TECHNICAL DATA SHEET

MCM-48 Mesoporous Molecular Sieve

Mesoporous silica · hydrothermal method · Type B, flower-shaped particles · BET >800 m²/g · pore size about 2.7 nm · calcined, ready to use



ACS Material MCM-48 Mesoporous Molecular Sieve — Representative Packaging

ACS Material MCM-48 in an ACS Material bottle. Image shown for reference; label and packaging may vary.

CONTENTS

01 Product Overview

02 Core Advantages

03 Specifications

04 Applications

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Revision Date **10/29/2026**

SECTION I

Product Overview

MCM-48 is a mesoporous molecular sieve of porous silica (SiO_2, CAS No. 7631-86-9). ACS Material MCM-48 is prepared by the hydrothermal method and is supplied calcined and ready to use directly. The current grade, Type B, is a reagent-grade white powder of flower-shaped particles (200–500 nm) with a BET surface area >800 m^2/g, a pore volume of 0.5–0.8 cm^3/g and an average pore size of about 2.7 nm.

Type A, a spherical-particle grade (200–400 nm), has been discontinued. Its specifications and its BET, TEM and XRD data are kept in this data sheet for reference only; they were measured on Type A and are not Type B results. The SEM images show the difference in particle shape between the two grades.

SECTION II

Core Advantages

— **High surface area** — BET surface area >800 m^2/g, the same specification as the discontinued Type A.

— **Flower-shaped particles** — Type B is supplied as flower-shaped particles with a particle size of 200–500 nm.

— **Hydrothermal preparation** — prepared by the hydrothermal method; reagent grade, white powder.

— **Small mesopores** — average pore size of about 2.7 nm; pore volume 0.5–0.8 cm^3/g (Type B).

— **Calcined and ready to use** — supplied calcined; the powder can be used directly.

— **Thermal reference point** — the collapsing temperature of MCM-48 is about 750 °C.

SECTION III

Specifications

Technical data

Specifications	
Product name	MCM-48 Mesoporous Molecular Sieve
Brand	ACS Material
Synonyms	MCM-48, porous silica, silicon dioxide
CAS No.	7631-86-9
Linear formula	SiO_2
Molecular weight	60.08
EC No.	231-545-4
Preparation method	Hydrothermal method
Supplied	Calcined, ready to use directly
Current grade	Type B (Type A has been discontinued)
Collapsing temperature	About 750 °C

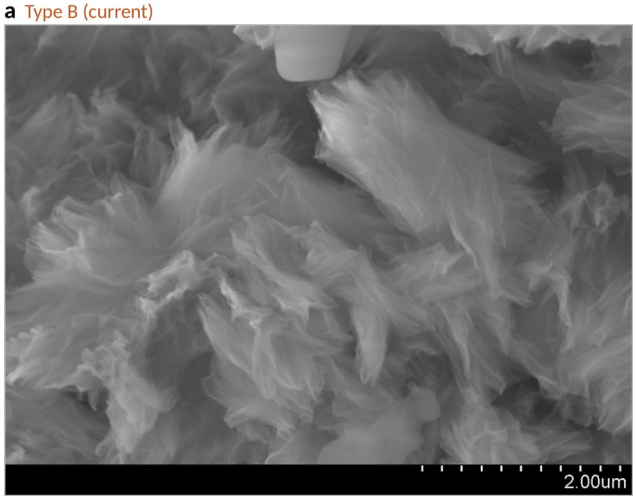
Characterizations — Type B (current) and Type A (discontinued)

Property	Type B	Type A (discontinued)
Grade	Reagent grade	Reagent grade
Appearance	White powder	White powder
Particle size	200–500 nm	200–400 nm
Shape	Flower	Spherical
BET surface area (m^2/g)	>800	>800
Pore volume (cm^3/g)	0.5–0.8	0.6–0.75
Average pore size	About 2.7 nm	About 2.7 nm
Boiling point	2230 °C (lit.)	2230 °C (lit.)
Melting point	>1600 °C (lit.)	>1600 °C (lit.)

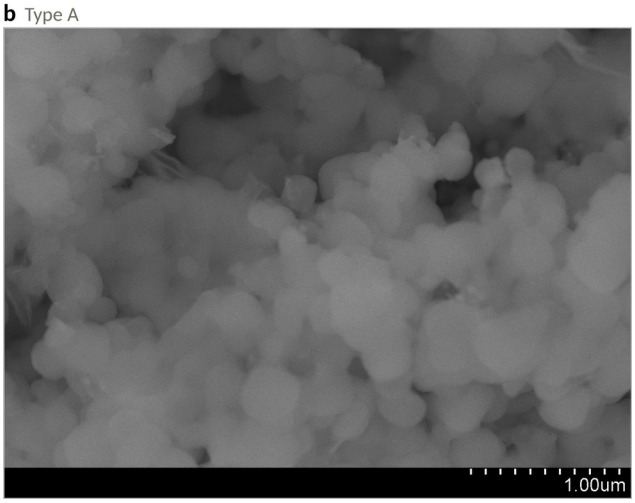
This product is calcined and ready to use directly. Type A data are shown for reference only.

Typical data

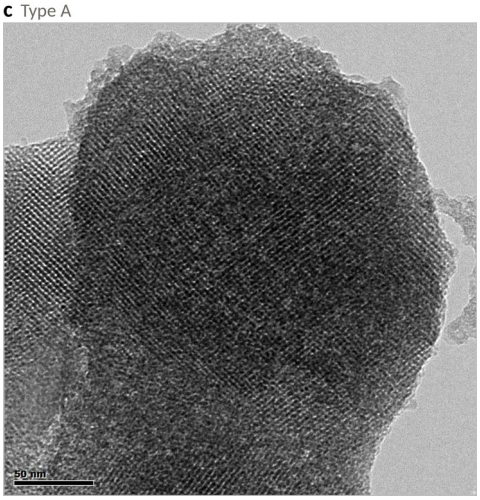
a Type B (current)



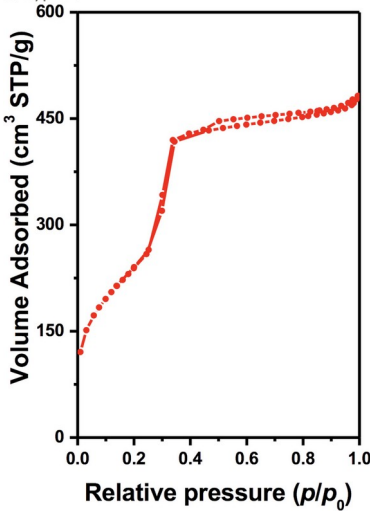
b Type A



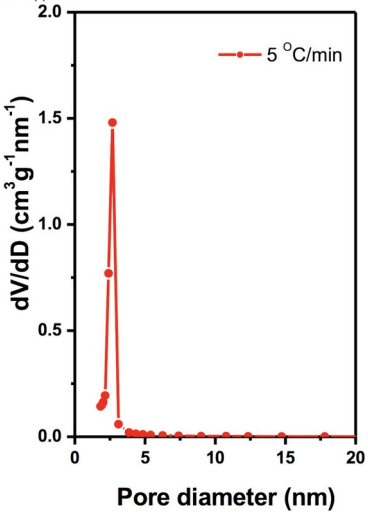
c Type A



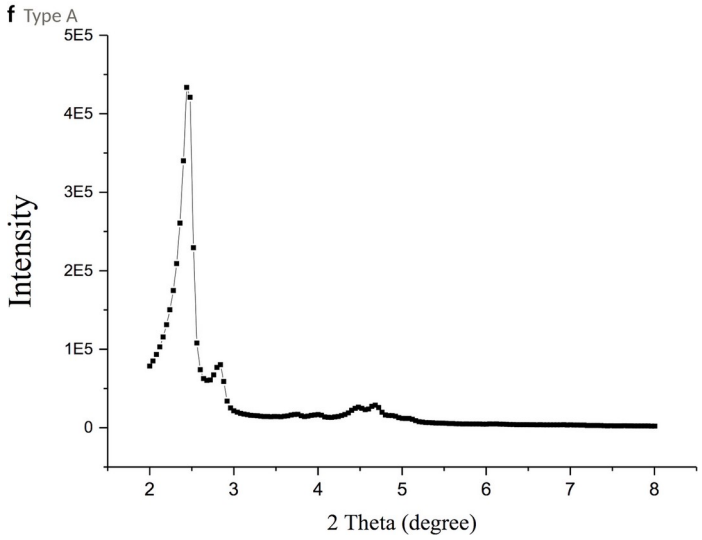
d Type A



e Type A



a SEM image of ACS Material MCM-48 Type B, flower-shaped particles, ×20,000 (scale bar 2.00 µm). **b** SEM image, spherical particles, ×30,000 (scale bar 1.00 µm). **c** TEM image (scale bar 50 nm). **d** Adsorption–desorption isotherm. **e** Pore size distribution.



f XRD pattern. Panels b–f were measured on Type A and are shown for reference only.

SECTION IV

Applications

Mesoporous silicas are inorganic materials with porous structures and find applications in chromatography, catalysis, drug delivery and imaging.

Application fields: chromatography; catalysis; drug delivery; imaging.

Revision Date: 10/29/2026

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