in Japanese Chemical Substances Control Law (JCSCL) and the Industrial Safety and Health Act of Japan.

## SECTION Ⅲ － HAZARDS IDENTIFICATION

EFFECT OF OVEREXPOSURE: None are expected with normal handling. Cutting and other finishing operations may create polyurethane nuisance dust. Ventilation and personal protection should be similar to all operations generating nuisance dust.

INHALATION: Remove to fresh air and seek medical attention if necessary.

EYE CONTACT: Flush eyes with water and seek medical attention if necessary.

SKIN CONTACT: Wash thoroughly with soap and water if necessary.

INGESTION: Seek medical attention if necessary.

## SECTION Ⅳ － FIRST-AID MEASURES

INHALATION: Remove to fresh air and seek medical attention if symptoms persist.

EYE CONTACT: Flush eyes and eyelids thoroughly with water and seek medical attention.

SKIN CONTACT: Wash thoroughly with soap and water.
Seek medical attention if symptoms persist.

INGESTION: None known

## SECTION Ⅴ － FIRE-FIGHTING MEASURES

FLASH POINT: NA

FLAMMABLE LIMITS: LEL NA UEL NA

AUTO IGNITION TEMPERATURE: NA

EXTINGUISHING MEDIA: X Water Fog X Foam X $CO_2$
X Dry Chemical ____ Other

SPECIAL FIRE FIGHTING PROCEDURES: Decomposition in a fire may produce toxic fumes. Firefighters should be equipped with self-contained breathing apparatus and turnout gear.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Polyurethane materials may generate dense smoke in a fire.

## SECTION Ⅵ － ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTION: None needed.

ENVIRONMENTAL PRECAUTIONS: None needed.

CLEANING METHODS: Sweep or shovel into appropriate container for disposal.

## SECTION Ⅶ － HANDLING AND STORAGE

HANDLING: Do not put this product close to fire. Avoid excessive impact or stacking. Hot wire cutting operations should be exhausted to prevent exposure to irritating vapors. Wear suitable protective equipment, refer to Section Ⅷ.

STORAGE: Keep in a cool place avoiding direct sunlight, rain, heat and moisture.

## SECTION Ⅷ － EXPOSURE CONTROLS MEASURES

RESPIRATORY PROTECTION: None needed

VENTILATION

LOCAL: Recommended in cutting /finishing operations or hot wire cutting operation.
GENERAL: Recommended as with all industrial operations.

PERSONAL PROTECTION

HAND: Gloves to avoid skin contact if necessary.
EYE: Safety glasses with side shields are recommended in all industrial operations.
SKIN: None needed.
OTHER: Safety shower/eyewash in the area.

## SECTION Ⅸ － PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Solid, cellular urethane foam (roll or sheet)
ODOR: Slight odor
PHYSICAL STAGE: Solid
BOILING POINT: NA
MELTING POINT: NE
FREEZING POINT: NE
WATER PRESSURE: NA
VAPOR PRESSURE: NA
SPECIFIC GRAVITY: 0.29-0.35
PARTITION COEFFICIENT: NA

EXPLOSIVE PROPERTIES: NA
EVAPORATION RATE: NA
VISCOSITY: NA
IGNITION TEMPERATURE: NA
PH: NA
FLAMMABILITY: NA
OXIDIZING PROPERTIES: NA

## SECTION Ⅹ － STABILITY AND REACTIVITY

STABLE X UNSTABLE ___

CONDITIONS TO AVOID: NA
MATERIAL TO AVOID: NA
HAZARDOUS POLYMERIZATION: Does Not Occur
HAZARDOUS DECOMPOSITION PRODUCTS: CO, $CO_2$, Oxides of nitrogen, HCN and trace of incompletely burned carbon compounds.

## SECTION ⅩⅠ － TOXICOLOGICAL INFORMATION

CARCINOGENIC STATUS: NA
ACUTE/CHRONIC: NA
REPRODUCTIVE HAZARDS: NA

## SECTION ⅩⅡ － ECOLOGICAL INFORMATION

NA

## SECTION ⅩⅢ － DISPOSAL CONSIDERATION

ENVIRONMENTAL TOXICITY DATA: NA
WASTE DISPOSAL METHOD: In accordance with applicable, federal, state, provincial and local laws and regulations.
CONTAINER DISPOSAL: In accordance with applicable, federal, state, provincial and local laws and regulations.

## SECTION ⅩⅣ － TRANSPORT INFORMATION

DOT/ADR CLASSIFICATION: Not Regulated
IMDG CLASSIFICATION: Not Regulated
ICAO/IATA CLASSIFICATION: Not Regulated

## SECTION ⅩⅤ － REGULATORY INFORMATION (JAPAN)

FIRE DEFENSE LAW: Combustible material
PRTR LAW*: NA
*Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof
POISONOUS AND DELETERIOUS SUBSTANCES CONTOROL LAW: NA
FOREIGN EXCHANGE AND FOREIGN TRADE ACT:
Export Trade Control Order Appended Table 1-16

Follow federal, state, provincial and local laws and regulations.

## SECTION ⅩⅥ － OTHER INFORMATION

NA = Not Applicable NE = Not Established

DATE PREPARED: NOV 1, 2008

PREPARED BY: Eri Isogai
APPROVED BY: Tadashi Sato

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# Material Safety Data Sheet

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## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** 9448HK & 9448HKB Double Coated Tissue Tape, Black
**MANUFACTURER:** 3M
**DIVISION:** Sumitomo/3M Ltd.

**ADDRESS:** 3M Center
St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

**Issue Date:** 01/23/2007
**Supercedes Date:** Initial Issue

**Document Group:** 22-3261-9

**Product Use:**
Intended Use: Bonding

## SECTION 2: INGREDIENTS

| Ingredient | C.A.S. No. | % by Wt |
|---|---|---|
| ADHESIVE: Acrylate Polymer | Trade Secret | 89 - 94 |
| CARRIER: Rayon Non-woven Fabric | Trade Secret | 6 - 11 |

## SECTION 3: HAZARDS IDENTIFICATION

### 3.1 EMERGENCY OVERVIEW

**Odor, Color, Grade:** Black or white product available. Slight acrylic odor.
**General Physical Form:** Solid
**Immediate health, physical, and environmental hazards:** The environmental properties of this product present a low environmental hazard. May cause target organ effects. This product, when used under reasonable conditions and in accordance with the 3M directions for use, should not present a health hazard. However, use or processing of the product in a manner not in accordance with the product's directions for use may affect the performance of the product and may present potential health and safety hazards.

### 3.2 POTENTIAL HEALTH EFFECTS

**Eye Contact:**
No health effects are expected.

**Skin Contact:**
No health effects are expected.

**Inhalation:**
No health effects are expected.

**Ingestion:**
No health effects are expected.

### 3.3 POTENTIAL ENVIRONMENTAL EFFECTS

This substance does not leach metals or other RCRA (Resource Conservation and Recovery Act) listed TCLP (Toxic Characteristic Leaching Procedure) hazardous substances at concentrations that would make the product a hazardous waste.

## SECTION 4: FIRST AID MEASURES

### 4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

**Eye Contact:** No need for first aid is anticipated.

**Skin Contact:** No need for first aid is anticipated.

**Inhalation:** No need for first aid is anticipated.

**If Swallowed:** Do not induce vomiting unless instructed to do so by medical personnel. Give victim two glasses of water. Never give anything by mouth to an unconscious person. If signs/symptoms develop, get medical attention.

## SECTION 5: FIRE FIGHTING MEASURES

### 5.1 FLAMMABLE PROPERTIES

| | |
|---|---|
| **Autoignition temperature** | *Not Applicable* |
| **Flash Point** | *Not Applicable* |
| **Flammable Limits - LEL** | *Not Applicable* |
| **Flammable Limits - UEL** | *Not Applicable* |

### 5.2 EXTINGUISHING MEDIA

Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).

### 5.3 PROTECTION OF FIRE FIGHTERS

**Special Fire Fighting Procedures:** Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

**Unusual Fire and Explosion Hazards:** No unusual fire or explosion hazards are anticipated.

**Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.**

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**Accidental Release Measures:** Not applicable.

## SECTION 7: HANDLING AND STORAGE

### 7.1 HANDLING
This product is considered to be an article which does not release or otherwise result in exposure to a hazardous chemical under normal use conditions.

### 7.2 STORAGE
Not applicable.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 ENGINEERING CONTROLS
Not applicable.

### 8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

#### 8.2.1 Eye/Face Protection
Not applicable.

#### 8.2.2 Skin Protection
Not applicable. Gloves not normally required.

#### 8.2.3 Respiratory Protection
Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection.

#### 8.2.4 Prevention of Swallowing
Do not ingest.

### 8.3 EXPOSURE GUIDELINES

**None Established**

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| **Odor, Color, Grade:** | Black or white product available. Slight acrylic odor. |
| **General Physical Form:** | Solid |
| **Autoignition temperature** | *Not Applicable* |
| **Flash Point** | *Not Applicable* |
| **Flammable Limits - LEL** | *Not Applicable* |
| **Flammable Limits - UEL** | *Not Applicable* |
| **Boiling point** | *Not Applicable* |
| **Vapor Density** | *Not Applicable* |
| **Vapor Pressure** | *Not Applicable* |
| **Specific Gravity** | 0.9 [*Ref Std:* WATER=1] |
| **pH** | *Not Applicable* |
| **Melting point** | *Not Applicable* |
| **Solubility in Water** | Nil |
| **Evaporation rate** | *Not Applicable* |
| **Percent volatile** | 0 % |
| **Viscosity** | *Not Applicable* |

## SECTION 10: STABILITY AND REACTIVITY

**Stability:** Stable.

**Materials and Conditions to Avoid:** None known

**Hazardous Polymerization:** Hazardous polymerization will not occur.

### Hazardous Decomposition or By-Products

| Substance | Condition |
|---|---|
| Aldehydes | During Combustion |
| Hydrocarbons | During Combustion |
| Carbon monoxide | During Combustion |
| Carbon dioxide | During Combustion |
| Ketones | During Combustion |

**Hazardous Decomposition:** Under recommended usage conditions, hazardous decomposition products are not expected. Hazardous decomposition products may occur as a result of oxidation, heating, or reaction with another material.

## SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

## SECTION 12: ECOLOGICAL INFORMATION

### ECOTOXICOLOGICAL INFORMATION

Not determined.

### CHEMICAL FATE INFORMATION

Not determined.

## SECTION 13: DISPOSAL CONSIDERATIONS

**Waste Disposal Method:** Agglomerate and send to sanitary landfill. As a disposal alternative, incinerate in an industrial or commercial facility in the presence of a combustible material.

**Since regulations vary, consult applicable regulations or authorities before disposal.**

## SECTION 14:TRANSPORT INFORMATION

**ID Number(s):**
XT-0021-0519-2, XT-0021-9322-2, XT-0021-9323-0, XT-0021-9324-8

**Please contact the emergency numbers listed on the first page of the MSDS for Transportation Information for this material.**

## SECTION 15: REGULATORY INFORMATION

### US FEDERAL REGULATIONS

Contact 3M for more information.

**311/312 Hazard Categories:**
Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - No Delayed Hazard - No

### STATE REGULATIONS

Contact 3M for more information.

### CHEMICAL INVENTORIES

This product is an article as defined by TSCA regulations, and is exempt from TSCA Inventory listing requirements.

Contact 3M for more information.

## INTERNATIONAL REGULATIONS

Contact 3M for more information.

**This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.**

## SECTION 16: OTHER INFORMATION

**NFPA Hazard Classification**

**Health:** 0 **Flammability:** 1 **Reactivity:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

No revision information is available.

DISCLAIMER: The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

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# 測試報告
# Test Report

號碼(No.): ETR23405809　　日期(Date): 10-May-2023　　

ROGERS INOAC CORPORATION
9-117, NASHINOKI, TAKETOYO-CHO, CHITA-GUN AICHI, JAPAN 470-2309 TEL:+81-569-74-1811

**以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by the applicant as)：**

| | | |
|---|---|---|
| 送樣廠商(Sample Submitted By) | : | ROGERS INOAC CORPORATION |
| 樣品名稱(Sample Name) | : | PORON ML TYPE |
| 樣品型號(Style/Item No.) | : | ML-24, ML-32, ML-20PR, ML-24PR,ML-20EG,ML-20G2, ML-20G3, ML-20FG, ML-24FG |

==========

| | | |
|---|---|---|
| 收件日(Sample Receiving Date) | : | 27-Apr-2023 |
| 測試期間(Testing Period) | : | 27-Apr-2023 to 10-May-2023 |

**測試需求(Test Requested)** : 依據客戶指定，參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP。 (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).)

**測試結果(Test Results)** : 請參閱下一頁 (Please refer to following pages.)

**結　論(Conclusion)** : 根據客戶所提供的樣品，其鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP的測試結果符合RoHS 2011/65/EU Annex II暨其修訂指令(EU) 2015/863之限值要求。 (Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.)

Troy Chang / Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

CHECK REPORT
PIN CODE: 0B5B634A

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# 測試報告
# Test Report



ROGERS INOAC CORPORATION
9-117, NASHINOKI, TAKETOYO-CHO, CHITA-GUN AICHI, JAPAN 470-2309 TEL:+81-569-74-1811

**測試部位敘述 (Test Part Description)**

No.1 : 黑色片狀 (BLACK SHEET)

**測試結果 (Test Results)**

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) No.1 | 限值 (Limit) |
|---|---|---|---|---|---|
| 鎘 (Cd) (Cadmium (Cd)) | 參考IEC 62321-5: 2013，以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.) | mg/kg | 2 | n.d. | 100 |
| 鉛 (Pb) (Lead (Pb)) | 參考IEC 62321-5: 2013，以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.) | mg/kg | 2 | n.d. | 1000 |
| 汞 (Hg) (Mercury (Hg)) | 參考IEC 62321-4: 2013+ AMD1: 2017，以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.) | mg/kg | 2 | n.d. | 1000 |
| 六價鉻 Cr(VI) (Hexavalent Chromium Cr(VI)) | 參考IEC 62321-7-2: 2017，以紫外光-可見光分光光度計分析。(With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.) | mg/kg | 8 | n.d. | 1000 |
| 鄰苯二甲酸丁苯甲酯 (BBP) (Butyl benzyl phthalate (BBP)) | 參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.) | mg/kg | 50 | n.d. | 1000 |
| 鄰苯二甲酸二丁酯 (DBP) (Dibutyl phthalate (DBP)) | | mg/kg | 50 | n.d. | 1000 |
| 鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP)) | | mg/kg | 50 | n.d. | 1000 |
| 鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP)) | | mg/kg | 50 | n.d. | 1000 |

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# 測試報告
# Test Report



ROGERS INOAC CORPORATION
9-117, NASHINOKI, TAKETOYO-CHO, CHITA-GUN AICHI, JAPAN 470-2309 TEL:+81-569-74-1811

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) No.1 | 限值 (Limit) |
|---|---|---|---|---|---|
| 一溴聯苯 (Monobromobiphenyl) | 參考IEC 62321-6: 2015，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.) | mg/kg | 5 | n.d. | - |
| 二溴聯苯 (Dibromobiphenyl) | | mg/kg | 5 | n.d. | - |
| 三溴聯苯 (Tribromobiphenyl) | | mg/kg | 5 | n.d. | - |
| 四溴聯苯 (Tetrabromobiphenyl) | | mg/kg | 5 | n.d. | - |
| 五溴聯苯 (Pentabromobiphenyl) | | mg/kg | 5 | n.d. | - |
| 六溴聯苯 (Hexabromobiphenyl) | | mg/kg | 5 | n.d. | - |
| 七溴聯苯 (Heptabromobiphenyl) | | mg/kg | 5 | n.d. | - |
| 八溴聯苯 (Octabromobiphenyl) | | mg/kg | 5 | n.d. | - |
| 九溴聯苯 (Nonabromobiphenyl) | | mg/kg | 5 | n.d. | - |
| 十溴聯苯 (Decabromobiphenyl) | | mg/kg | 5 | n.d. | - |
| **多溴聯苯總和 (Sum of PBBs)** | | mg/kg | - | n.d. | 1000 |
| 一溴聯苯醚 (Monobromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| 二溴聯苯醚 (Dibromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| 三溴聯苯醚 (Tribromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| 四溴聯苯醚 (Tetrabromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| 五溴聯苯醚 (Pentabromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| 六溴聯苯醚 (Hexabromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| 七溴聯苯醚 (Heptabromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| 八溴聯苯醚 (Octabromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| 九溴聯苯醚 (Nonabromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| 十溴聯苯醚 (Decabromodiphenyl ether) | | mg/kg | 5 | n.d. | - |
| **多溴聯苯醚總和 (Sum of PBDEs)** | | mg/kg | - | n.d. | 1000 |

**備註(Note)：**

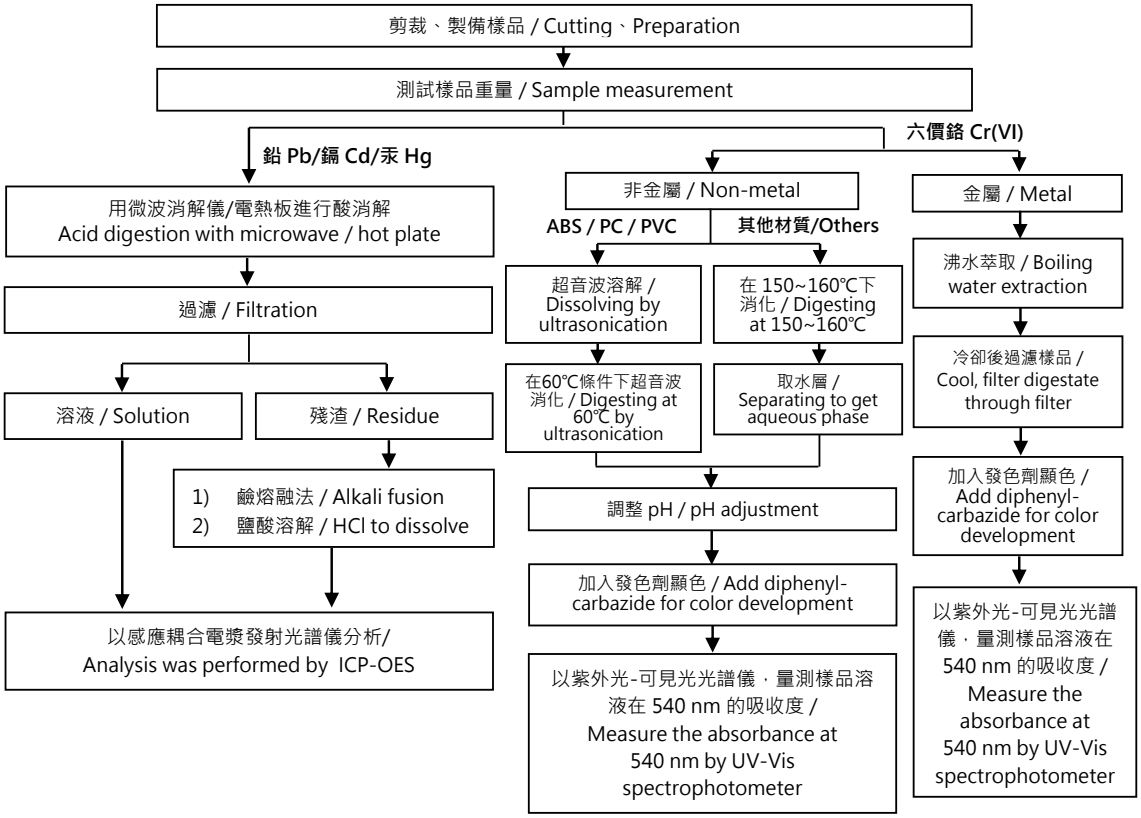
1. mg/kg = ppm；0.1wt% = 0.1% = 1000ppm
2. MDL = Method Detection Limit (方法偵測極限值)
3. n.d. = Not Detected (未檢出)；小於MDL / Less than MDL
4. "-" = Not Regulated (無規格值)
5. 除非另有說明，參照ILAC-G8:09/2019，採用簡單二元(w=0)允收規則進行符合性判定；根據此規則，符合性結果之判定係以測試結果與限值做比較。(Unless otherwise stated , the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019. According to this rule, the judgement of conformity is based on the comparing test results with limits.)

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ROGERS INOAC CORPORATION
9-117, NASHINOKI, TAKETOYO-CHO, CHITA-GUN AICHI, JAPAN 470-2309 TEL:+81-569-74-1811

**重金屬流程圖 / Analytical flow chart of heavy metal**

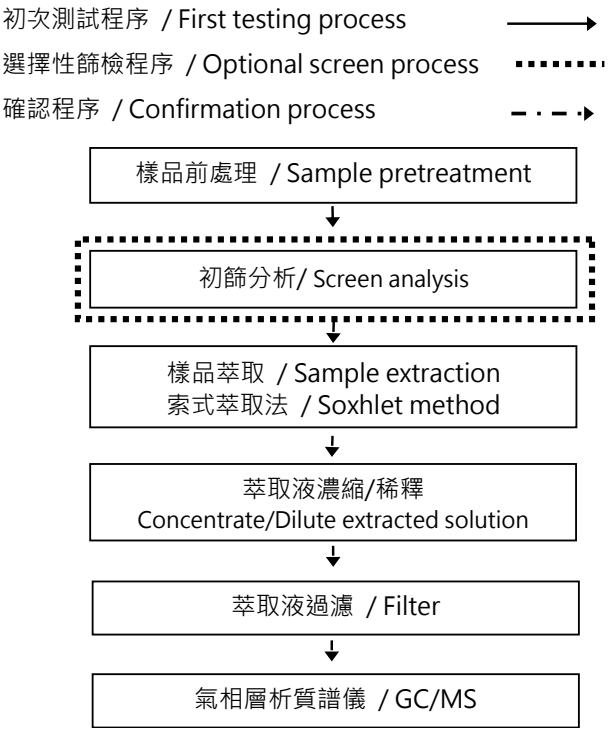
根據以下的流程圖之條件，樣品已完全溶解。（六價鉻測試方法除外）
These samples were dissolved totally by pre-conditioning method according to below flow chart.
（$Cr^{6+}$ test method excluded）




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ROGERS INOAC CORPORATION
9-117, NASHINOKI, TAKETOYO-CHO, CHITA-GUN AICHI, JAPAN 470-2309 TEL:+81-569-74-1811

**多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBBs/PBDEs**

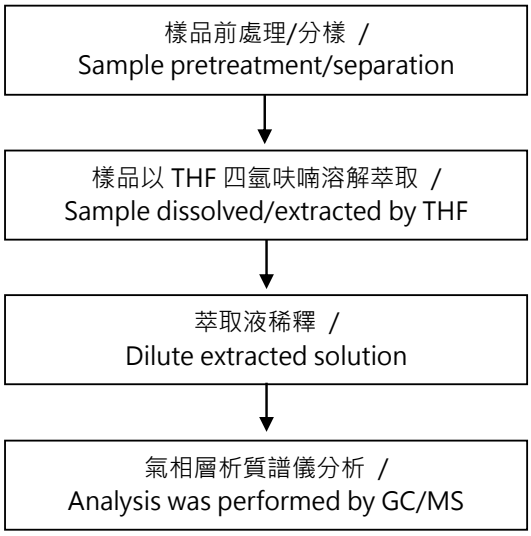



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ROGERS INOAC CORPORATION
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**可塑劑分析流程圖 / Analytical flow chart - Phthalate**

**【測試方法/Test method: IEC 62321-8】**




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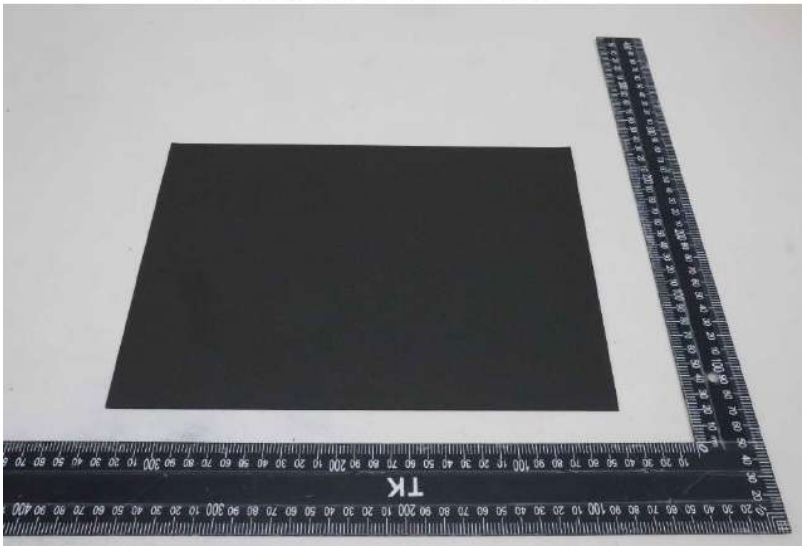
# 測試報告
# Test Report

號碼(No.): ETR23405809　　日期(Date): 10-May-2023　　

ROGERS INOAC CORPORATION
9-117, NASHINOKI, TAKETOYO-CHO, CHITA-GUN AICHI, JAPAN 470-2309 TEL:+81-569-74-1811

*** 照片中如有箭頭標示，則表示為實際檢測之樣品/部位. ***
**(The tested sample / part is marked by an arrow if it's shown on the photo.)**

**ETR23405809**



** 報告結尾 (End of Report) **

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# 測試報告
# Test Report



ROGERS INOAC CORPORATION
9-117, NASHINOKI, TAKETOYO-CHO, CHITA-GUN AICHI, JAPAN 470-2309 TEL:+81-569-74-1811

**以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by the applicant as)：**

| | | |
|---|---|---|
| 送樣廠商(Sample Submitted By) | : | ROGERS INOAC CORPORATION |
| 樣品名稱(Sample Name) | : | PORON ML TYPE |
| 樣品型號(Style/Item No.) | : | ML-24, ML-32, ML-20PR, ML-24PR,ML-20EG,ML-20G2, ML-20G3, ML-20FG, ML-24FG |

==========

| | | |
|---|---|---|
| 收件日(Sample Receiving Date) | : | 27-Apr-2023 |
| 測試期間(Testing Period) | : | 27-Apr-2023 to 10-May-2023 |

**測試需求(Test Requested)** : 依據客戶指定，測試鹵素-氟、氯、溴、碘。 (As specified by client, to test Halogen-Fluorine, Chlorine, Bromine, Iodine in the submitted sample.)

**測試結果(Test Results)** : 請參閱下一頁 (Please refer to following pages).

Troy Chang / Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

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PIN CODE: FD65C02B

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# 測試報告
# Test Report



ROGERS INOAC CORPORATION
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**測試部位敘述 (Test Part Description)**

No.1 : 黑色片狀 (BLACK SHEET)

**測試結果 (Test Results)**

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) |
|---|---|---|---|---|
| | | | | No.1 |
| 氟 (F) (Fluorine (F)) (CAS No.: 14762-94-8) | 參考BS EN 14582: 2016，以離子層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.) | mg/kg | 50 | n.d. |
| 氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-15-1) | 參考BS EN 14582: 2016，以離子層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.) | mg/kg | 50 | 108 |
| 溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2) | 參考BS EN 14582: 2016，以離子層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.) | mg/kg | 50 | n.d. |
| 碘 (I) (Iodine (I)) (CAS No.: 14362-44-8) | 參考BS EN 14582: 2016，以離子層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.) | mg/kg | 50 | n.d. |

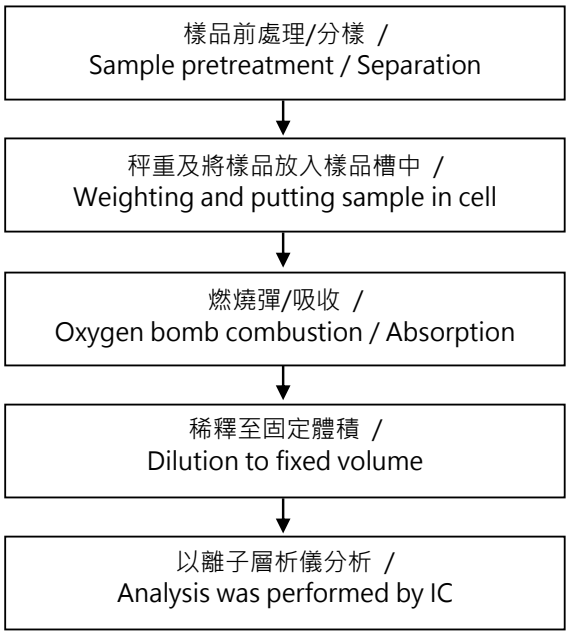
**備註(Note)：**

1. mg/kg = ppm；0.1wt% = 0.1% = 1000ppm
2. MDL = Method Detection Limit (方法偵測極限值)
3. n.d. = Not Detected (未檢出)；小於MDL / Less than MDL

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**鹵素分析流程圖 / Analytical flow chart - Halogen**




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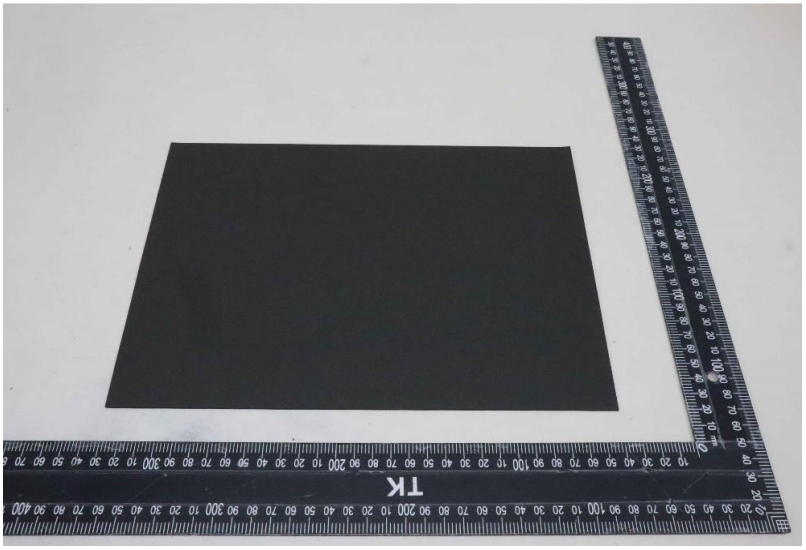
# 測試報告
# Test Report



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*** 照片中如有箭頭標示，則表示為實際檢測之樣品/部位. ***
**(The tested sample / part is marked by an arrow if it's shown on the photo.)**

**ETR23405810**



** 報告結尾 (End of Report) **

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# Test Report

**No.:** SHAEC23015747901 **Date:** Oct 07, 2023 

Client Name: 3M CHINA LIMITED

Client Address: 222 TIANLIN ROAD, SHANGHAI

Sample Name: 3M 9448HK

The above sample(s) and information were provided by the client.

---

SGS Job No.: SHP23-014530

Sample Receiving Date: Sep 27, 2023

Testing Period: Sep 27, 2023 ~ Oct 07, 2023

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

| Test Requirement | Conclusion |
|---|---|
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) | Pass |

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Jenny Lan
Approved Signatory

scan to see the report
CD4ACF0A

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**Test Result(s):**

Test Part Description：

| SN ID | Sample No. | SGS Sample ID | Description |
|---|---|---|---|
| SN1 | A1 | SHA23-0157479-0001.C001 | Colorless transparent adhesive film |

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%
(2) MDL = Method Detection Limit
(3) ND = Not Detected (< MDL)
(4) "-" = Not Regulated

**EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)**

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 and IEC 62321-8:2017, analysis was performed by ICP-OES, UV-Vis and GC-MS.

| Test Item(s) | Limit | Unit(s) | MDL | A1 |
|---|---|---|---|---|
| Cadmium(Cd) | 100 | mg/kg | 2 | ND |
| Lead (Pb) | 1000 | mg/kg | 2 | ND |
| Mercury (Hg) | 1000 | mg/kg | 2 | ND |
| Hexavalent Chromium (Cr(VI)) | 1000 | mg/kg | 8 | ND |
| Polybromobiphenyl (PBBs) | 1000 | mg/kg | - | ND |
| Monobromobiphenyl (MonoBB) | - | mg/kg | 5 | ND |
| Dibromobiphenyl (DiBB) | - | mg/kg | 5 | ND |
| Tribromobiphenyl (TriBB) | - | mg/kg | 5 | ND |
| Tetrabromobiphenyl (TetraBB) | - | mg/kg | 5 | ND |
| Pentabromobiphenyl (PentaBB) | - | mg/kg | 5 | ND |
| Hexabromobiphenyl (HexaBB) | - | mg/kg | 5 | ND |
| Heptabromobiphenyl (HeptaBB) | - | mg/kg | 5 | ND |
| Octabromobiphenyl (OctaBB) | - | mg/kg | 5 | ND |
| Nonabromobiphenyl (NonaBB) | - | mg/kg | 5 | ND |
| Decabromobiphenyl (DecaBB) | - | mg/kg | 5 | ND |
| Polybromodiphenyl ether(PBDEs) | 1000 | mg/kg | - | ND |
| Monobromodiphenylether (MonoBDE) | - | mg/kg | 5 | ND |
| Dibromodiphenylether (DiBDE) | - | mg/kg | 5 | ND |
| Tribromodiphenylether (TriBDE) | - | mg/kg | 5 | ND |
| Tetrabromodiphenylether (TetraBDE) | - | mg/kg | 5 | ND |
| Pentabromodiphenylether (PentaBDE) | - | mg/kg | 5 | ND |
| Hexabromodiphenylether (HexaBDE) | - | mg/kg | 5 | ND |
| Heptabromodiphenylether (HeptaBDE) | - | mg/kg | 5 | ND |
| Octabromodiphenylether (OctaBDE) | - | mg/kg | 5 | ND |
| Nonabromodiphenylether (NonaBDE) | - | mg/kg | 5 | ND |
| Decabromodiphenylether (DecaBDE) | - | mg/kg | 5 | ND |
| Dibutyl Phthalate(DBP) | 1000 | mg/kg | 50 | ND |
| Benzyl Butyl Phthalate(BBP) | 1000 | mg/kg | 50 | ND |

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| Test Item(s) | Limit | Unit(s) | MDL | A1 |
|---|---|---|---|---|
| Bis-(2-ethylhexyl) Phthalate(DEHP) | 1000 | mg/kg | 50 | ND |
| Diisobutyl Phthalate(DIBP) | 1000 | mg/kg | 50 | ND |

**Notes:**

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

(2) IEC 62321 series is equivalent to EN 62321 series.

(3) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (*w*=0) stated in ILAC-G8:09/2019.

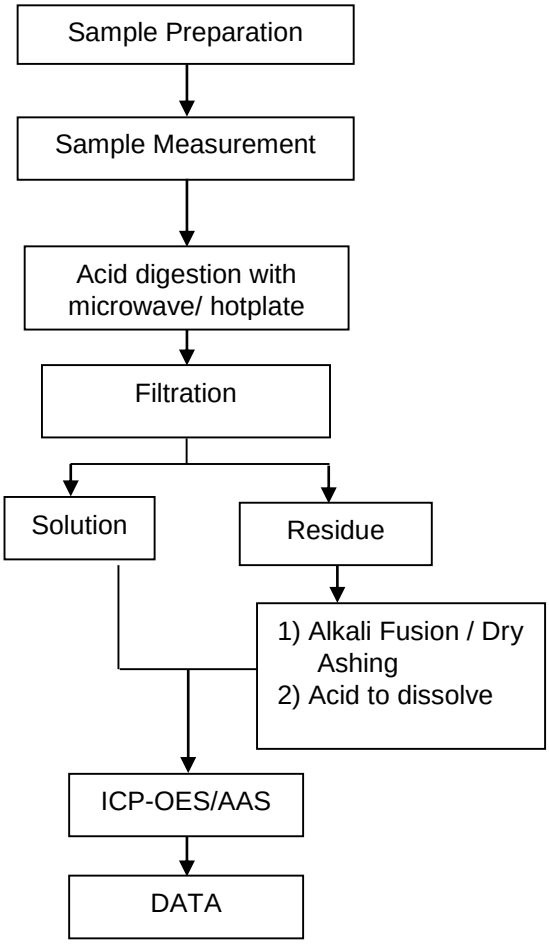
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**Elements Testing Flow Chart**

These samples were dissolved totally by pre-conditioning method according to below flow chart.



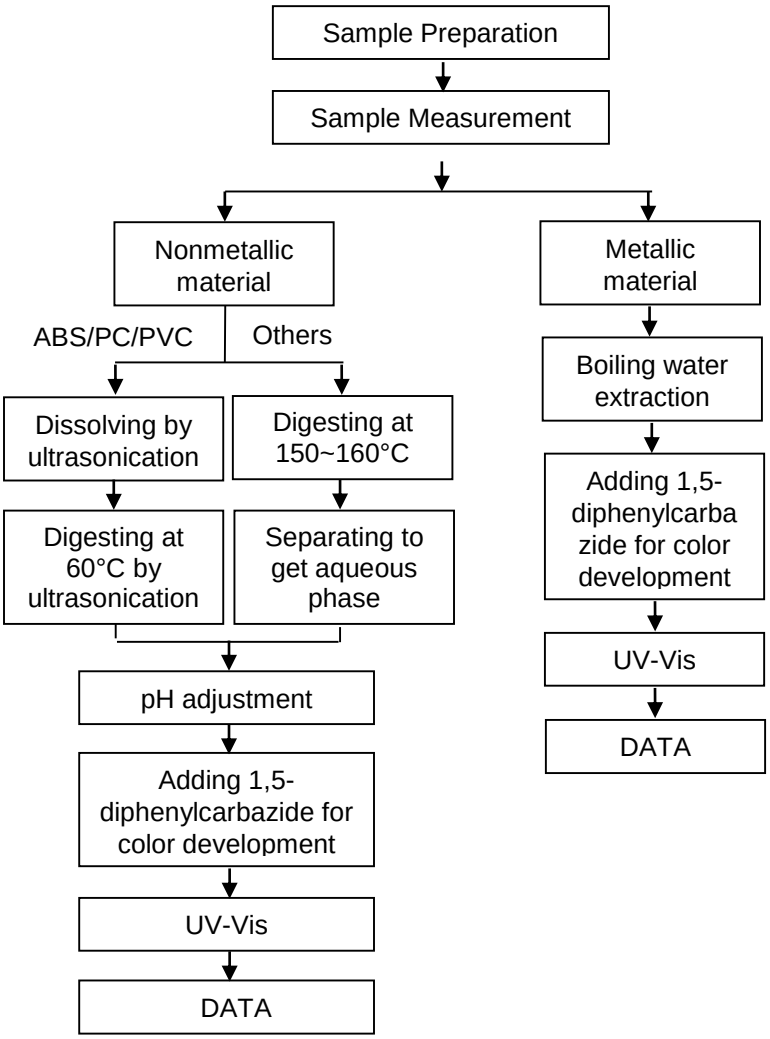

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**Hexavalent Chromium (Cr(VI)) Testing Flow Chart**



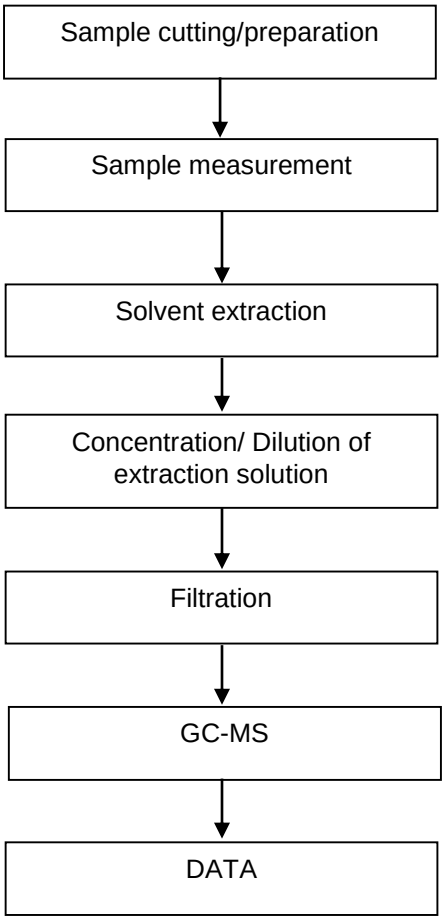

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**PBBs/PBDEs Testing Flow Chart**



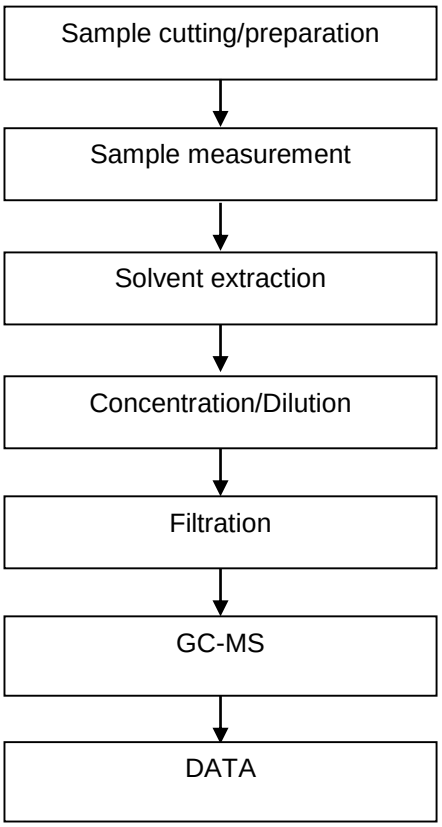

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**Phthalates Testing Flow Chart**




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**Sample Photo:**




SHA23-0157479-0001.C001

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# Test Report

**No.:** SHAEC23015747903 **Date:** Oct 07, 2023 

Client Name: 3M CHINA LIMITED

Client Address: 222 TIANLIN ROAD, SHANGHAI

Sample Name: 3M 9448HK

The above sample(s) and information were provided by the client.

---

SGS Job No.: SHP23-014530

Sample Receiving Date: Sep 27, 2023

Testing Period: Sep 27, 2023 ~ Oct 07, 2023

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

| Test Requirement | Conclusion |
|---|---|
| Halogen | See Results |

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Jenny Lan
Approved Signatory

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**Test Result(s):**

Test Part Description：

| SN ID | Sample No. | SGS Sample ID | Description |
|---|---|---|---|
| SN1 | A1 | SHA23-0157479-0001.C001 | Colorless transparent adhesive film |

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%
(2) MDL = Method Detection Limit
(3) ND = Not Detected (< MDL)
(4) "-" = Not Regulated

**Halogen**

Test Method: With reference to EN 14582:2016, analysis was performed by IC.

| Test Item(s) | Unit(s) | MDL | A1 |
|---|---|---|---|
| Fluorine(F) | mg/kg | 20 | ND |
| Chlorine(Cl) | mg/kg | 50 | ND |
| Bromine(Br) | mg/kg | 50 | ND |
| Iodine(I) | mg/kg | 50 | ND |

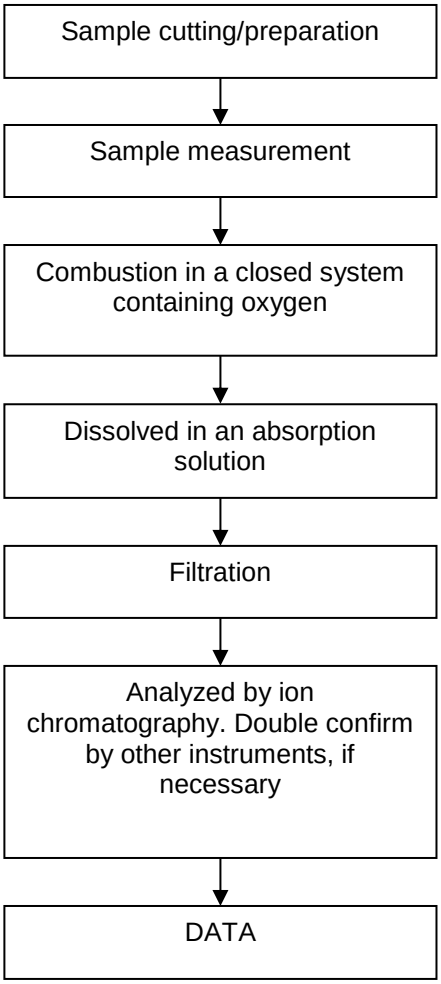
Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (*w*=0) stated in ILAC-G8:09/2019.

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**ATTACHMENTS**

## Halogen Testing Flow Chart




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