

**FILTRATION MEDIA
COMPARISON REPORT**

KATALOX LIGHT®

Technical Evaluation:
Katalox Light® vs. DMI-65®,
Manganese Greensand-Plus™,
and Birm®

Prepared For:
System Design &
Engineering Team

Subject:
Iron, Manganese &
Heavy Metal Filtration

Document ID:
KL-COMP2026

SUMMARY

EXECUTIVE SUMMARY & VALUE PROPOSITION

Katalox Light® (KL) delivers superior iron, manganese, and heavy metal removal without requiring continuous chemical oxidant injection such as free chlorine (HOCl) or potassium permanganate (KMnO₄). In applications with elevated Total Organic Carbon (TOC), switching from DMI-65® to Katalox Light completely eliminates the formation of regulated Disinfection By-Products (DBPs) like Trihalomethanes (THMs) and Haloacetic Acids (HAAs), while reducing operational backwash water usage and providing sub-3-micron mechanical filtration.

IRON • MANGANESE • HEAVY METAL FILTRATION - WITHOUT CHEMICAL OXIDANT INJECTION

Superior iron, manganese and heavy metal removal without continuous free chlorine (HOCl) or potassium permanganate (KMnO₄).

Compared head-to-head against DMI-65®, Manganese Greensand-Plus™ and Birm®.

ZEOSORB® Zeolite Matrix vs. DMI-65®

vs. Greensand-Plus™ vs. Birm®



PREMIUM QUALITY
MADE IN GERMANY



NSF/ANSI /
CAN 61 & 372

KATALOX
LIGHT

MASTER SPECIFICATION COMPARISON MATRIX

KATALOX LIGHT® VS. DMI-65®, GREENSAND-PLUS™ AND BIRM®

Property / Parameter	Katalox Light®	DMI-65®	Greensand-Plus™	Birm®
Base Matrix Material	ZEOSORB® (Zeolite)	Silica Sand (SiO ₂)	Silica Coated Sand	Aluminum Silicate
Active Catalytic Content	10% MnO ₂ (High)	Infused MnO ₂	0.5% – 3% MnO ₂ Coating	Surface Coating
Required Oxidant Feed	Dissolved Oxygen / Air	Free Chlorine (0.1-0.3 ppm)	Continuous Cl ₂ or KMnO ₄	Dissolved Oxygen Only
DBP Risk in High TOC Water	Zero Risk (No Chlorine)	High Risk (THMs/HAA _s)	Moderate / High	Zero Risk
Bulk Density	66 lbs/ft ³ (1.06 g/cm ³)	91 lbs/ft ³ (1.46g/cm ³)	88 lbs/ft ³ (1.41 g/cm ³)	35–40 lbs/ft ³ (0.6g/cm ³)
Service Flow Velocity	6 – 12 gpm/ft ² (15-30 m/h)	5 - 10 gpm/ft ²	3 - 5 gpm/ft ²	3 - 5 gpm/ft ²
Backwash Velocity Required	8 – 12 gpm/ft ² (Low energy)	12 – 15 gpm/ft ²	12 – 15 gpm/ft ²	10 – 12 gpm/ft ²
Operating pH Window	5.8 – 10.5 (Widest)	5.8 – 8.6	6.2 – 8.8	6.8–8.5 (Fe), >8.0 (Mn)
Max Removal Concentration	30+ ppm Fe / 15 ppm Mn	15 ppm Fe / 3 ppm Mn	15 ppm Fe / 5 ppm Mn	10 ppm Fe / 2 ppm Mn
Hydrogen Sulfide (H ₂ S) Tolerance	High (Up to 10 mg/L)	Moderate	Moderate	Zero (Fouls Media)
Filtration Rating	< 3 Microns	5 – 10 Microns	5 Microns	~20 Microns

ZERO CHEMICAL REPLENISHMENT.
ZERO DBP RISK.
SUB-3-MICRON FILTRATION.

AT A GLANCE

KEY ADVANTAGES OVER THE ALTERNATIVES

Oxidant:

dissolved oxygen / air only -
no free chlorine or permanganate

Catalyst

10% MnO₂ throughout the
matrix vs. a thin 0.5–3%
surface coating

Flow rate

6–12 gpm/ft² (15–30 m/h) -
up to double conventional
media

pH window

5.8–10.5 — the widest in
the comparison

H₂S tolerance

high, up to 10 mg/L

Backwash

8–12 gpm/ft² at only
66 lbs/ft³ bulk density

COMPETITIVE ANALYSIS

HEAD-TO-HEAD COMPETITIVE ANALYSIS

Three direct comparisons, each anchored on a **primary advantage** - eliminating DBPs, multiplying catalyst density and flow rate, and delivering metal capacity with chemical resistance.

Katalox Light® vs. DMI-65®

Primary Advantage: Zero DBPs

- ✓ **DBP elimination:** DMI-65 requires free chlorine, generating harmful THMs/HAAAs in TOC water. KL operates on dissolved oxygen.
- ✓ **Lower backwash energy:** at 66 lbs/ft³ vs. DMI's 91 lbs/ft³, KL uses significantly less water for bed expansion.
- ✓ **Sub-micron filtration:** micro-porous ZEOSORB matrix filters down to <3 µm vs. 5–10 µm for silica sand.

Katalox Light® vs. Greensand-Plus™

Primary Advantage: 10× Catalyst · 2× Flow

- ✓ **Higher catalyst loading:** KL contains 10% MnO₂ throughout its structure vs. a thin 0.5–3% surface coating on Greensand.
- ✓ **No permanganate needed:** eliminates hazardous KMnO₄ handling, messy chemical pots and regeneration cycles.
- ✓ **2× service flow rate:** runs at 6–12 gpm/ft² vs. 3–5 gpm/ft² for Greensand, cutting required tank size in half.

Katalox Light® vs. Birm®

Primary Advantage: Capacity · Chemical Resistance

- ✓ **Heavy contaminant capacity:** handles up to 30 ppm Fe and 15 ppm Mn. Birm fails above 10 ppm Fe / 2 ppm Mn.
- ✓ **Sulfur (H₂S) immunity:** unimpacted by hydrogen sulfide gas (up to 10 ppm), whereas H₂S permanently ruins Birm.
- ✓ **Chlorine tolerance:** immune to accidental chlorine spikes, whereas Birm is destroyed by free chlorine above 0.5 ppm.



ECONOMIC JUSTIFICATION · RETROFIT ENGINEERING GUIDANCE //

ECONOMIC JUSTIFICATION & FINANCIAL RETURN

A higher upfront media cost is repaid by eliminating chemical consumption, lowering backwash volume, avoiding DBP compliance exposure and delivering multi-metal filtration.

OPERATIONAL COST SAVINGS (OPEX) //

LOWER RUNNING COSTS

- ✔ **Zero chemical replenishment:** saves thousands annually in sodium hypochlorite (NaOCl) or potassium permanganate (KMnO₄) chemical costs.
- ✔ **25–35% backwash water savings:** lower media density requires reduced backwash flow rates (8–12 gpm/ft²), reducing wastewater volume.
- ✔ **Pump maintenance:** eliminates chemical metering pumps, injection quills and static mixers that suffer from mineral scaling.

CAPITAL COST OFFSETS (CAPEX) //

SMALLER, SIMPLER SYSTEMS

- ✔ **Avoids carbon post-treatment:** eliminates the need for expensive downstream GAC beds to remove chlorination DBPs.
- ✔ **Smaller footprint:** high loading rate (12 gpm/ft²) allows smaller pressure vessels than conventional Greensand systems.
- ✔ **7–10 year lifespan:** high attrition resistance ensures long operational life without frequent top-offs.



ENGINEERING GUIDANCE //

RETROFITTING EXISTING FILTER VESSELS

✔ Stop Upstream Chlorine

When replacing DMI-65, Greensand or Birm with Katalox Light, turn off upstream chlorine injection pumps.

✔ Confirm Freeboard

Ensure a minimum 30% to 35% freeboard space in the vessel for bed expansion.

✔ Supply Oxygen if Anoxic

If raw water is completely anoxic (0 mg/L DO), install a simple venturi air injector upstream to supply oxygen for catalysis.

Conclusion: While Katalox Light carries a higher upfront media cost, it pays for itself by eliminating ongoing chemical consumption, lowering backwash water volume, preventing compliance fines from DBPs, and providing superior multi-metal filtration.

