The Plastics Experts.

MINELINE

ABRASION RESISTANT PE PIPING SYSTEM

EN

The Plastics Experts.

MINELINE is currently the most advanced stage of development in the evolution of piping systems for the mining industries. Whereas other pipe materials suffer from severe erosion and corrosion, AGRU MINELINE scores with far better durability than other options.

The AGRU success story has been unfolding now for around seven decades.
Founded back in 1948 by Alois Gruber senior, nowadays the company is one of the world's most important single-source suppliers for piping systems, semi-finished products, concrete protection liners and lining systems made from engineering plastics. Our ability to supply everything from a single source sets us apart. We use only top-grade thermoplastic polymers as our raw materials. When it comes to application-technical consulting, we are your best partner in the field.

ISO 14001:2004

Quality

At AGRU, customer satisfaction comes first. Technical consultations, training courses, welding instruction and expert supervision on site are essential parts. The AGRU quality assurance system is compliant with ISO 9001:2008 and its environmental management system fulfils ISO 14001:2004. This in turn ensures that the products comply with international norms, as monitored and evaluated on an ongoing basis by independent testing agencies standards.

The start-to-finish attention to quality ensures that the products meet and beat the strictest technical specifications, providing safe operation within gas, water and wastewater infrastructures.

MINELINE
Reduced maintenance and longer lifespan

MINELINE is an entire piping system designed and tested especially for the transport of abrasive media. The innovative multi-layer design guarantees robustness and dependability for a longer lifespan and high cost-efficiency.

Economic mining operations

Longer service life because of the abrasion-resistant layer

The inner layer offers high abrasion resistance and prevents media adhesion
- better durability than conventional metal and PE pipes
- maintenance intervals are significantly longer
- much higher productivity because of shorter downtimes

Minimal thermal expansion

White outer layer reflects sunlight

A white surface significantly reduces the pipe wall temperature
- reduced abrasion due to less snaking of the pipeline
- higher pressure rating and reliability of the installed system due to lower pipe wall temperature

Higher operational safety

Greater wall thickness due to multi-layer design

Multi-layer structure allows higher static loads for underground systems
- higher wall thickness (PE pipe + abrasion-resistant layer), so the pipes are more robust
- extra safety margin against water hammers, pressure surges and seismic activity
- offers all the advantages of PE pipes, such as high flexibility and resistance to crack propagation

Protection inside the entire piping system

All fittings have the abrasion-resistant layer

Complete product range with protective layer, so no weak points in the installed system
- MINELINE is abrasion-resistant end to end, including all branches, bends and stub flanges
- the combination of butt welding and electrofusion welding ensures a perfect welded joint every time

MINELINE system

Metal HDPE MINELINE II

The most cost-efficient solution

- The abrasion-resistant layer prolongs usable lifespan
- Better durability than conventional metal or PE pipes
- Maintenance intervals are significantly longer
- Higher productivity because of shorter downtimes

Triple dependability because of multi-layer design

- The abrasion-resistant inner layer prolongs usability enormously and prevents media adhesion
- The black core is made of PE 100-RC, offering all PE piping advantages such as flexibility, resistance to cracks, water hammers and seismic events
- The white outer layer is made of PE 100-RC and it reflects the sunbeams, reducing heat build-up and helping to minimize thermal expansion in the piping system

End-to-end protection through-out the entire piping system

- A pipeline is only as good as its weakest link. AGRU MINELINE II fittings consist of three-layers, just like the pipe itself.

Combination welding, total dependability

- Combined butt and electrofusion welding in a single step means that there are no weak points in AGRU MINELINE II pipe-lines.
- So in conjunction with the outstanding material properties, this makes AGRU MINELINE the most cost-efficient solution.


Butt welding


Electrofusion welding


Combined welding

MINELINE application

For underground installation of MINELINE II pipelines, the white outer layer can be omitted.

Application areas are the mining industry and the transport of highly abrasive media. In these fields, the MINELINE piping system will become indispensable due to its excellent abrasion resistance.

Areas of application

- Mining and extraction industries
  - Transport of crushed ore
  - Transport of waste products
- Quarry industries
  - Transport of sand and natural stone
  - Transport of crushed stone
- Cement industry
  - Transport of lime, stones and slurries
- Chemicals industry
  - Transport of waste products, salts
- Dredging

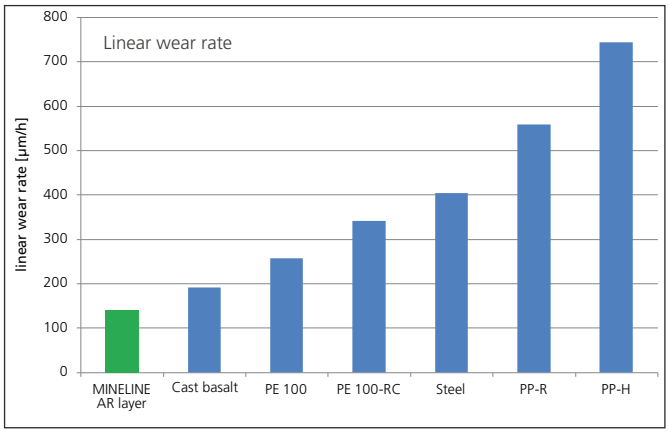
TESTS PROVE OUTSTANDING ABRASION RESISTANCE

Coriolis sliding wear test

Test conditions: Water with 26 % sand and solids, particle size 0.57 mm, test temperature 20 °C.

The Coriolis effect forces slurry from a rotating bowl through pipes in which material samples are fixed.

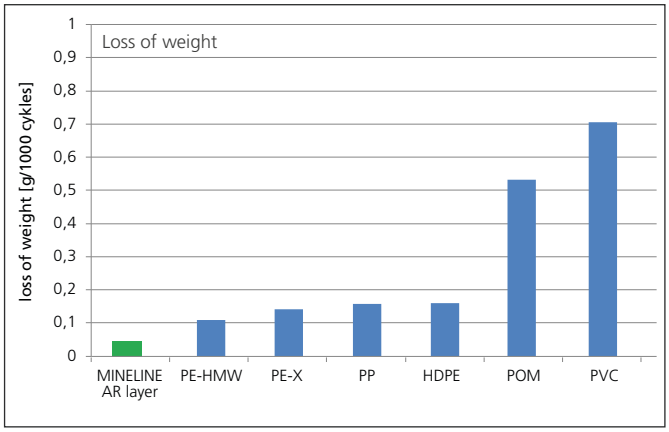
MINELINE wins this sliding wear test clearly.



Taber abrasion test (ASTM D 4060)

Test conditions: Moving wheels weighing 1000 g and an abrasive coating, test temperature 20 °C.

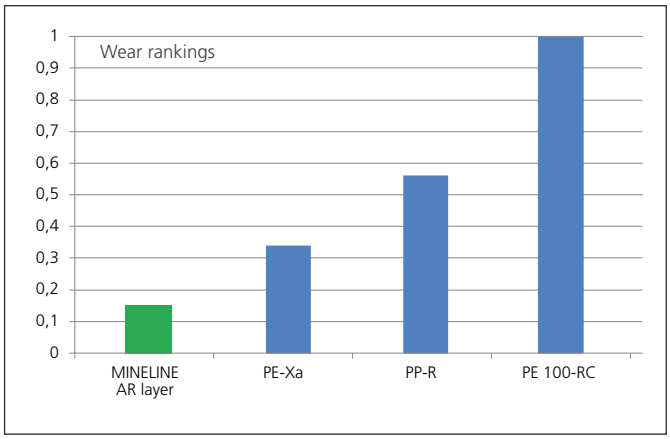
The wheels rotate against the surface of the test specimen; their weight and the abrasive surface coating cause material erosion. Weight loss after a certain number of cycles is measured. Also with this test procedure the MINELINE system shows clear advantages to the other test materials.



Accelerated wear test

Test conditions: Water with 15 % sand, particle size 0.585 mm, test duration: 74.5 h, slurry changed every 6 h. Test temperature 20 °C - 30 °C.

The slurry is pumped through a system of bends; the test specimens are affixed in the bends on the outside radius. Also in this test, which is well accepted in the mining industry, the MINELINE system has shown better performance than other tested plastics.



MINELINE product range

The MINELINE supply range differentiates between 2 pipe types, which have been optimized for aboveground installation.

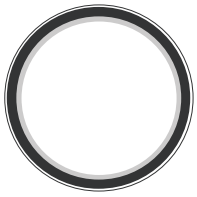
MINELINE I pipes have a white protective layer outside but have no extra abrasion resistant layer inside. They have the good abrasion resistance of HDPE. The white outer protective layer reflects the sunlight, preventing this way the heating of the pipe of up to 70 °C. For this reason, the strength and pressure resistance of the pipe remain even under intensive solar radiation.

MINELINE II features the same white outside protective layer and also has an extreme abrasion resistant inner layer. Depending on the transported media, MINELINE II pipes offer a further improved life span than MINELINE I pipes.

MINELINE fittings are built up the same way as MINELINE II pipes with the additional, abrasive resistant layer. This is important because especially in bends and tees, the abrasion is much higher than in straight pipes.

PRODUCT RANGE OF MINELINE II PIPES (with inside layer)	
Dimensions	
SDR 17	OD 63 – 630 mm OD 710 – 1200 mm*
SDR 11	OD 63 – 630 mm OD 710 – 1200 mm*

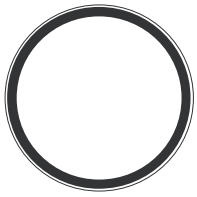
*on request



Code: 3M.705.

PRODUCT RANGE OF MINELINE I PIPES (without inside layer)	
Dimensions	
SDR 17	OD 63 – 630 mm OD 710 – 1200 mm*
SDR 11	OD 63 – 630 mm OD 710 – 1200 mm*

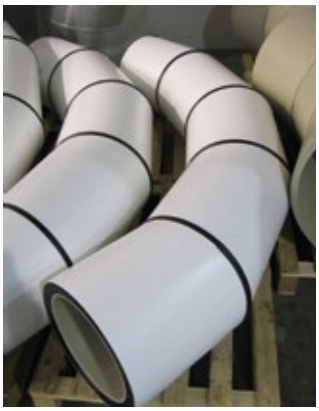
*on request



Code: 2M.705.

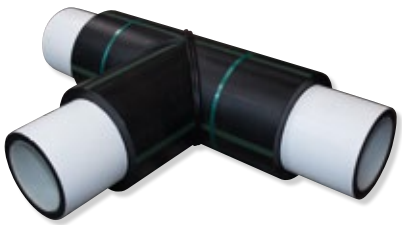
PRODUCT RANGE OF MINELINE FITTINGS	
Dimensions	
Tee, reduced working pressure	63 – 500 mm*
Tee, full pressure conform	*
Stub flange	63 – 500 mm 560 – 1200 mm*
Sweep bends	63 – 630 mm
Segmented bends	63 – 1200 mm

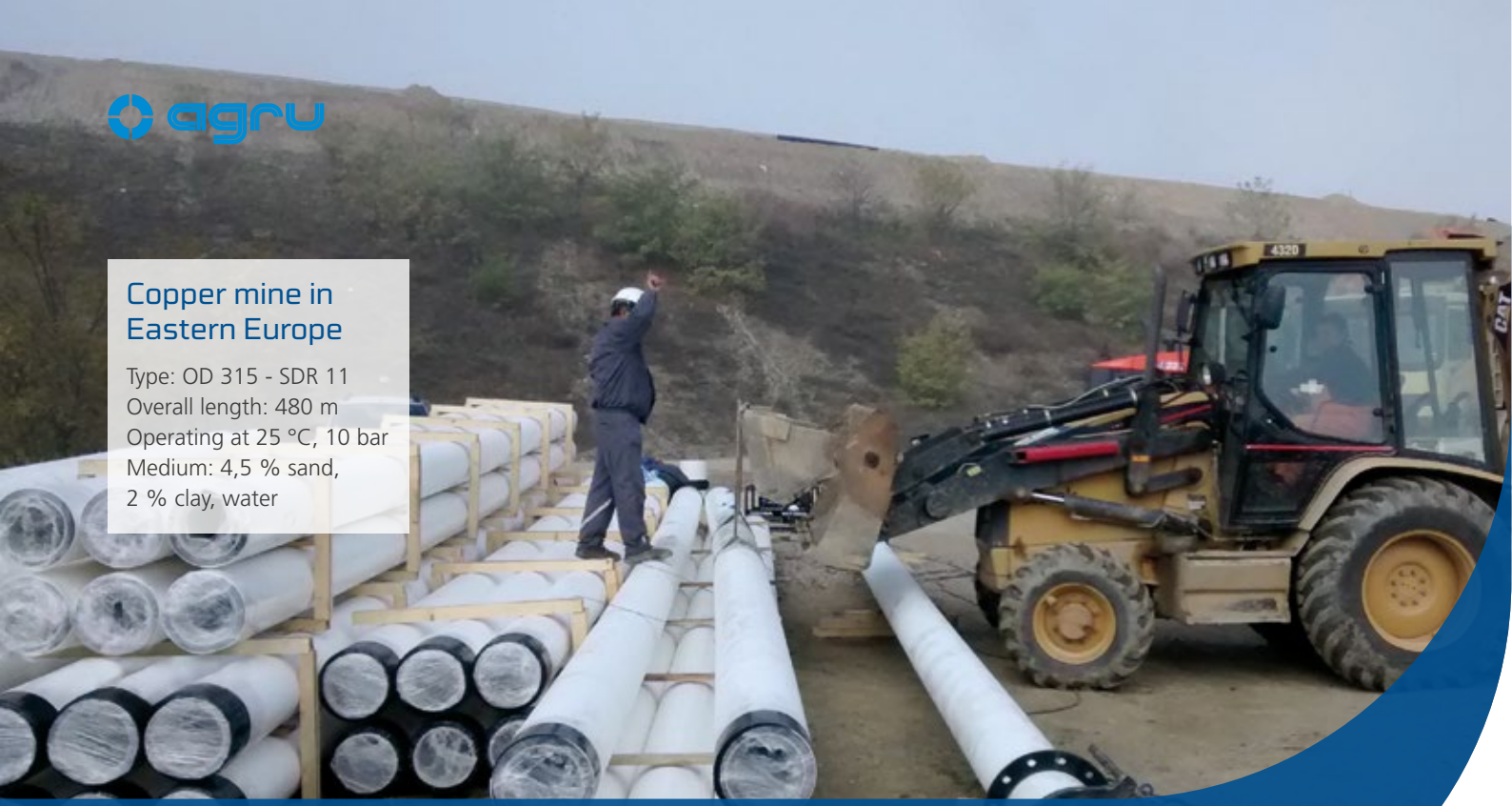
*on request



Wide range of fittings for superb versatility

The range of AGRU MINELINE fittings is extensive. And virtually anything is possible on customer request. Sweep or segmented – our fittings afford superb versatility in the field, on any project.





Copper mine in Eastern Europe

Type: OD 315 - SDR 11
Overall length: 480 m
Operating at 25 °C, 10 bar
Medium: 4,5 % sand,
2 % clay, water

MINELINE References

Chilean mine transport pipeline

Type: PPR – white signal layer
OD 250, OD 225 - SDR 11
OD 280 - SDR 7.4
Overall length: 6000 m
Operating at 60 °C, 7,4 bar
Medium: Abrasive slurry
Installation: Butt welding

Kaolin plant in Germany

Type: OD 250 - SDR 7,4
Overall length: 2500 m
Operating at 25 °C, 10 bar
Medium: Kaolin/water mixture

On customer request, AGRU manufactured Mineline II pipes without the white outside layer, because the piping system was to be laid underground. Because of the high installation depth, heavy wall SDR 7,4 MINELINE II pipes were applied.

Easy handling

AGRU MINELINE is a light-weight compared to metal pipes and it scores extra points for long service life and easy installation.

The Plastics Experts.

Your distributor

Subject to errors of typesetting, misprints and modifications.
Illustrations are generic and for reference only.

0916

AGRU Kunststofftechnik GmbH
Ing.-Pesendorfer-Strasse 31
4540 Bad Hall, Austria

T. +43 7258 7900
F. +43 7258 790 - 2850
office@agru.at

www.agru.at