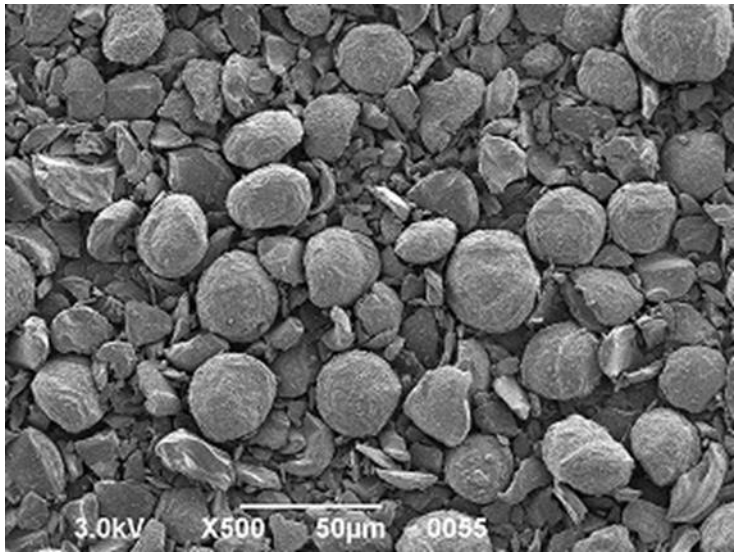
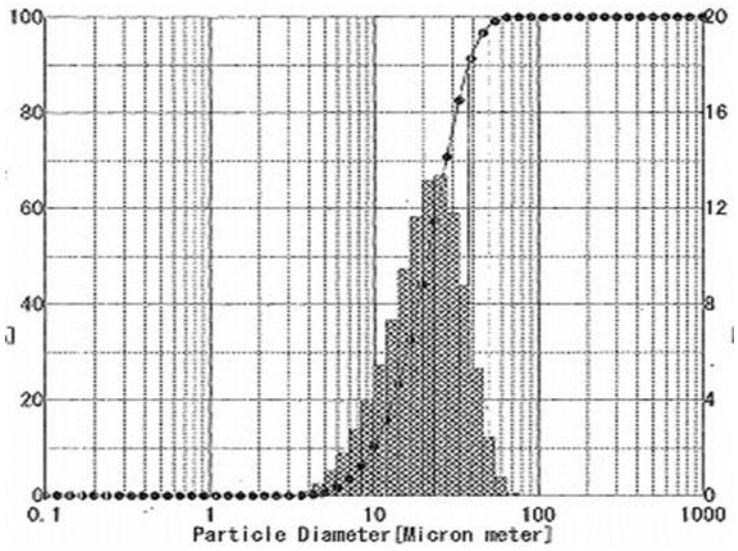
# Features of JFEC's anode materials

| Symbol | Features | Ave. Dia. (μm) | SA ($m^2/g$) | Dis. Cap. (mAh/g) | 1st Effi. (%) |
|---|---|---|---|---|---|
| K3 | ・Suitable for High density electrode (～1.80g/$cm^3$)<br>・High discharge rate property<br>・Good cycle performance | 21 | 0.6 | 347 | 94.3 |
| K3H | ・Suitable for High density electrode (～1.85g/$cm^3$)<br>・High discharge rate property<br>・Good cycle performance | 19 | 0.6 | 354 | 94.2 |
| HATM | ・Suitable for long life batteries (～1.60)<br>・High discharge rate property<br>・Achieve both a high energy and power | 21 | 0.7 | 340 | 93.9 |
| W2R2 | ・Suitable for High density electrode (～1.75g/$cm^3$)<br>・High discharge capacity and rate property<br>・Good cycle performance as natural graphite | 20 | 3.0 | 362 | 94.0 |
| W2V2 | ・Suitable for High density electrode (～1.75g/$cm^3$)<br>・Better rate property than W2R2<br>・Good cycle performance as natural graphite | 16.5 | 3.3 | 360 | 93.8 |

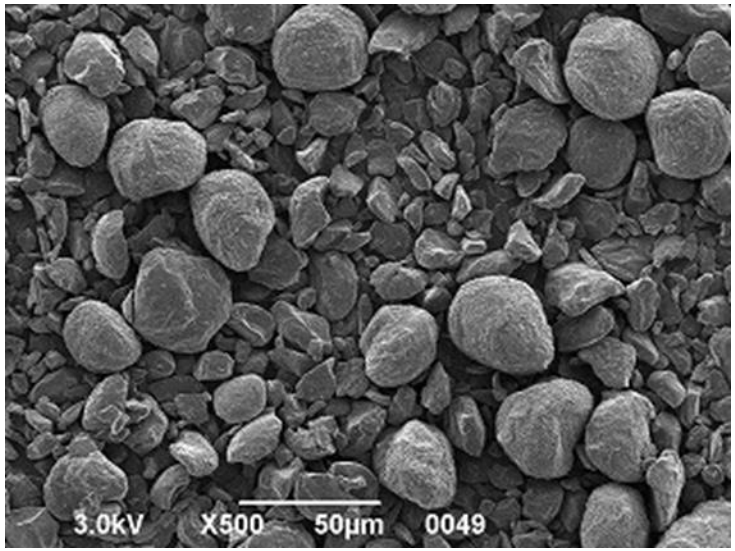
# K3: MCMB（Spherical Type＋Crushed Type:High Packing)

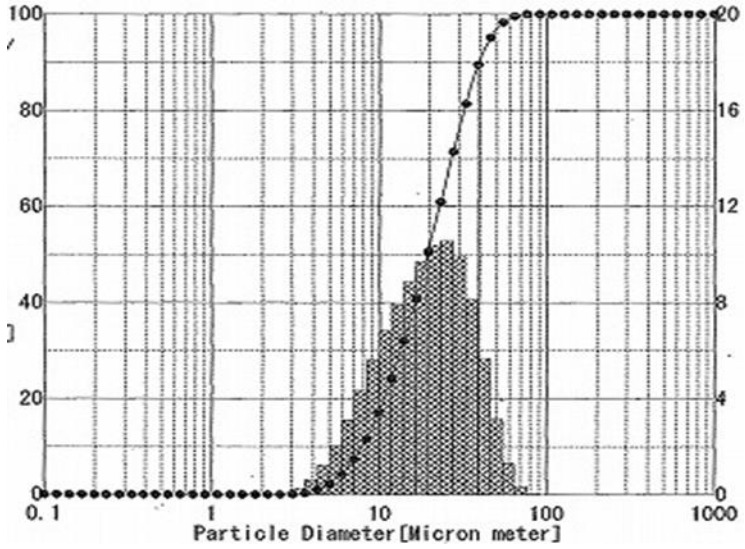



| Index | | Specification | Method |
|---|---|---|---|
| Particle Size (μ m) | D10 | 8.5 ± 1.5 | Laser method (Seishin Enterprise Co.,Ltd.・LMS-30) |
| | D50 | 20 ± 4 | |
| | D90 | 37 ± 5 | |
| | Dmax. | ≦ 91 | |
| Specific Surface Area | $m^2/g$ | 0.5 ± 0.2 | B.E.T. method |
| Tap Density ($g/cm^3$) | 300times | 1.50 ± 0.07 | Automatic tapping method |
| Absorbed Water | wt% | ≦ 0.03 | JIS M 8812 |
| Ash Content | wt% | ≦ 0.10 | JIS M 8812 |
| True Density | $g/m^3$ | 2.246 ± 0.004 | JIS R 7222 |
| Fe Content | ppm | ≦ 10 | ICP Method |
| Cu Content | ppm | ≦ 5 | ICP Method |
| Zn Content | ppm | ≦ 5 | ICP Method |
| The 1st Discharge Capaciry | mAh/g | ≧ 345 | JFEC Operation Standard |
| Irreversible Capacity | mAh/g | ≦ 24 | JFEC Operation Standard |

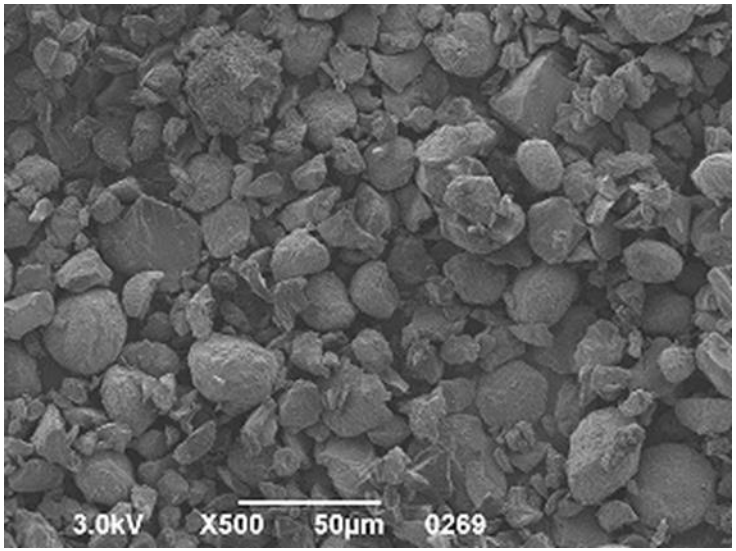
# K3H-- --100%MCMB（Spherical Type＋Crushed Type with Carbon Coating)

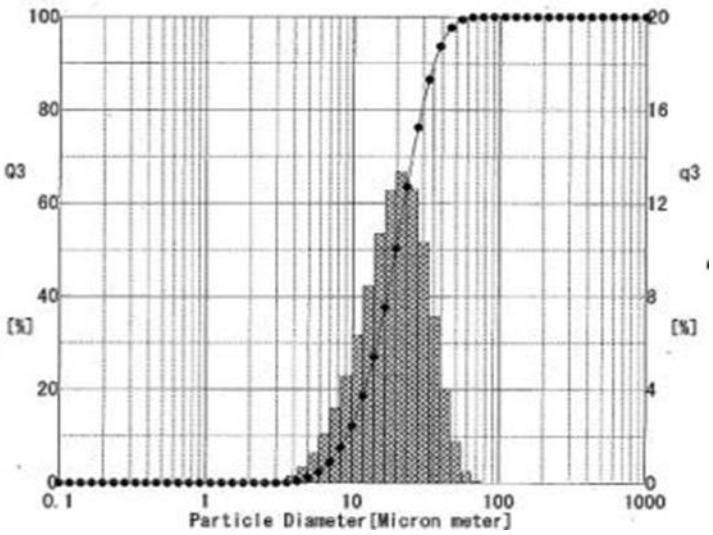



| Index | | Specification | Method |
|---|---|---|---|
| Particle Size (μ m) | D10 | 7.3 ± 1.5 | Laser method (Seishin Enterprise Co.,Ltd.・LMS-30) |
| | D50 | 19 ± 2 | |
| | D90 | 38 ± 4 | |
| | Dmax. | ≦ 91 | |
| Specific Surface Area | $m^2/g$ | 0.6 ± 0.2 | B.E.T. method |
| Tap Density ($g/cm^3$) | 300times | 1.45 ± 0.05 | Automatic tapping method |
| Absorbed Water | wt% | ≦ 0.03 | JIS M 8812 |
| Ash Content | wt% | ≦ 0.10 | JIS M 8812 |
| True Density | $g/m^3$ | 2.237 ± 0.004 | JIS R 7222 |
| Fe Content | ppm | ≦ 15 | ICP Method |
| Cu Content | ppm | ≦ 5 | ICP Method |
| Zn Content | ppm | ≦ 5 | ICP Method |
| The 1st Discharge Capaciry | mAh/g | ≧ 350 | JFEC Operation Standard |
| Irreversible Capacity | mAh/g | ≦ 25 | JFEC Operation Standard |

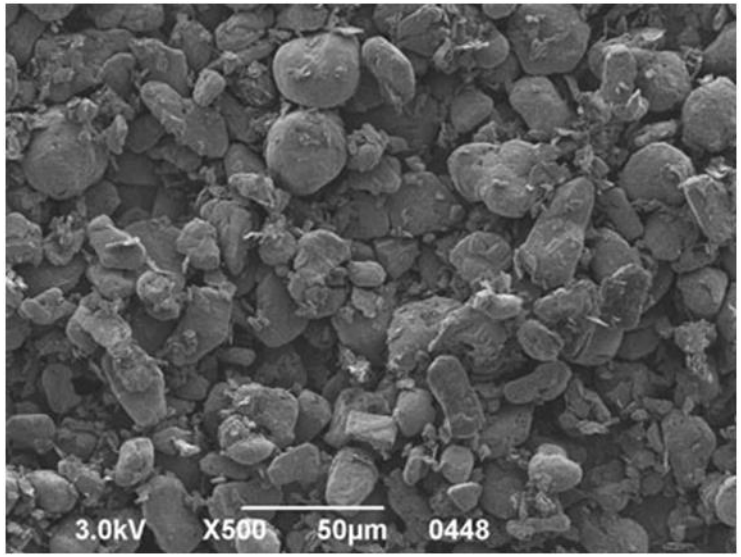
# HATM—MCMB+Bulk Mesophase (Crushed Type)

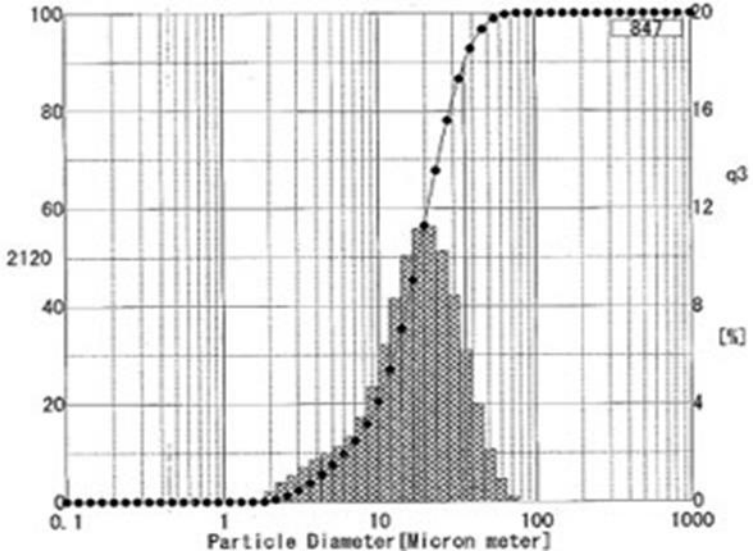



| Index | | Specification | Method |
|---|---|---|---|
| Particle Size (μm) | Dmin. | ≧ 2 | Laser method (Seishin Enterprise Co.,Ltd.・LMS-30) |
| | D10 | 9 ± 1.5 | |
| | D50 | 20 ± 4 | |
| | D90 | ≦ 50 | |
| | Dmax. | ≦ 91 | |
| Specific Surface Area | $m^2/g$ | 0.6 ± 0.2 | B.E.T. method |
| Tap Density ($g/cm^3$) | 300times | 1.47 ± 0.07 | Automatic tapping method |
| Absorbed Water | wt% | ≦ 0.03 | JIS M 8812 |
| Ash Content | wt% | ≦ 0.10 | JIS M 8812 |
| True Density | $g/m^3$ | ≧ 2.235 | JIS R 7222 |
| Fe Content | ppm | ≦ 10 | ICP Method |
| Cu Content | ppm | ≦ 10 | ICP Method |
| Zn Content | ppm | ≦ 10 | ICP Method |
| The 1st Discharge Capaciry | mAh/g | ≧ 335 | JFEC Operation Standard |
| Irreversible Capacity | mAh/g | ≦ 30 | JFEC Operation Standard |

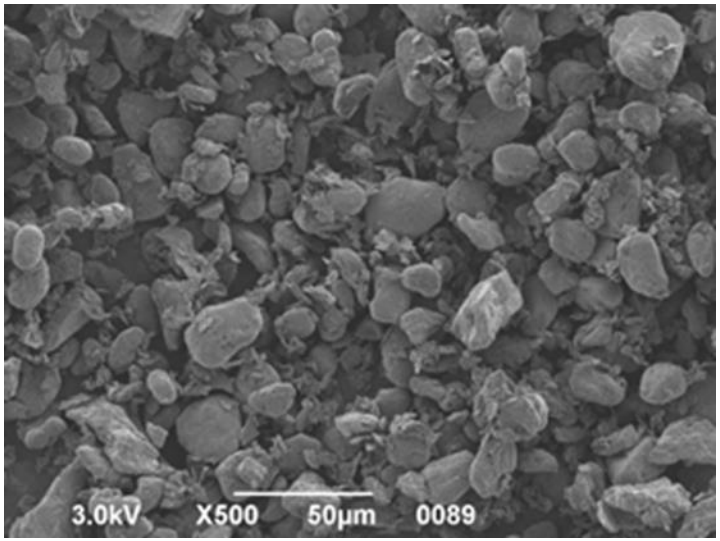
# W2R2----MCMB+ Natural Carbon with Carbon Coating

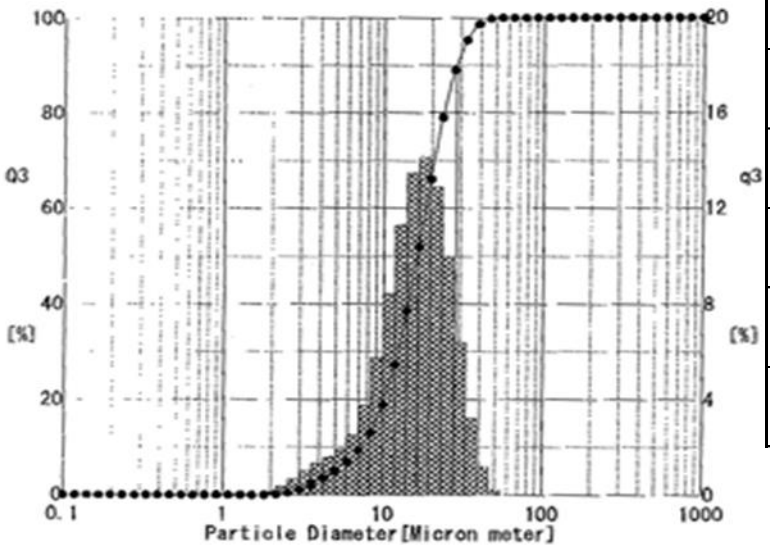



| Index | | Specification | Method |
|---|---|---|---|
| Particle Size (μm) | D10 | ≧ 6 | Laser method (Seishin Enterprise Co.,Ltd.・LMS-30) |
| | D50 | 20 ± 3.0 | |
| | D90 | ≦ 45 | |
| | D99 | ≦ 65 | |
| Specific Surface Area | $m^2/g$ | 3.0 ± 0.4 | B.E.T. method |
| Tap Density ($g/cm^3$) | 300times | 1.10 ± 0.20 | Automatic tapping method |
| Absorbed Water | wt% | ≦ 0.09 | JIS M 8812 |
| Ash Content | wt% | ≦ 0.15 | JIS M 8812 |
| Si Content | ppm | ≦ 1000 | ICP Method |
| Fe Content | ppm | ≦ 10 | ICP Method |
| Cu Content | ppm | ≦ 10 | ICP Method |
| Zn Content | ppm | ≦ 10 | ICP Method |

# W2V2----Bulk Mesocarbon + Natural Carbon with Carbon Coating (For Quick Charge)




| Index | | Specification | Method |
|---|---|---|---|
| Particle Size (μ m) | D10 | 6 ± 2.0 | Laser method (Seishin Enterprise Co.,Ltd.・LMS-30) |
| | D50 | 17 ± 3.0 | |
| | D90 | ≦ 40 | |
| | D99 | ≦ 60 | |
| Specific Surface Area | $m^2/g$ | 2.9 ± 0.4 | B.E.T. method |
| Tap Density ($g/cm^3$) | 300times | 1.09 ± 0.20 | Automatic tapping method |
| Absorbed Water | wt% | ≦ 0.10 | JIS M 8812 |
| Ash Content | wt% | ≦ 0.15 | JIS M 8812 |
| Fe Content | ppm | ≦ 10 | ICP Method |
| Cu Content | ppm | ≦ 10 | ICP Method |
| Zn Content | ppm | ≦ 10 | ICP Method |