



Mobile  
Energy

# THE ONE CARBON SOLUTION FOR ADVANCED LEAD ACID BATTERIES

**TIMREX®**  
CyPbrid™

TIMREX® CyPbrid™ is a novel product family especially designed for advanced lead acid batteries.

#### Key features

- Outstanding battery performance improvement in terms of charge acceptance
- High cycling stability during high rate partial state of charge
- Just one single carbon additive needed
- No additional pre-dispersing unit is required
- Higher battery production output

| PRODUCT CHARACTERISTICS       | APPLICATION BENEFITS  |
|-------------------------------|---|
| Broad Surface Area Range      | <ul style="list-style-type: none"><li>• Improved charge acceptance</li><li>• Strongly improved cycle life</li><li>• Increased performance in high current applications</li></ul>  |
| Extremely High Density        | <ul style="list-style-type: none"><li>• High Density of the plates</li><li>• High Electrical Charge Capacity of the battery</li><li>• Easy product handling, limits required stock space.</li></ul>   |
| High Degree of Graphitization | <ul style="list-style-type: none"><li>• Strongly improved cycle life</li><li>• High electrical conductivity</li><li>• Improved charge acceptance</li></ul>  |
| Excellent wettability         | <ul style="list-style-type: none"><li>• No need of preliminary processing before paste incorporation, easy to incorporate into the paste.</li><li>• Fast electrolyte absorption</li><li>• Less dust emissions vs. conventional carbon additives</li></ul> |
| High Purity                   | <ul style="list-style-type: none"><li>• High purity profile that fulfills the requirements of the ALAB battery industry</li><li>• High quality consistency</li></ul>  |



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**IMERYS**  
Graphite & Carbon

INNOVATIONS TO POWER EVERYDAY LIFE

## RECOMMENDED USE

The unique characteristics of TIMREX® CyPbrid™ give unmatched performance improvements in advanced lead acid batteries, outperforming conventional carbon additives like expanded graphite, natural graphite, carbon blacks, activated carbons and mixtures thereof.

**Recommended CyPbrid™ dosage in the negative active material paste: in EFB 0.25-0.50 wt%, in AGM 0.80-1.20 wt%**

You can adjust the CyPbrid™ dosage vs. targeted battery performance by taking full advantage of the CyPbrid™ product portfolio (BET ranging between 100 and 300 m<sup>2</sup>/g)

You can fine tune the CyPbrid™ dosage in order to maximize battery capacity by exploiting the very high apparent density of CyPbrid™ (Scott density ranging between 0.31 and 0.35 g/cm<sup>3</sup>)

### Typical Product Properties

|  | SPECIFIC SURFACE AREA <sup>1)</sup> (m <sup>2</sup> /g) | APPARENT DENSITY <sup>2)</sup> (g/cm <sup>3</sup> ) | PURITY (sum of Ni, Te, Co, Cr, Mn, Pt, in ppm) | HYDROPHILIC PROPERTIES | GRAPHITIZATION DEGREE |
|--|---|---|--|------------------------|-----------------------|
| TIMREX® CyPbrid™ 1                     | 300   | 0.31  | 5  | Highly hydrophilic     | High                  |
| TIMREX® CyPbrid™ 2                     | 200   | 0.31  | 5  | Highly hydrophilic     | High                  |
| TIMREX® CyPbrid™ 3                     | 100   | 0.35  | 5  | Highly hydrophilic     | High                  |
| Typical Expanded graphite used in ALAB | 30  | 0.03  | 50   | Hydrophilic            | Medium                |
| Typical Carbon black used in ALAB      | 60  | 0.06  | 50   | Hydrophobic            | Low                   |

<sup>1)</sup> Measured according to BET method

<sup>2)</sup> Scott density according to ASTM B 329-98

More Data Available on Request