

Supporting information

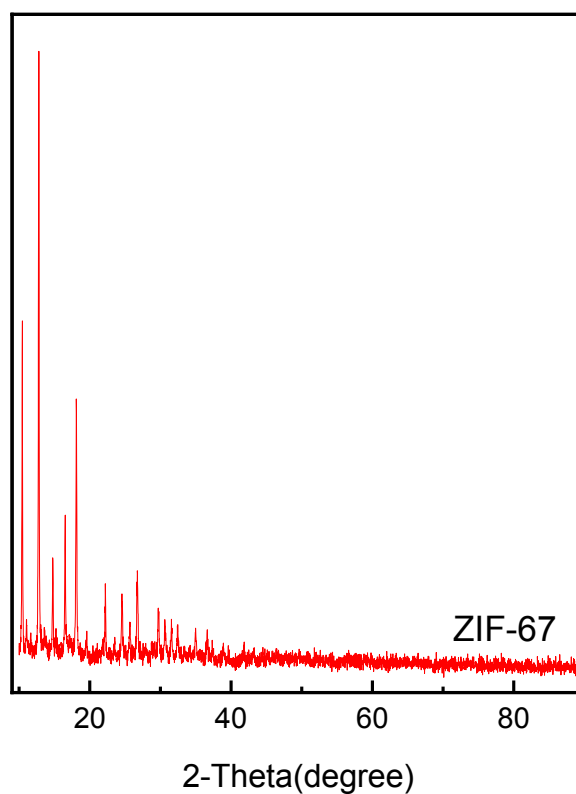


Figure S1. The XRD pattern of pristine ZIF-67.

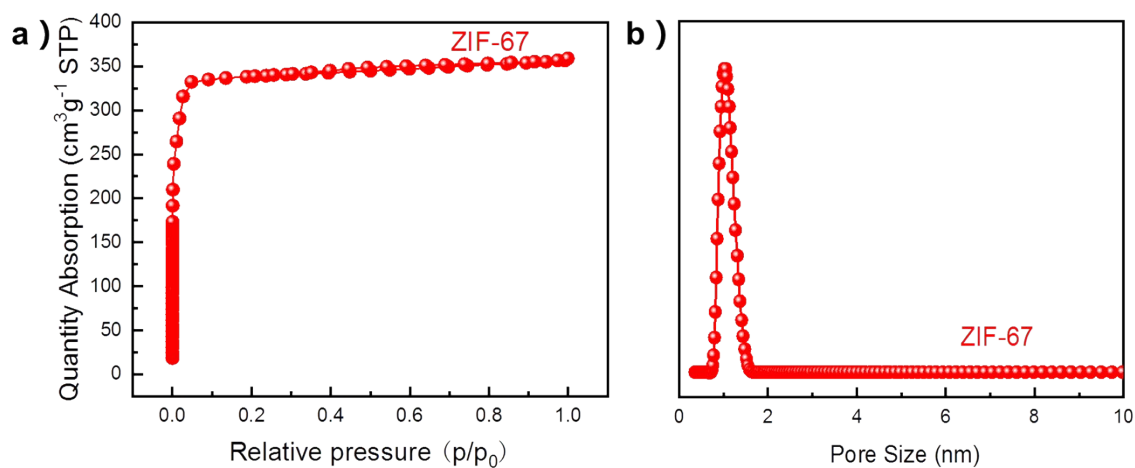


Figure S2. The N₂ adsorption-desorption isotherms and pore size distribution of ZIF-67.

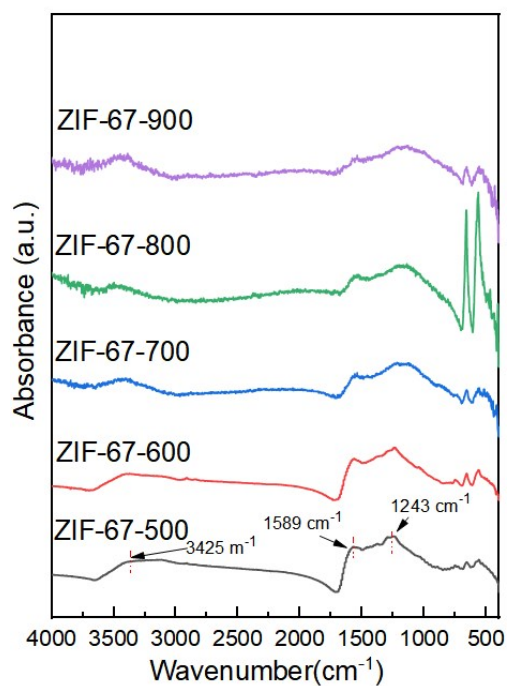


Figure S3. FT-IR spectra of carbonized ZIF-67 catalysts.

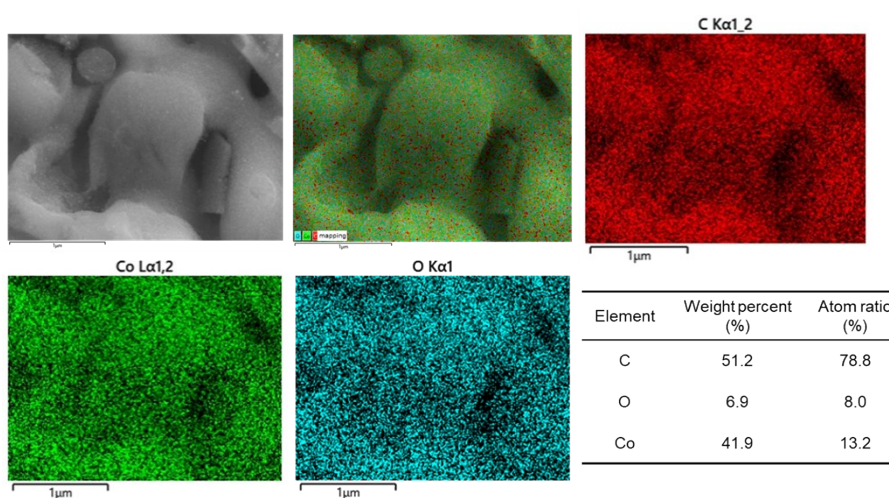


Figure S4. Element mapping and SEM-EDX analysis of ZIF-67-500 catalyst.

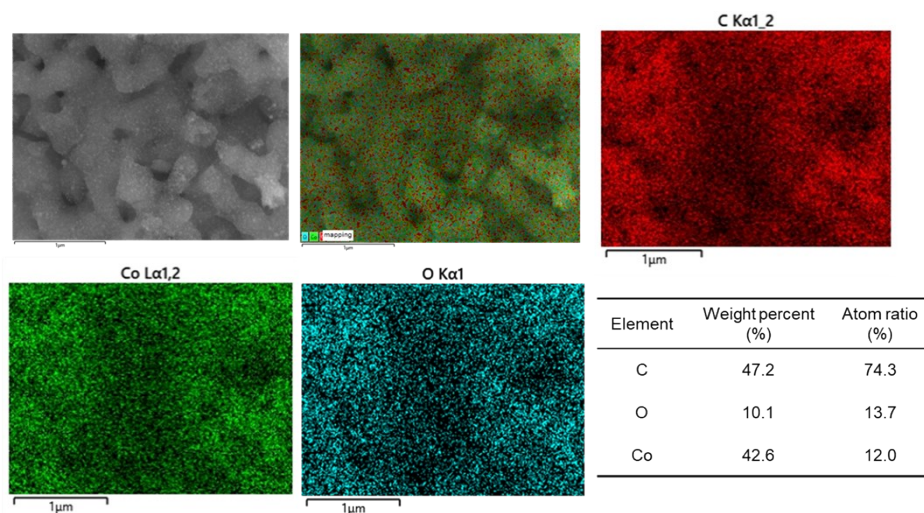


Figure S5. Element mapping and SEM-EDX analysis of ZIF-67-600 catalyst.

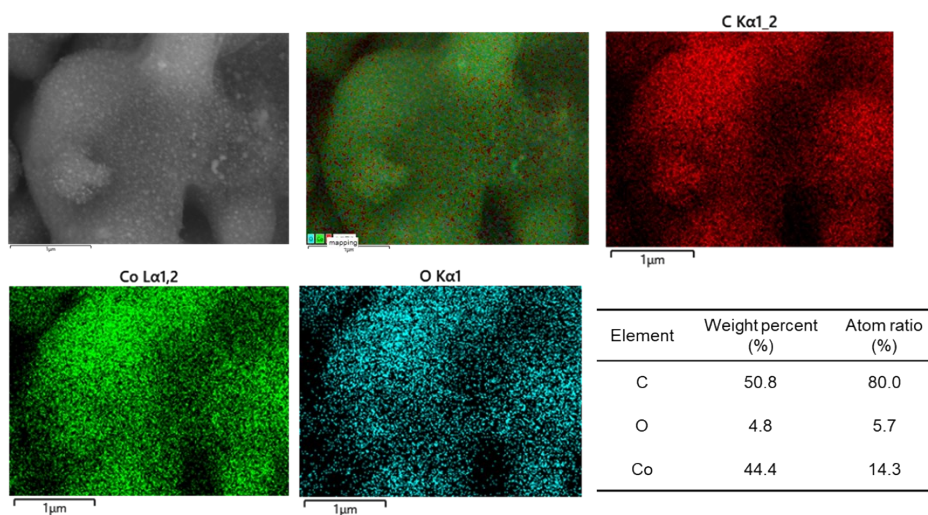


Figure S6. Element mapping and SEM-EDX analysis of ZIF-67-700 catalyst.

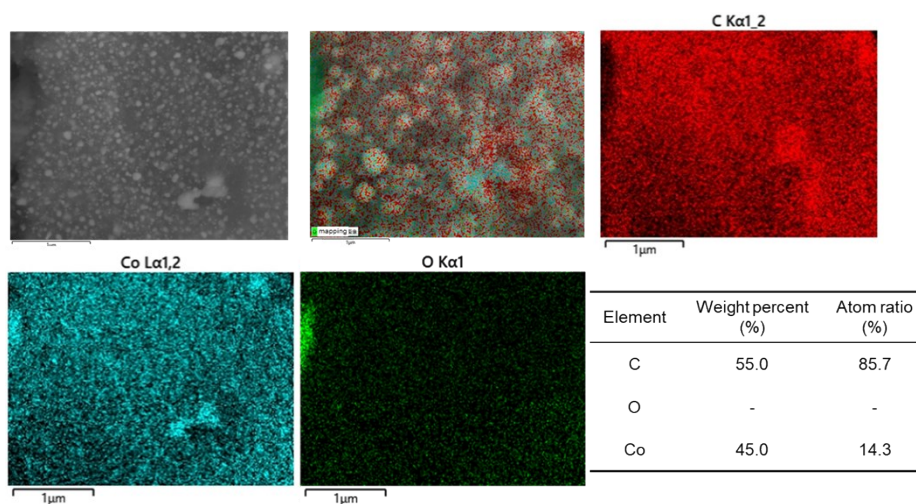


Figure S7. Element mapping and SEM-EDX analysis of ZIF-67-800 catalyst.

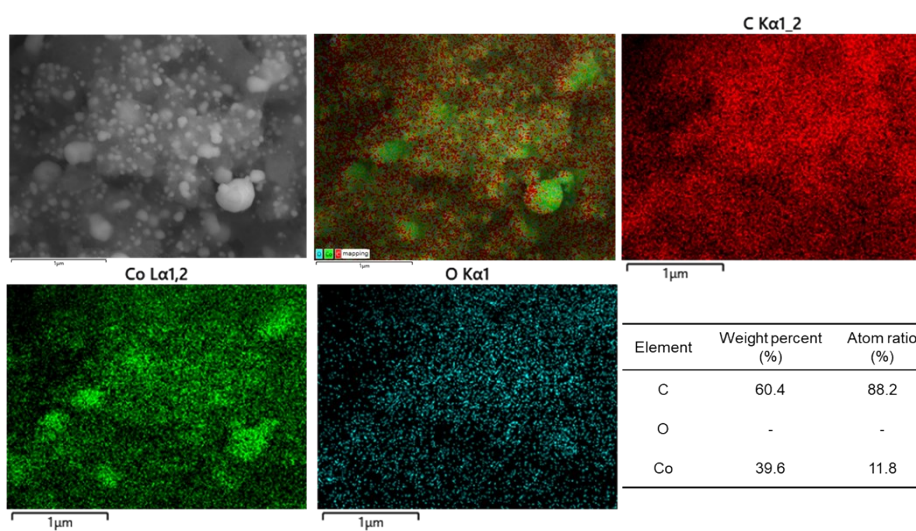


Figure S8. Element mapping and SEM-EDX analysis of ZIF-67-900 catalyst.

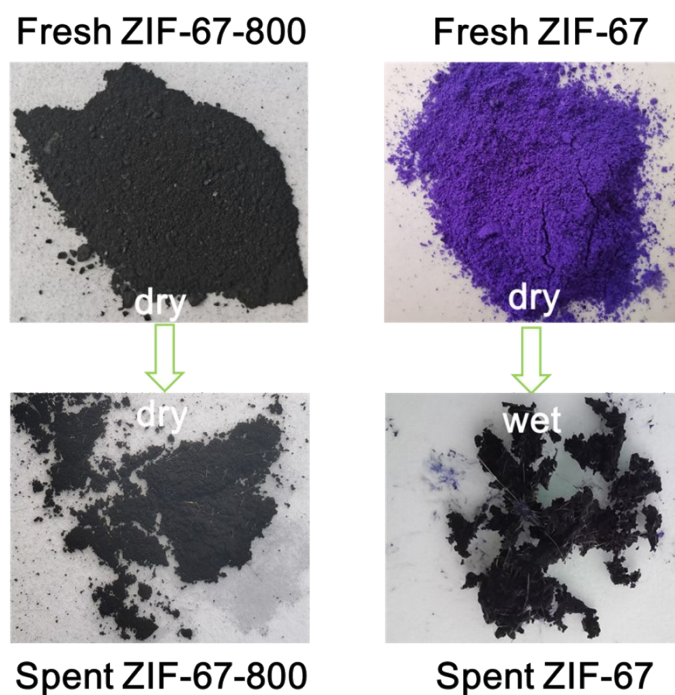


Figure S9. Picture comparison of carbonized ZIF-67 and ZIF-67 after ozone decomposition under high humidity (RH=90%).

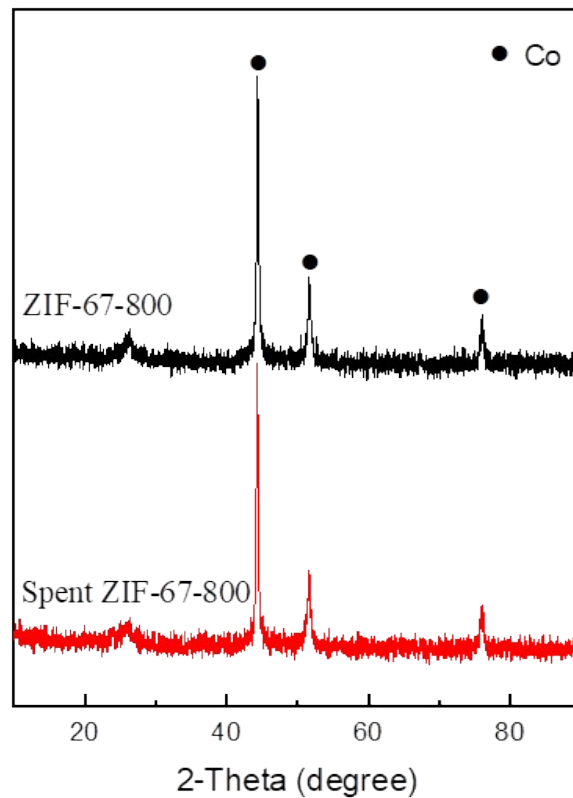


Figure S10. The XRD patterns of fresh and spent ZIF-67-800 catalysts.

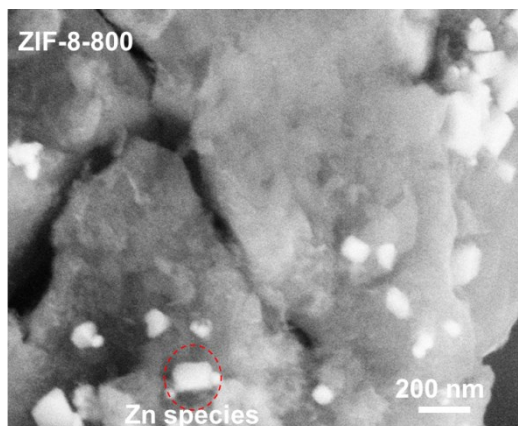


Figure S11. The SEM picture of ZIF-8-800.

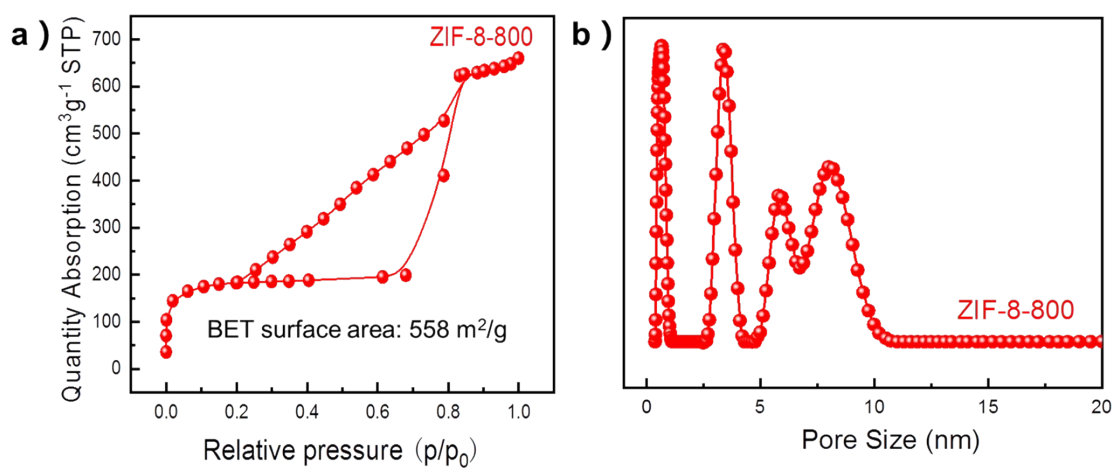


Figure S12. The N_2 adsorption-desorption isotherms and pore size distribution of ZIF-8-800 catalysts.

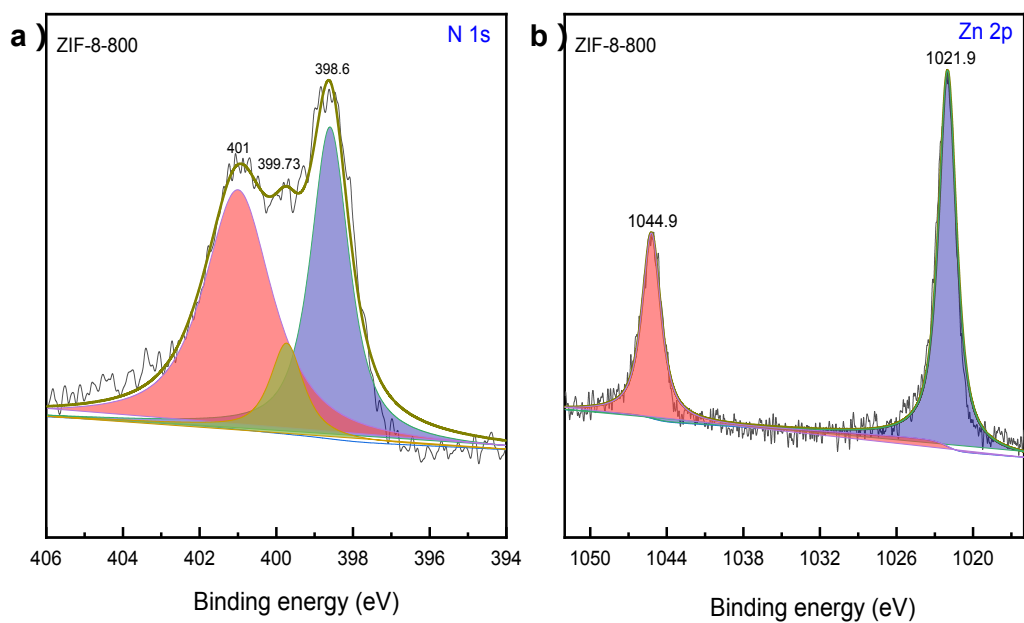


Figure S13. The XPS of N1s on the ZIF-8-800 catalysts.

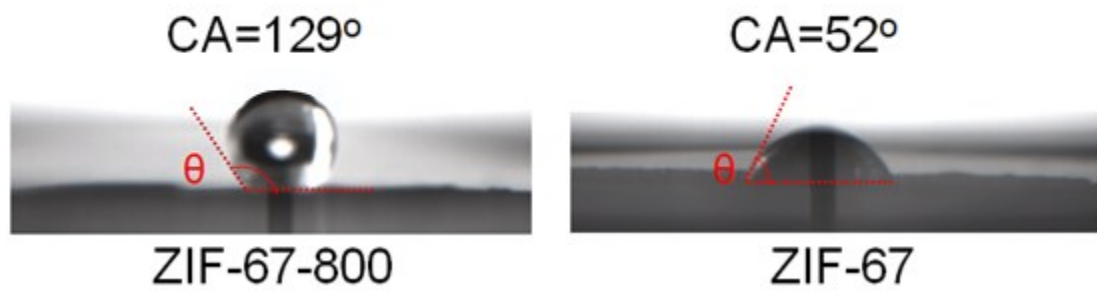


Figure S14. Pictures of water contact angle on ZIF-67-800 and ZIF-67 surface.

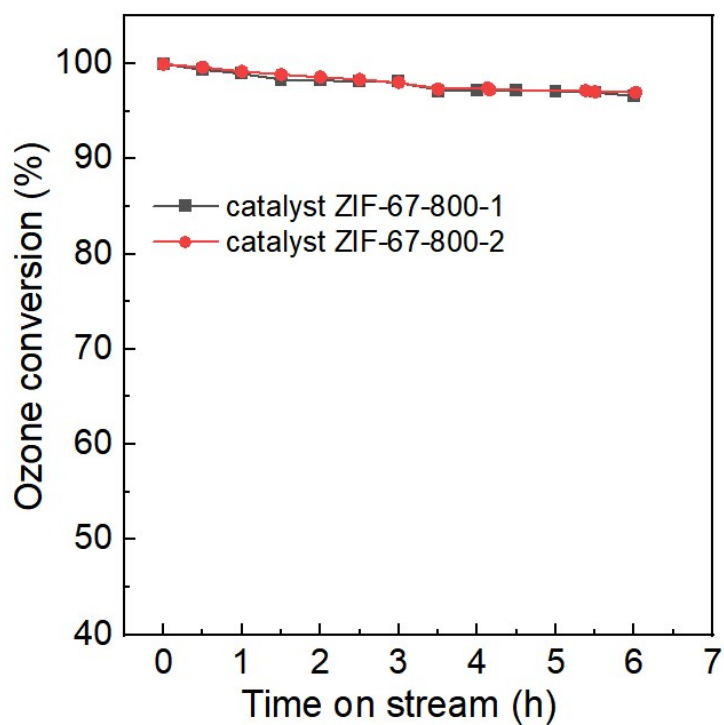


Figure S15. The reproducibility test of ZIF-67-800 catalyst.

Table S1. XRD analysis of cobalt species on carbonized ZIF-67 catalysts.

Catalysts	Structure	phase	Crystallite size (nm)
ZIF-67-500	cubic	metallic Co	15.2
ZIF-67-600	cubic	metallic Co	15.9
ZIF-67-700	cubic	metallic Co	17.5
ZIF-67-800	cubic	metallic Co	25.3
ZIF-67-900	cubic	metallic Co	38.6

Table S2. The stability comparison of ZIF-67-800 with reported works.

Catalysts	O ₃ (ppm)	T (°C)	RH (%)	Reaction time (h)	O ₃ conversion (%)	Ref.
ZIF-67-800	23	20	90	6	100	This work
ZIF-67-800	23	20	90	36	95%	This work
MnOMn ₂ N _{0.86} @850	23	20	90	6	6	1
CeMn ₁₀ O _x	40	30	65	6	96	2
MIL-100(Fe)	45	25	90	12	100	3
Cu ₂ O/rGO	20	25	80	10	98	4
Ag-MnO _x -H	40	25	60	6	90	5
OMS-2-Ac	40	30	90	6	80	6
Ce-OMS-2	40	25	90	6	90	7
8%AgMnO _x	40	30	65	6	81	8
V-MnO ₂	110	25	55	5	50	9
Ni/NiO pH-1	1000	25	90	8	98	10
S-300 (MnO _x)	43	25	25	6	80	11
S-300 (MnO _x)	43	25	50	6	65	11
S-300 (MnO _x)	43	25	75	6	10	11
1.1% MnO _x /AC	43-48	25	60	6	83	12

Reference

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