Promethean Particles®

TECHNICAL DATA SHEET

# ProMOF® 1100

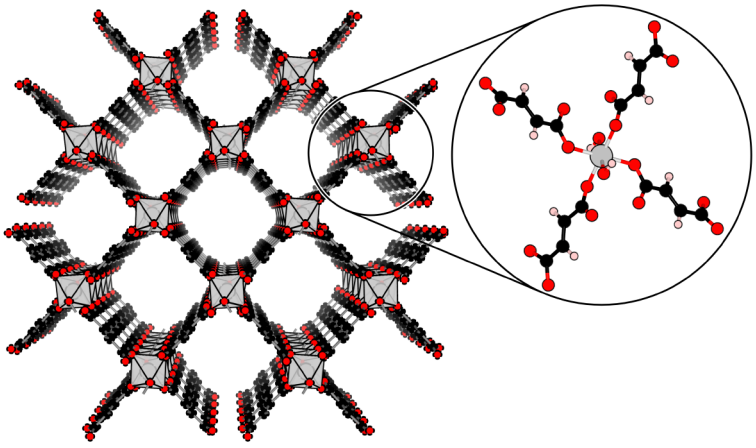
A high-quality aluminium fumarate based metal-organic framework (MOF) designed for use in a wide range of applications including atmospheric water harvesting and dehumidification.

## Specifications

| | |
|---|---|
| Synonym | Aluminium fumarate |
| Metal Ion(s) | Aluminium (Al) |
| Substance Name | Aluminium, [(2E)-2-butenedioato(2-)-kappa.O1]hydroxy- |
| Empirical Formula | $C_4H_2AlO_5$ |
| Molecular Weight | 157.04 |
| CAS Number | 1370461-06-5 |
| EC Number | 810-213-8 |

## Structure

ProMOF 1100 is a MOF composed of octahedral aluminium ions, connected by fumaric acid linkers. The crystal structure adopts a primitive structure, with a space group of P21/c.



## Appearance

ProMOF 1100 is a white solid which can be supplied in the form of a powder or granules.

## Typical Properties

| | | |
|---|---|---|
| Surface Area (powder) | 1,000 $m^2/g$ | $N_2$ adsorption by BET |
| Bulk Density (powder) | 0.45 $g/cm^3$ | |
| Mean crystallite length | ~40.5 ± 9.1 nm | SEM Imaging |
| Mean crystallite width | ~13.2 ± 3.0 nm | SEM Imaging |

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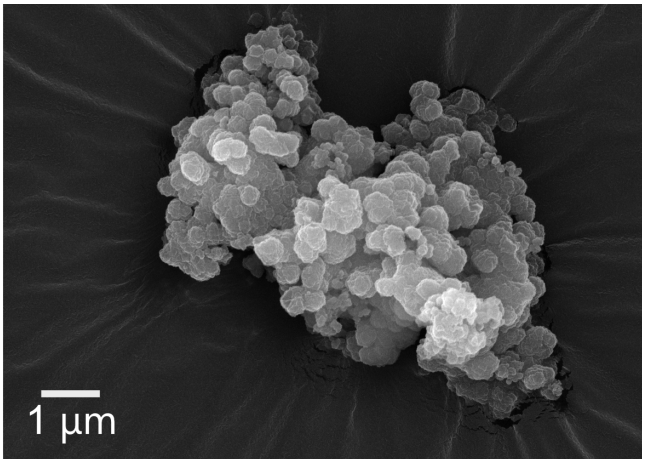
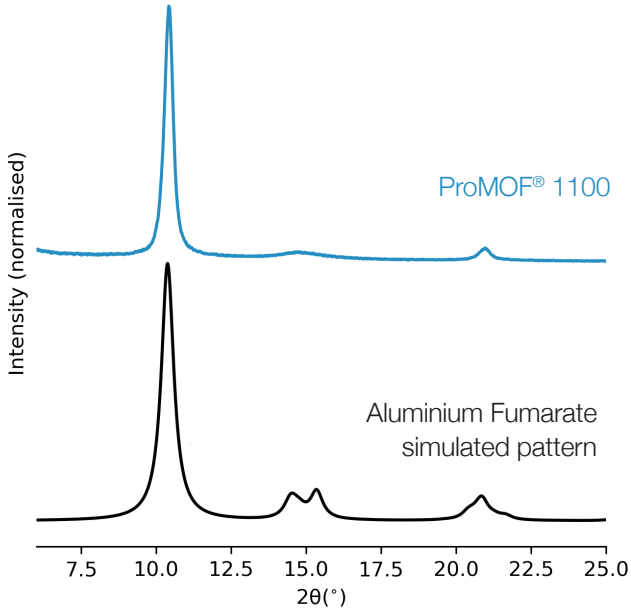
## Scanning Electron Microscopy (SEM) Imaging




SEM imaging shows that ProMOF 1100 is composed of spherical crystallites of approximately 100 nm diameter, which agglomerate into stable, larger particles.

## Powder X-Ray Diffraction (PXRD)




The PXRD pattern of ProMOF 1100 matches the pattern generated by SCXRD of aluminium fumarate reported in the literature, meaning that the sample contains pure aluminium fumarate, with no impurities.

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## Further Information

ProMOF 1100 may have naturally adsorbed gas species during storage. Please activate ProMOF 1100 before use by heating in an oven at 120°C for ≥12 hours. For best results, use a vacuum or forced-air oven.

Information about specific shaped forms, production volumes, lead times and safety data sheets are availabile on request.

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