LANDS Superabrasives

Quality Certificate

Laser diffraction analysis of micron powders

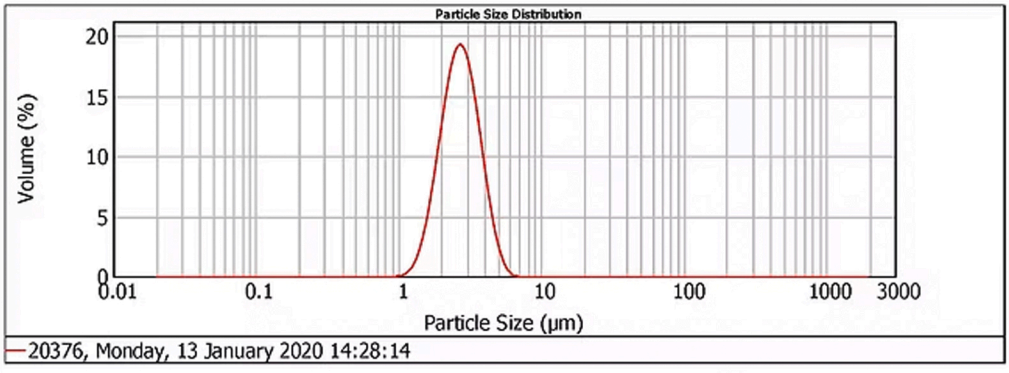
This quality certificate nr. **20376-1S8179** has been issued by the Quality Control Laboratory of LANDS Superabrasives. All measurements have been done with the utmost care and are in accordance with the LANDS Superabrasives standards.

1. SAMPLE IDENTIFICATION

MIDAB number	: 20376	**Product type**	: BN2600
Lotnumber	: 462936	**Size (µm)**	: 2 - 4
Hexadecimal nr.	: no nr		
Incoming date	: 13/01/2020		
Type of material	: CBN-microns , standard		

2. ANALYSIS DATA

Result units	: Volume	**Weighted residual**	: 4.3 %
Date	: 13/01/2020	**D[4,3] (Mean)**	: 2.795 µm
Substance	: Diamond	**d(0.1)**	: 1.799 µm
Refraction Index	: 2.418	**d(0.5) (Median)**	: 2.68 µm
Absorption	: 0.01	**d(0.9)**	: 3.948 µm
Dispersant	: Water	**d(0.001) (Lowest obs)**	: 1.046 µm
Refraction Index	: 1.330	**d(0.999) (Highest obs)**	: 6.295 µm
Analysis model	: General purpose	**Span (10% - 90%)**	: 0.802
Obscuration (red)	: 7.11 %	**Uniformity**	: 0.251000
Obscuration (blue)	: 7.09 %	**Spec. surface area**	: 0.67 m2/g



approved by the
Quality Control Manager

Above measurements have been done on a calibrated MALVERN Mastersizer 2000. This Laser Diffraction analyzer combines both the red and the latest blue laser light technology. This makes it possible to measure particles down to 0,02 µm with the best sensitivity and maximum reliability.

LANDS Superabrasives

Quality Certificate

Image analysis of micron powders.

This quality certificate number **51128** has been issued by the Quality Control Laboratory of LANDS Superabrasives. All measurements have been performed with the utmost care. All tests are run in accordance with LANDS Superabrasives standards.

1. SAMPLE IDENTIFICATION

Hexadecimal nr. :
Original lotnr. : 350511
Type of material : synthetic microns
Product type : friable
Product : LS600F
Size (µm) : 15 to 25

2. ANALYSIS DATA

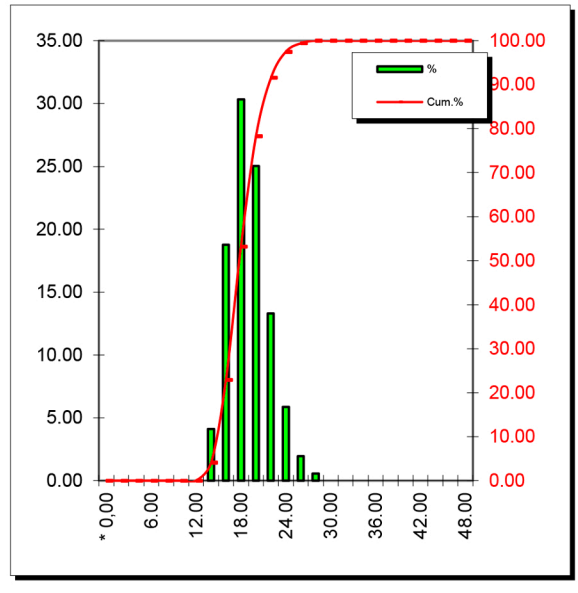
Analysis number : 51128
Analysis date : 17-10-2022
Objective : x20
# of particles : 512
Mean value (µm) : 20.1117
Median (µm) : 19.7984
D10 / D90 (µm) : 17.0235 / 23.5279
Lowest value obs (µm) : 14.4583
Highest value obs (µm) : 29.6900
Standard dev. (µm) : 2.6997
Kurtosis value : 0.3160
Peakedness : Leptokurtic
Skewness : 0.5887
Asymmetric degree : Skewed to the right
Statistical dev. : 1.16%
Shape factor : 1.3353

3. TEST FIGURES

Classes (µm)		#	%	Cum.
>=	<	particles	particles	%
* 0,00	2.00	0	0.00	0.00
2.00	4.00	0	0.00	0.00
4.00	6.00	0	0.00	0.00
6.00	8.00	0	0.00	0.00
8.00	10.00	0	0.00	0.00
10.00	12.00	0	0.00	0.00
12.00	14.00	0	0.00	0.00
14.00	16.00	21	4.11	4.11
16.00	18.00	96	18.79	22.90
18.00	20.00	155	30.33	53.23
20.00	22.00	128	25.05	78.28
22.00	24.00	68	13.31	91.59
24.00	26.00	30	5.87	97.46
26.00	28.00	10	1.96	99.41
28.00	30.00	3	0.59	100.00
30.00	32.00	0	0.00	100.00
32.00	34.00	0	0.00	100.00
34.00	36.00	0	0.00	100.00
36.00	38.00	0	0.00	100.00
38.00	40.00	0	0.00	100.00
40.00	42.00	0	0.00	100.00
42.00	44.00	0	0.00	100.00
44.00	46.00	0	0.00	100.00
46.00	48.00	0	0.00	100.00
48.00	50.00	0	0.00	100.00

* **particles > 0,00 !!**

4. CUMULATIVE HISTOGRAM



approved by the
Quality Control Manager

LANDS Superabrasives Quality Control

Date: 4/11/24

1. SAMPLE IDENTIFICATION:

Gridab nr Antwerp:	31967	**Location:**	LANDS New york
Gridab type:	QC	**Product:**	LSMA0
Lotnumber Antwerp:		**Size:**	80/100
Lotnumber LS USA:	276990	**Date:**	4/11/24

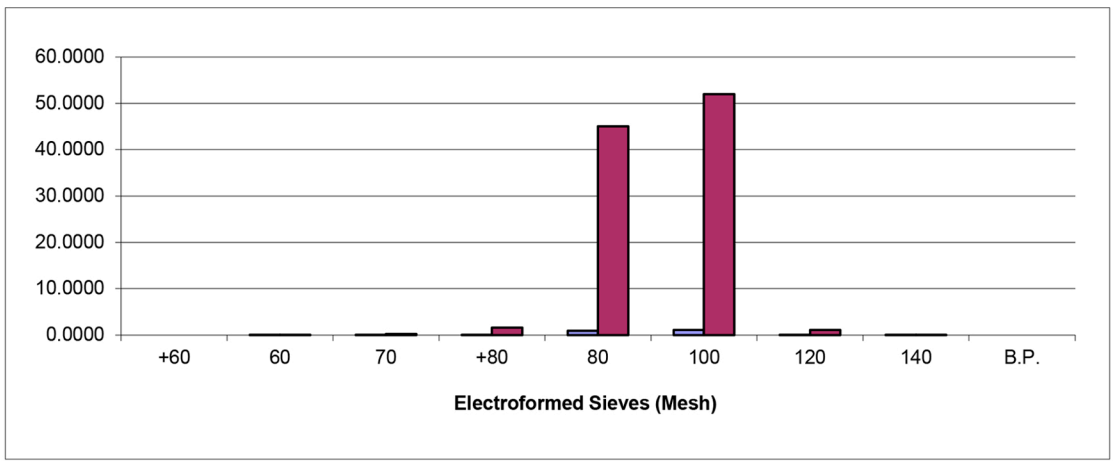
2. SIEVING TEST:

Amplitude (mm): 0.60 **Int. time (s): 20** **Sieving time (min) : 30**

Sieves	g	%
US Mesh	on sieve	on sieve
+60	0.0000	0.00
60	0.0008	0.04
70	0.0042	0.21
+80	0.0320	1.56
80	0.9222	45.06
100	1.0638	51.97
120	0.0228	1.11
140	0.0010	0.05
B.P.	0.0000	0.00
Total:	2.0468	100.00

*Sieves: all tests are performed on electroformed sieves, certified according to ISO 3310-3 and checked upon calibration according to ISO 9002 They do no match regular production sieve sizes.

** ISO 6106: is the standard FEPA sieving standard. All test results refer only to the FEPA testing procedure



2. Sieving Results

% oversize:	1.81%
% within size	97.03%
% undersize	1.16%