



Fast. Strong. Black.

Blackrapid – hardens and coats iron alloys in one operation

Sometimes steel needs a second skin. Metal workpieces can be coated with lacquer, stable compounds or metal to make them more resistant to external influences or to make them more decorative. The disadvantage of standard coating methods such as blackening, phosphating or lacquering, is that they usually involve very complex processes. Furthermore, faults in the coating can occur as a result of an uneven distribution of the coating material. The patented Blackrapid process from Messer provides an alternative – it is environmentally friendly and offers the user a wide range of benefits. It allows metallic materials to be coated efficiently and extremely cost-effectively in just one operation and in accordance with individual requirements – reliably, safely and without electrochemical immersion baths.

Maximum effect with minimum effort

What makes the Blackrapid process so special is that the coating is applied in the course of heat treatment by means of a controlled oxidation of the material surface. During austenitisation, a gas mixture consisting of nitrogen and an oxidising agent is passed into the furnace.

After just a short time, an evenly sealed, black-coloured, strongly adherent iron oxide layer is formed on the material surface – even in blind holes. The thickness of the oxide layer is variable and its appearance can be subsequently altered. After a preset reaction time, the oxidation process is completed by hardening in an oil bath. There is now no need for any conventional coating!



Results of Blackrapid treatment: blackened components

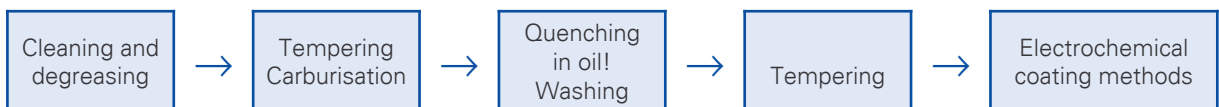


Cost-effective treatment of hand tools...

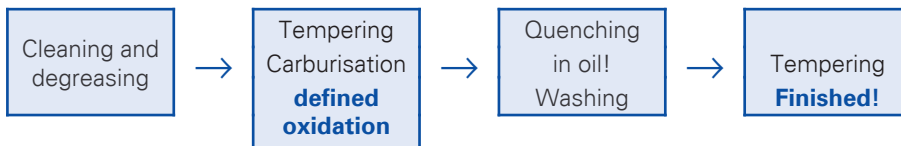


... and other mass-produced components

Process flow without Blackrapid



Process flow with Blackrapid



*Process flow:
Process times are
shortened considerably with
Blackrapid.
(batch furnace)*

High throughput and flexible handling

The Blackrapid process is suitable for all standard furnace installations that temper, case harden and carbonitride metallic materials with the use of endogas. Existing furnace systems can be upgraded by installing the necessary supply and control technology.

What the experts think

Blackrapid provides the user with a cost-effective and tried and tested blackening method used, for instance, in the treatment of metal workpieces for toolmaking and mechanical engineering. If you value quality and high productivity and want to lower your operating costs at the same time, you should choose the Blackrapid process from Messer.

Your benefits at a glance

The Blackrapid process from Messer

- allows reproducible, high-quality, scratch and abrasion-proof protective layers to "grow" on iron alloys.
- makes the surface treatment of metal workpieces in electrochemical immersion baths largely unnecessary.
- can be used flexibly and adapted to suit individual requirements.
- is completely automatable, increases throughput in surface treatment, reduces operating costs and at the same time protects the environment.

Messer provides the Blackrapid process under licence, with the licence fee being based on the time and effort involved!

Installation, setup and optimisation of the supply and control technology required for use of the Blackrapid process are carried out by our team of experts immediately after signing of the contract.

Please do not hesitate to contact us if you have any questions regarding the Blackrapid process or would like to arrange a personal consultation with our application experts.

Contacts in your country can be found at:

www.messergroup.com/de/Standorte

This and many other brochures can also be downloaded from the Internet in PDF format:
www.messergroup.com



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