Application Guide: LaserMark-W

High-Contrast Laser Marking for Light-Colored Plastics

1. Positioning Statement

LaserMark-W is an ATO-based laser-responsive additive designed for high-contrast laser marking on white and light-colored polymers.
It enables permanent, readable marks without using carbon black.

2. What LaserMark-W Is — and Is Not

LaserMark-W IS:

- An inorganic laser absorber based on antimony tin oxide (ATO)
- A solution for black / dark marking on light substrates
- Suitable for industrial, electronic, and regulated applications

LaserMark-W IS NOT:

- A color pigment
- A conductive filler
- A decorative or aesthetic coloring agent

3. Typical Problems It Solves

LaserMark-W is used when customers face:

- Poor contrast when laser marking white plastics
- Carbon black being forbidden due to:
- electrical conductivity
- migration / blooming
- contamination of light systems
- Organic pigments burning or fading under laser exposure

4. How It Works (Mechanism Level Only)

LaserMark-W absorbs laser energy and converts it into localized thermal effects at the polymer surface.
This controlled energy conversion produces surface modification that appears as a dark mark, without forming a conductive network.

(Mechanism explained intentionally without formulation details.)

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5. Suitable Application Window

Polymers

- PP
- ABS
- PC
- PET
- PA
- PBT

Base Color

- White
- Light gray
- Pastel colors

Laser Types

- Fiber laser
- Nd:YAG laser

Processing

- Standard compounding
- Masterbatch incorporation

6. Typical Use Level

- Below 1 wt% in most polymer systems
- Exact dosage depends on:
- polymer type
- part thickness
- laser power and speed

Final optimization should be performed by the user.

7. Performance Benefits

- High-contrast black marking on light plastics
- Stable and repeatable marking results
- No electrical conductivity introduced
- Good durability after aging and environmental exposure

8. When NOT to Use LaserMark-W

LaserMark-W is not recommended when:

- Electrical conductivity is required
- Carbon black is acceptable and lowest cost is the only driver
- Colored or green laser marks are required
- Ultra-thin transparent films require minimal optical change

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9. Comparison with Common Alternatives

Solution	Limitation
Carbon black	Conductivity, migration, poor aesthetics
Organic pigments	Burning, fading
Decorative blacks	Unstable marking contrast

LaserMark-W addresses these limitations within its defined application window.

10. Technical Support

LaserMark-W is supplied with application guidance.
Formulation-specific optimization can be supported under NDA when required.

11. Summary

LaserMark-W (ATO-based) is a reliable, industry-proven solution for laser marking of white and light-colored plastics where carbon black cannot be used.
It is selected for control, stability, and compliance, not for coloration.

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