Test Report of Dust Explosion Characteristics

Report ID: IEPI / Lycopodium / 20151228

Sample name: Lycopodium

Synonyms:

CAS Number:

Supplier: Industrial Explosion Protection Institute, Northeastern University

Industrial Explosion Protection Institute

Northeastern University, P. R. China

Test Report of Explosion Characteristics

Report ID: IEPI/Lycopodium/20151228

Sample name	Lycopodium	Supplier	Industrial Explosion Protection Institute, NEU	
Date of receiving sample		2012	Period of test	2015 / 12 / 28
Sample preparation method		Standard sample: dried		
Sample characteristics		Yellow powder		

Test results

Parameter	Value	Apparatus	Standard
Water content /%	0	Vacuum drying chamber and balance	
Medium diameter/μm	29.9	Malvern laser particle analyzer	
Explosion?	Yes	20L Spherical explosion test apparatus	ASTM E1226-12a

The test results are only valid for the tested sample, and it is necessary to consult experts to interpret the explosion characteristics for risk assessment of the product in manufacturing, processing, transportation, and storage.

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Signature:

Date:

Appendix A. Size distribution

Table A. Particle size distribution of the standard sample

Sample name	Lycopodium	Supplier	Industrial Explosion Protection Institute, NEU
Method	Determined by Malvern Master 2000 laser particle analyzer, dispersed by ethanol		
Sample preparation method		Standard sample	
Medium diameter	29.880μm	Volume averaged diameter	30.781μm
Surface area averaged diameter		29.068μm	Specific surface area 0.206m^2/kg

Particle size/μm	Density distribution/%	Cumulative distribution /%	Particle size /μm	Density distribution /%	Cumulative distribution /%	Particle size/μm	Density distribution/%	Cumulative distribution/%
14.159	0	0	25.179	12.51	24.16	44.774	7.34	95.4
15.887	0.11	0.11	28.251	16.88	41.04	50.238	3.47	98.87
17.825	0.94	1.05	31.698	18.39	59.43	56.368	0.96	99.83
20.000	3.28	4.33	35.566	16.92	76.35	63.246	0.17	100
22.440	7.32	11.65	39.905	11.71	88.06	70.963	0	100

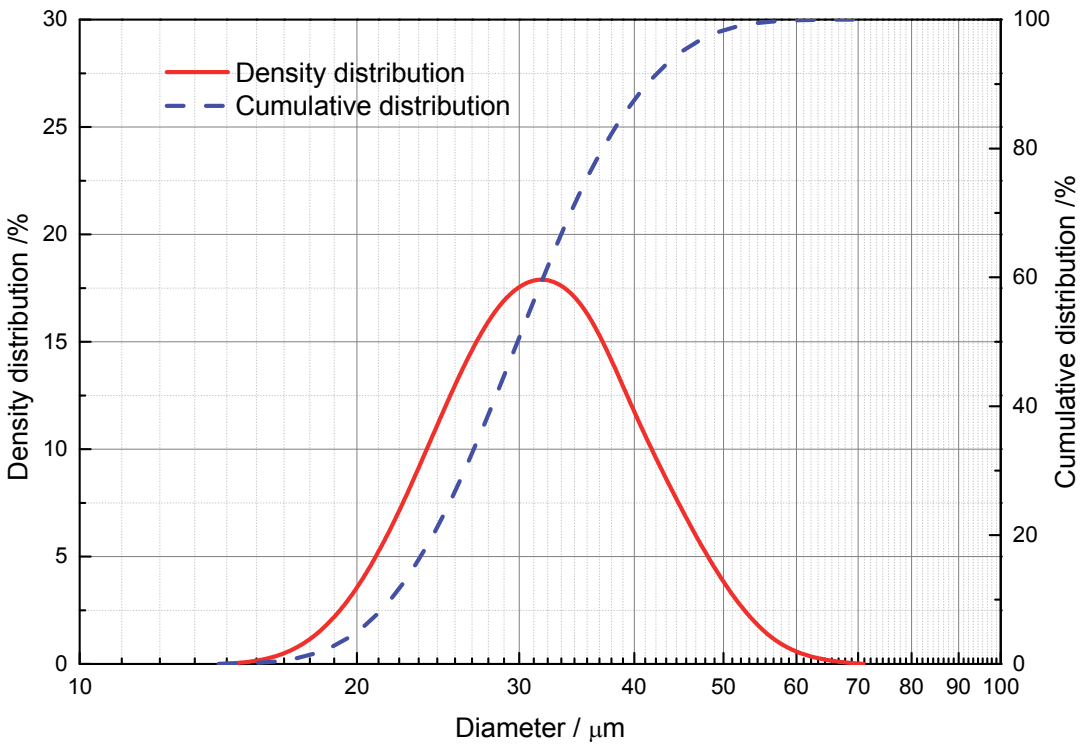

Figure A. Particle size distribution of the standard sample

Appendix B. Micrographs

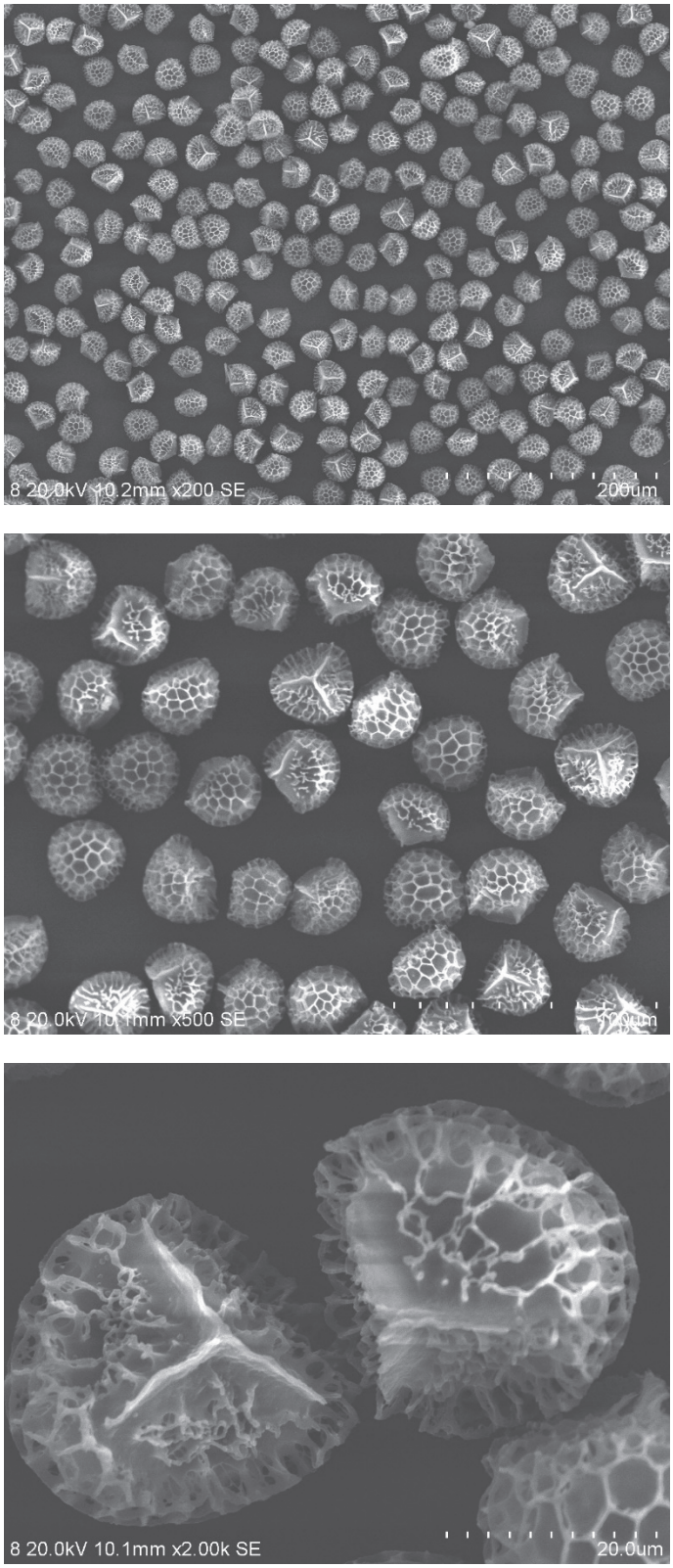

Figure B. Micrographs of the standard sample under scanning electronic microscope

Appendix C. Test records of go or no go

Table C. Test records of go or no go

Sample name	Lycopodium	Supplier	Industrial Explosion Protection Institute, NEU
Sample preparation method		Standard sample	
Test apparatus	20L spherical explosion vessel	Test standard	ASTM E1226-12a
Ignition energy	Pyrotechnical ignition, 10kJ	Ignition delay	60ms
Initial pressure	0MPa(g)	Initial temperature	18℃
Explosion?	**Yes**		
Test records			
Test No.	C/(g/m^3)	p_m/MPa	K_m/(MPa•m/s)
1	1000	0.6145	13.1775

Appendix D. Pressure - Time Curve of go or no go