



THE
LATEST

IN
OVERLAY
TECHNOLOGY

WFM
WEAR RESISTANT MATERIALS

WEAR RESISTANT
BIMETALLIC PLATES



WFM

WEAR RESISTANT MATERIALS

METALLURGICAL ENTERPRISE

specializing in the production of
surfacing materials and alloys for the
restoration and hardening of machine
parts and mechanisms operating
under conditions of intensive abrasive
wear and aggressive environments.

40+

years of experience
in wear-resistant solutions

3-5x

of increase
in equipment service life

100%

custom engineering
for every application

WFM BIMETALLIC WEAR OVERLAY PLATE

consist of dual-layer metal sheets featuring a base layer of low-carbon or heat-resistant steel and a wear-resistant overlay layer.

The thickness of both the base plate and the overlay can be customized to meet specific project requirements and technical specifications.

FIGHTS WEAR,
GUARANTEED

THE OVERLAY LAYER
features high wear resistance and serves a protective function.

High-carbide alloy absorbs abrasion, impact and heat. The base underneath stays untouched



OWN RIBBON HARDFACING TECHNOLOGY

The wear-resistant coating is applied to the base metal using automatic overlay welding.

Technology co-developed with the E.O. Paton Electric Welding Institute (Kyiv), one of the world's most renowned research centers in welding and hardfacing technologies.

THE BASE LAYER
absorbs mechanical loads and structural stresses.

RIBBON HARDFACING TECHNOLOGY VS. CONVENTIONAL WIRE-BASED HARDFACING

RIBBON



MINIMIZING CRACKS
+60-100%
STRENGTH

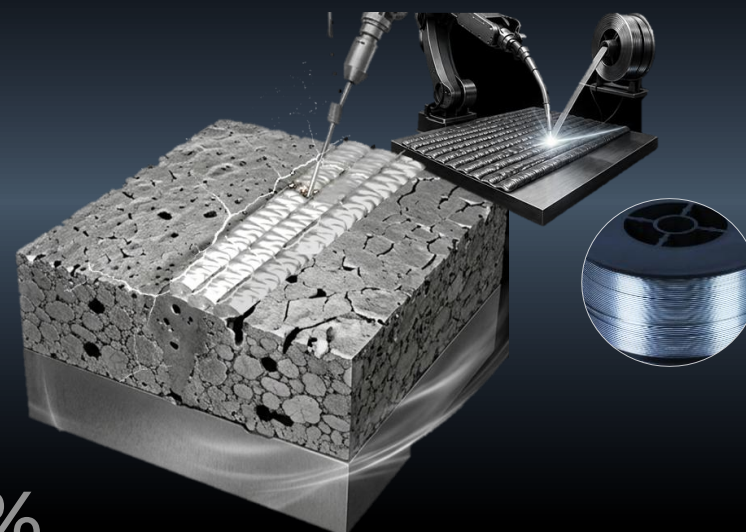


WFM bimetallic plates are surfaced using the electric-arc method with proprietary flux-cored surfacing ribbons, 2.8–3.2 mm in diameter, manufactured in-house

Flux-cored ribbon cross-sections:
16.5×4 mm and 10×3 mm

The maximum fill factor for flux-cored wires is 30–35%. Achieving superior plate abrasion resistance requires a high concentration of primary Cr23C6 chromium carbides within the matrix. To accomplish this, the overlay layer must contain a minimum of 26% chromium and 4% carbon. This level cannot be attained using flux-cored wire welding, where actual chromium content does not exceed 20%

WIRE-BASED



The fill factor of flux-cored ribbons ranges
from 55% to 62%

(which is nearly twice the fill factor of flux-cored wires)

Therefore, surfacing with flux-cored ribbons makes it possible to achieve the required carbon and chromium contents right in the first layer, which ensures a stable micro-structure of the weld overlay. This fact allows for the production of wear-resistant plates with significantly improved consumer properties.

WFM PLATE

Advantages



Reliable protection

The improved and stable protective layer prevents abrasive wear and erosion, which is critical under conditions of sliding and intensive material flow



High efficiency

In-house production of flux-cored ribbons guarantees a stable microstructure and high quality



Flexibility and versatility

The plates can be custom-manufactured in any shape and prepared to the required size, which significantly simplifies installation



Economic efficiency

The more durable material extends equipment life, reduces lining weight, and minimizes downtime and maintenance costs

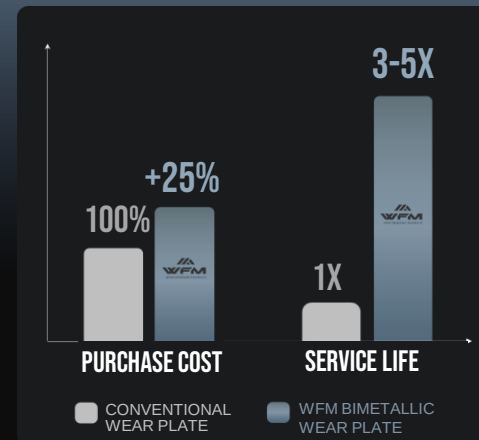


Wide selection

The availability of various plate grades allows for selecting the optimal option for specific operating conditions

➤ Rationale for using WFM bimetallic plates:

- ability to protect large surfaces against various types of wear;
- extended equipment service life by increasing the wear resistance of the protected surface;
- reduction of lining weight by up to 50%, which helps increase equipment productivity;
- reduction of production downtime;
- reduced costs for specialized repair crews;
- decreased maintenance and repair costs;
- reduction of operational equipment maintenance costs, leading to lower product manufacturing costs;
- simplicity of bimetallic plate installation process.



A +20–30% price premium at purchase turns into **UP TO 75% SAVINGS** on maintenance costs — thanks to a service life that increases by 3–5 times

SIX GRADES FOR EVERY WEAR TYPE

Universal Up to 250°C



Optimal balance of wear resistance and versatility

Designed for high-wear applications with moderate impact loads. WFM 214 delivers reliable performance across the widest range of industrial tasks — the go-to solution where conditions vary or are difficult to predict.

WFM 214

Abrasive wear Up to 550°C



Maximum resistance to abrasive and gas-abrasive wear.

Engineered for extreme abrasive and erosive conditions where standard plates fall short. Highest hardness in the product line — built for intensive particle impact and continuous material flow.

WFM 178

High temperatures Up to 750°C



Stable performance under extreme heat

Built for hot zones and high-temperature processes. Maintains mechanical properties and wear resistance at temperatures up to 755°C — where both heat and abrasion are present simultaneously.

WFM 179

Impact loads Up to 200°C



Reliable operation under intensive wear and impact

A well-rounded solution for demanding conditions involving continuous wear and standard impact loads. Consistent, predictable performance across a broad range of equipment — where durability and stability matter most.

WFM 101

Abrasive wear Up to 400°C



Superior resistance under high loads and abrasive conditions

Developed for equipment operating under sustained heavy loads with aggressive abrasive wear. The preferred choice for high-throughput machinery where downtime is costly and plate longevity is critical.

WFM 180

Aggressive environments Up to 450°C



Engineered for aggressive media and combined wear.

A specialised Ni-Cr alloy plate for environments where standard materials fail — corrosive media, chemical exposure, combined abrasive and thermal wear. WFM 111 performs where conditions are most unforgiving.

WFM 111

COMPOSITION:

The plates consist of:

- **Steel base** (provides rigidity and absorbs mechanical loads)
- **Hard-faced protective layer** enriched with carbide-forming elements (Cr, Nb, Mo, W, B, V)

SIZE

- 1340*3000 mm
- 1850*3000 mm
- Custom sizes available upon request

THICKNESS:

Base: from 5 to 25 mm

Wear-resistant layer: from 3 to 16 mm

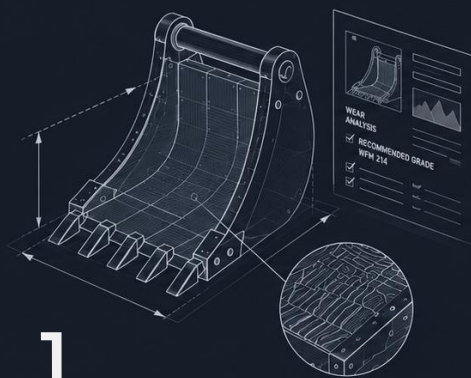
Total plate thickness: from 8 to 35 mm

WFM Wear Overlay Plate - TECHNICAL CLASSIFICATION

Grade	Wear type	Wear facing system	Hardness (HRC)	Max. service temperature	Main alloying elements	Application industries
WFM 214	Universal	Chromium carbide alloy	58–62	Up to 250°C	Cr, C, Mn	Mining; Cement; Metallurgy; Construction materials; Port logistics; Road construction
WFM 178	Abrasive wear	Complex chromium carbide alloy	60–65	Up to 550°C	Cr, Nb, B, Si	Cement; Mining; Metallurgy; Power generation; Port logistics
WFM 179	High temperatures	High-temperature complex carbide alloy	55–58	Up to 750°C	Cr, Nb, Mo, W, V	Cement; Power generation; Metallurgy; Road construction
WFM 101	Impact loads	Impact-resistant chromium carbide alloy	50–56	Up to 200°C	Cr, Ni, Si, Mn	Underground mining; Construction materials; Recycling; Port logistics
WFM 180	Abrasive wear	High chromium carbide alloy	58–62	Up to 400°C	Cr, Mo, Si	Mining; Cement; Metallurgy; Power generation; Construction materials
WFM 111	Aggressive environments	Nickel-based chromium carbide alloy	50–56	Up to 450°C	Cr, Ni, Si, Mn, Zr, B	Metallurgy; Recycling; Power generation; Underground mining; Chemical processes



WORKFLOW SCHEME

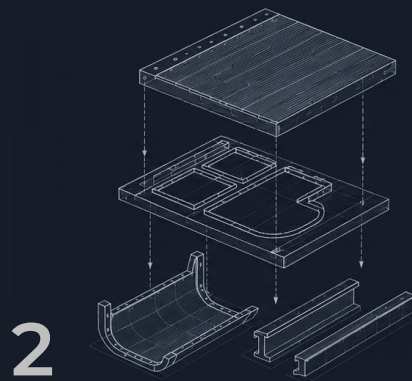


1

Engineering support

We analyse your wear conditions and recommend the right solution before any order is placed

- Wear condition analysis
- Grade selection
- Technical recommendations
- Drawing review



2

Cut-to-size parts

Plates cut and formed to your dimensions. Reduces fabrication time on your end.

- Cut to drawing
- Welded assemblies
- Formed sections
- Ready for on-site installation



3

Finished components

Complete wear-protected parts manufactured to your drawings. Arrives ready to fit.

- Buckets · chutes · hoppers
- Transfer chutes · fan housings
- Cyclones · pipelines
- Any component to your drawing

FIELDS OF APPLICATION

BIMETALLIC PLATES ARE USED IN MANY INDUSTRIAL
SECTORS SUBJECT TO
EXTREME WEAR CONDITIONS



Abrasion

Caused by hard, abrasive particles sliding against the metal surface, gradually wearing it down



High-stress abrasion

Occurs when abrasive particles are crushed under high pressure between two hard surfaces



Impact

Results from heavy mechanical shocks and blows that can deform or fracture standard materials.



Impact + abrasion

A combination of repetitive mechanical impacts and abrasive wear, common in heavy processing equipment



Erosion

Caused by the continuous high-speed impact of solid particles suspended in fluid or gas streams



Sliding wear

Generated by direct surface-to-surface contact and friction during relative sliding motion



Corrosion

Material degradation driven by chemical or electrochemical reactions in aggressive environments



Elevated temperatures (up to 750 °C)

Operates under extreme thermal stress where conventional steels lose their strength and wear resistance.



MINING

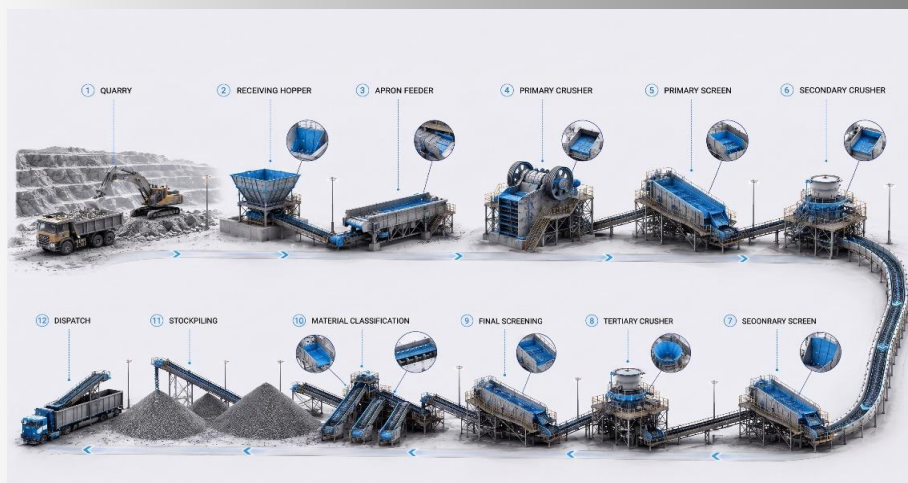


CEMENT



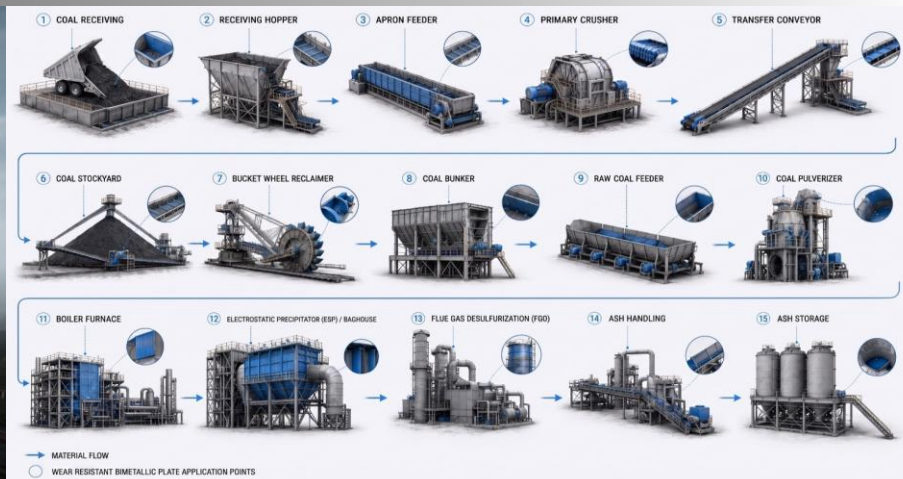
UNDERGROUND MINING







POWER GENERATION



ROAD CONSTRUCTION & ASPHALT PRODUCTION



PORT LOGISTICS



OUR APPROACH

➔ **Production upon request**

➔ **Fast order fulfillment**

➔ **Supply flexibility**

1. ENQUIRY

Submit your request with an application description or drawings.

We respond within one business day

2. TECHNICAL CONSULTATION

We analyse your operating conditions and select the right grade.

The solution is confirmed before production begins

3. COMMERCIAL PROPOSAL

A tailored quote with fixed lead times, scope and technical parameters.

Confirmed in writing

4. PRODUCTION AND DELIVERY

Manufactured at our own plant in Slovakia. Quality control at every stage

You receive exactly what was agreed

**Quality control
at every stage
— from hardfacing
to delivery**



BENEFITS

-  REDUCED INVENTORY
-  NO CAPITAL TIED IN STOCK
-  BETTER CASH FLOW
-  AVAILABILITY WHEN NEEDED
-  RELIABLE PARTNER

After warranty

- OEM loses part of the aftermarket
- Better wear performance helps keep the customer within the OEM ecosystem

WHY THIS IS BENEFICIAL FOR THE OEM



Higher value product



Better field performance



Lower downtime for end user



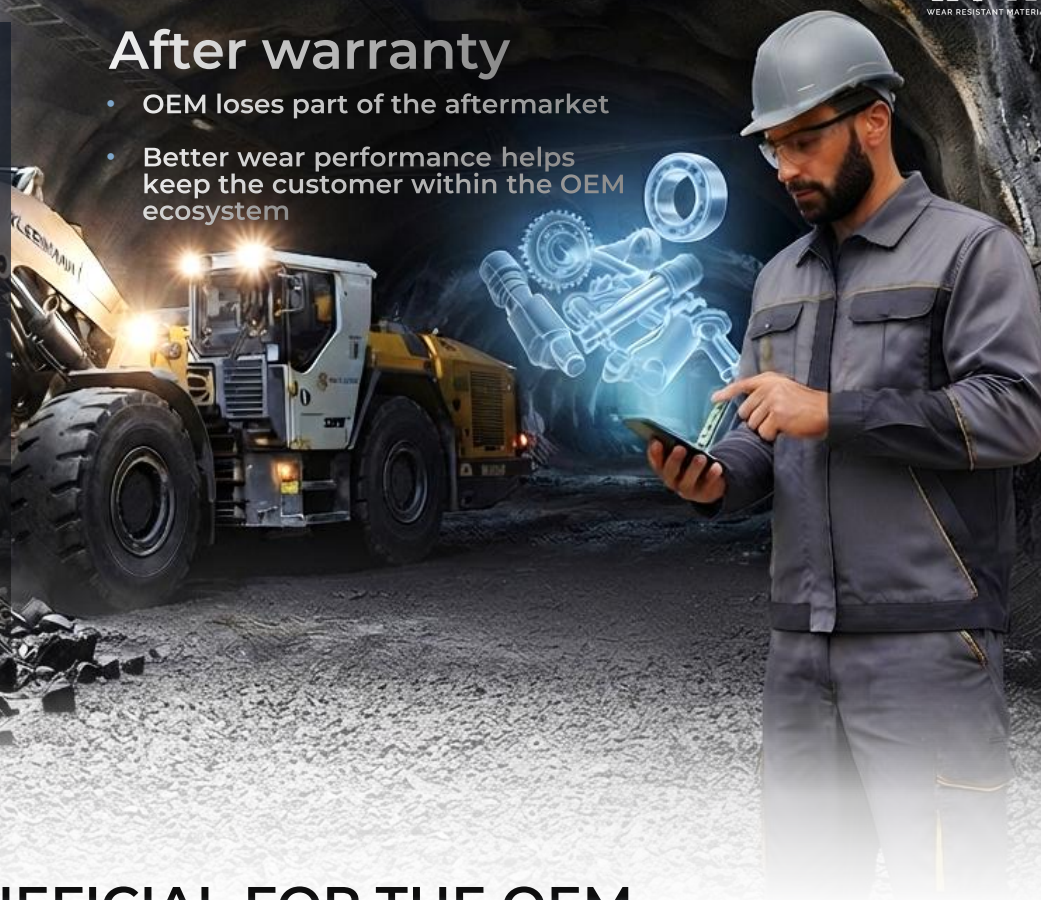
Better total cost of ownership



Stronger customer loyalty



Premium positioning in the market





OWN
PRODUCTION
FACILITIES



Everything made in-house
at our own 2,500 m²
facility in Slovakia.

NOTHING OUTSOURCED

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SCAN ME





WEAR RESISTANT MATERIALS