

Manufacturing & Quality Control

GoldMAX Gold Recovery Carbon is produced under controlled process and quality discipline aligned with international gold-recovery carbon performance requirements and focusing on consistency, adsorption kinetics, gold loading capacity, mechanical strength, low platelets and low fines generation in plant operation.

Manufacturing Highlights

- Selection of high-density coconut shell charcoal
- Controlled steam activation in rotary kilns for gold-recovery pore development
- Controlled activation to balance adsorption activity and mechanical strength
- Multi-stage crushing, screening, de-dusting and particle size control
- Screening / shape control to minimise platelets and flaky particles
- Batch-wise monitoring for activity, density, moisture, ash, hardness and particle-size distribution

Quality Control & Testing

Each production batch is subjected to rigorous testing to ensure repeatable performance:

- Particle size distribution (ASTM D2862)
- CTC / Butane Activity correlation (ASTM D5742 / D3467)
- Hardness & attrition resistance (ASTM D3802)
- Ash, moisture, pH, and density verification
- Internal benchmarking against premium gold recovery carbons

This disciplined approach supports predictable circuit behaviour, reduced carbon losses, reduced screen blinding and dependable gold recovery performance.

Handling, Packing & Logistics

Standard Packing Options

- 25 kg PP woven / HDPE bags with PE inner liner
- 25 kg export-grade moisture-protected bags, where required by customer
- 500 kg or 550 kg FIBC / jumbo bags with inner liner
- Palletised export packing with stretch wrapping available on request
- Bulk packaging available on request, subject to handling suitability
- Custom packing and private-label packing available on request

Shipping & Safety

- Product exposed to atmosphere prior to packing
- Not classified as hazardous (Excluded from IATA 395 / IMCO 4.2 / UN 1362)
- HS Code: 3802.10.00

Safety Note: Wet activated carbon can deplete oxygen in confined spaces. Adequate ventilation and oxygen monitoring are mandatory during vessel entry.

Technical Support & Customisation

Carbonmax offers technical collaboration for:

- Carbon selection and sizing
- Circuit optimisation (CIP / CIL / CIC)
- Regeneration & make-up strategies
- Custom grades for ore chemistry, pulp density, silver/gold ratio, base-metal content and circuit configuration

Our technical team works closely with metallurgists and plant operators to maximise recovery and reduce operating cost.

Disclaimer

Specifications shown are typical values and may be customised based on application and contract requirements. Actual performance depends on ore chemistry, gold tenor, cyanide concentration, competing adsorbates, pulp density, contact time, circuit design, elution and regeneration practice. Users should conduct laboratory and plant trials to confirm suitability.



Gold Recovery
Activated Carbon

Premium Coconut Shell–Based Steam
Activated Carbon for Gold Mining Applications

Overview

Carbonmax Gold Recovery Carbon GoldMax (Gold Series) is a premium coconut shell–based granular activated carbon, engineered and optimised for maximum gold recovery efficiency in modern hydrometallurgical circuits.

Manufactured using controlled steam activation in rotary kilns, GoldMax (Gold Series) is designed to deliver: - Rapid gold adsorption kinetics - High gold loading capacity - Exceptional mechanical strength and low attrition - Minimal platelets and fines for superior screen performance

The product philosophy and performance envelope of Carbonmax GoldMax are benchmarked against globally proven gold recovery carbons used by leading mining companies, while being adapted for cost efficiency, consistency, and flexible customisation.

GoldMAX carbons are suitable for Carbon-in-Pulp (CIP), Carbon-in-Leach (CIL), Carbon-in-Column (CIC), heap leach solution polishing and recovery from suitable process streams, subject to site-specific evaluation.



Why Coconut Shell Carbon for Gold Recovery

Coconut shell is universally recognised as the preferred raw material for gold recovery activated carbon due to its inherent physical and adsorption advantages:

- Dense and hard micro-porous structure
- High resistance to abrasion and breakage
- Superior affinity for gold-cyanide complexes
- Excellent regeneration capability

Carbonmax leverages South India's coconut shell resources and controlled activation technology to produce consistent gold-recovery activated carbon with repeatable performance.

Key Performance Advantages

High Gold Adsorption Kinetics

Rapid adsorption reduces soluble gold losses and enables shorter contact times or higher throughput for the same carbon inventory.

High Gold Loading Capacity

Optimised pore structure allows effective recovery even at low gold tenors, improving overall circuit efficiency.

Low Attrition & Carbon Loss

Exceptional hardness minimises carbon losses during agitation, pumping, screening, and regeneration—directly improving recovery economics.

Very Low Platelets & Fines

Processed through vee-wire screening and de-dusting, reducing: - Screen blinding - Carbon carryover - Gold-laden carbon losses

Easy Stripping & Regeneration

Gold is strongly adsorbed yet easily desorbed during elution, allowing the carbon to be regenerated close to virgin activity.

Typical Applications

Carbonmax Gold Recovery Carbon is suitable for all major gold recovery processes:

- Carbon-in-Pulp (CIP)
- Carbon-in-Leach (CIL)
- Carbon-in-Column (CIC)
- Heap leach pregnant solution polishing
- Recovery from tailings, process water, and carbonaceous ores
- Operations processing carbonaceous ores, high silver/gold ratio ores and base-metal bearing ores, subject to technical evaluation

Used successfully in gold mining operations across Africa, Australia, CIS countries, Asia and South America.

Product Grades & Specifications

Carbonmax offers two clearly differentiated Gold Recovery Carbon variants, allowing customers to optimise between operating cost and maximum gold recovery performance.

GoldMax (Gold Series) STANDARD

Cost-Competitive Series

Designed for stable, economical gold recovery where robustness and consistent adsorption are required with optimised carbon make-up cost. Typical Applications - CIP / CIL circuits with moderate gold tenor - Heap leach operations - Cost-sensitive operations with regular regeneration cycles

Typical Grades: 6×12, 6×16, 8×16

Parameter	GoldMax STANDARD
CTC Activity (%)	55 min
Butane Activity (% wt)	21 – 23
Gold Adsorption Rate (R-Value)	55 – 58
K-Value	24 – 30
Iodine Number (mg/g)	1100
BET Surface Area (m²/g)	850 – 1100
Hardness Number	≥ 99
Attrition Loss (%)	≤ 2.0
Platelets (% by wt)	≤ 3
Apparent Density (g/cc)	0.5 – 0.52
Ash Content (%)	≤ 5
Moisture (% as packed)	≤ 5
pH (aqueous extract)	9 – 11

Value Proposition - Competitive landed cost - Reliable adsorption performance - Suitable for high-throughput operations

GoldMax PRO / ULTRA

Premium High-Performance Series

The GoldMax PRO / ULTRA Series represents Carbonmax's highest performance gold recovery carbons, developed for mines where incremental improvements in recovery directly translate into significant revenue gains.

This series is optimised for: - Faster adsorption kinetics at low gold tenors - Higher equilibrium gold loading - Exceptional resistance to abrasion and breakage - Stable performance across multiple regeneration cycles

Typical Applications - Large-scale CIP / CIL operations - Carbonaceous and preg-robbing ores - High-agitation circuits with aggressive pumping - Operations targeting reduced soluble gold losses in tails

Typical Grades: 6×12 PRO, 6×12 ULTRA, 8×16 ULTRA

Parameter	GoldMax PRO	GoldMax ULTRA
CTC Activity (%)	≥ 58	≥ 62
Butane Activity (% wt)	≥ 24	≥ 26
Gold Adsorption Rate (R-Value)	≥ 60	≥ 62
K-Value	28 – 34	30 – 36
Iodine Number (mg/g)	≥ 1150	≥ 1200
BET Surface Area (m²/g)	1000 – 1250	1100 – 1300
Hardness Number	≥ 98	≥ 98
Attrition Loss (%)	≤ 1.5	≤ 1.0
Platelets (% by wt)	≤ 2.5	≤ 2.0
Apparent Density (g/cc)	0.49 – 0.51	0.48 – 0.50
Ash Content (%)	≤ 4	≤ 3
Moisture (% as packed)	≤ 4	≤ 4
pH (aqueous extract)	9 – 11	9 – 11

Performance Philosophy - High micro-porosity optimized for gold–cyanide complexes - Tight particle size distribution to minimise carbon losses - Low platelet morphology to protect interstage screens - Consistent adsorption behaviour batch after batch

Premium Advantages- Higher gold loading per tonne of carbon - Faster approach to equilibrium loading - Reduced carbon make-up and regeneration frequency - Improved overall plant recovery and operating stability

—|—|—| | CTC Activity (%) | ≥ 62 | ≥ 65 | | Butane Activity (% wt) | ≥ 24 | ≥ 26 | | Gold Adsorption Rate (R-Value) | ≥ 60 | ≥ 62 | | K-Value | 28 – 34 | 30 – 36 | | Iodine Number (mg/g) | ≥ 1050 | ≥ 1100 | | BET Surface Area (m²/g) | 1000 – 1250 | 1100 – 1300 | | Hardness Number | ≥ 99 | ≥ 99.5 | | Attrition Loss (%) | ≤ 1.5 | ≤ 1.0 | | Platelets (% by wt) | ≤ 2.5 | ≤ 2.0 | | Apparent Density (g/cc) | 0.49 – 0.54 | 0.50 – 0.55 | | Bulk Density (kg/m³) | 500 – 560 | 520 – 580 | | Ash Content (%) | ≤ 4 | ≤ 3 | | Moisture (% as packed) | ≤ 4 | ≤ 4 | | pH (aqueous extract) | 9 – 11 | 9 – 11 |

Premium Advantages- Faster adsorption kinetics → lower soluble gold losses - Higher gold loading per tonne of carbon - Reduced carbon consumption & regeneration frequency - Improved circuit stability and screen performance

Test Methods: ASTM D2862 (PSD), ASTM D5742 (Butane Activity), ASTM D3467 (CTC – correlated), ASTM D3802 (Hardness), ASTM D2866 (Ash), ASTM D2867 (Moisture), ASTM D2854 (Density), ASTM D4607 / BET-N₂ (Surface Area)

Specifications are typical values. Carbonmax can fine-tune activity, density, and particle size distribution based on ore chemistry, pulp density, and circuit configuration.

—|—|—|—| | Mesh Size (USS) | 6 × 12 | 6 × 16 | 8 × 16 | | Typical Screen Distribution | >6: ≤5%6×12: ≥90%<12: ≤5% | >6: ≤5%6×16: ≥90%<16: ≤5% | >8: ≤5%8×16: ≥90%<16: ≤5% | | d50 (mm) | 2.2 – 2.6 | 2.0 – 2.6 | 1.8 – 2.1 | | CTC Activity (%) | ≥ 60 | ≥ 55 | ≥ 60 | | Butane Activity (% wt) | ≥ 23 | ≥ 21 | ≥ 22 | | Gold Adsorption Rate (R-Value) | ≥ 58 | ≥ 55 | ≥ 58 | | K-Value | 26 – 32 | 24 – 30 | 26 – 32 | | Iodine Number (mg/g) | ≥ 1000 | ≥ 950 | ≥ 1000 | | BET Surface Area (m²/g) | 900 – 1200 | 850 – 1150 | 900 – 1200 | | Hardness Number | ≥ 98 | ≥ 99 | ≥ 99 | | Platelets (% by wt) | ≤ 3 | ≤ 3 | ≤ 3 | | Attrition Loss (%) | ≤ 1 – 2 | ≤ 1 – 2 | ≤ 1 – 2 | | Abrasion Number | ≤ 2 | ≤ 2 | ≤ 2 | | Apparent Density (g/cc) | 0.48 – 0.53 | 0.49 – 0.54 | 0.48 – 0.53 | | Bulk Density (kg/m³) | 480 – 540 | 490 – 550 | 480 – 540 | | Moisture (% as packed) | ≤ 5 | ≤ 5 | ≤ 5 | | Ash Content (%) | ≤ 5 | ≤ 5 | ≤ 5 | | pH (aqueous extract) | 9 – 11 | 9 – 11 | 9 – 11 | | Ignition Temperature (°C) | ≥ 450 | ≥ 450 | ≥ 450 |

Test Methods: ASTM D2862 (PSD), ASTM D5742 (Butane Activity), ASTM D3467 (CTC – correlated), ASTM D3802 (Hardness), ASTM D2866 (Ash), ASTM D2867 (Moisture), ASTM D2854 (Density), ASTM D4607 / BET-N₂ (Surface Area)

Specifications shown are typical values derived from industry-standard gold recovery carbons. Carbonmax can engineer customised grades to match specific ore chemistry, pulp density, and circuit design.

—|—|—|—| | Mesh Size (USS) | 6 × 12 | 6 × 16 | 8 × 16 | | d50 (mm) | 2.2 – 2.6 | 2.0 – 2.6 | 1.8 – 2.1 | | CTC Activity (%) | ≥ 60 | ≥ 55 | ≥ 60 | | Gold Adsorption Rate (R-Value) | ≥ 58 | ≥ 55 | ≥ 58 | | Hardness Number | ≥ 98 | ≥ 99 | ≥ 99 | | Platelets (%) | ≤ 3 | ≤ 3 | ≤ 3 | | Attrition Loss (%) | ≤ 1 | ≤ 1 | ≤ 1 | | Apparent Density (g/ml) | 0.48 – 0.50 | 0.49 – 0.51 | 0.48 – 0.50 | | Moisture (% as packed) | ≤ 5 | ≤ 5 | ≤ 5 | | Ash (%) | ≤ 5 | ≤ 5 | ≤ 5 | | pH (aqueous extract) | 9 – 11 | 9 – 11 | 9 – 11 |

Specifications shown are typical. Custom grades can be manufactured to suit specific circuit requirements.