



**HYPROX<sup>®</sup>**  
**PERSYNT<sup>®</sup>**  
**PERACLEAN<sup>®</sup>**

Solutions for the  
pulp & paper industry

Evonik is one of the world's largest producers of hydrogen peroxide. Our worldwide capacity is more than 950 000 tonnes per year. We are the innovative leader in high quality products and services, offering more than a century of worldwide experience to serve the megatrends of the modern society and to deliver an exceptional value for our customers. To ensure optimal supply of hydrogen peroxide to the world market, we operate production facilities at 13 locations around the world.



About 50 percent of the hydrogen peroxide is used as an ecologically safe bleaching agent in the pulp & paper industry and textile industry. Furthermore, hydrogen peroxide is an environmentally friendly chemical used for many oxidation reactions, water treatment, exhaust air treatment and for various disinfection applications. Decomposing to yield only oxygen and water, hydrogen peroxide is one of the cleanest and most versatile chemicals available.

Peracetic acid is a potent antimicrobial agent which is rapidly active at low concentration against a wide spectrum of microorganisms. Solutions of peracetic acid are used for many different water treatment applications such as the treatment of process water and industrial or municipal waste water.

Evonik manufactures a range of high quality hydrogen peroxide and peracetic acid products and offers them under different brands such as HYPROX®, PERSYNT® and PERACLEAN®.



## Excellence

Our environment, safety, health and quality values set out our commitments in these areas. Together with more detailed guidelines and procedures, they form a binding framework. The ESHQ values define protection of people and the environment as central elements of our activities.

Evonik is committed to the global Responsible Care initiative, and we constantly strive to improve our performance in health, safety, environment and product stewardship. Our manufacturing facilities worldwide are certified according to the ISO 9001 as well as 14001 and 50001 series.

## Grades

For normal pulp applications and effluent treatment Evonik recommends the use of HYPROX® standard grade hydrogen peroxide.

For specialty applications, such as food, pharma, cosmetics and generation of chlorine dioxide, we recommend our various PERSYNT® grades.

For process water treatment and slime control we offer PERACLEAN® products containing a mixture of peracetic acid (PAA) and hydrogen peroxide.

Grade	content, % (w/w)	we guarantee
HYPROX® 500	49.5 – 49.9 % H <sub>2</sub> O <sub>2</sub>	specification
HYPROX® 600	59.5 – 59.9 % H <sub>2</sub> O <sub>2</sub>	
HYPROX® 700	69.5 – 69.9 % H <sub>2</sub> O <sub>2</sub>	
PERSYNT® 500 LC	49.5 – 49.9 % H <sub>2</sub> O <sub>2</sub>	specification incl. Eur.Ph.7, DAB 10, DIN EN 902
PERSYNT® 600 LC	59.5 – 59.9 % H <sub>2</sub> O <sub>2</sub>	
PERACLEAN® 5	approx. 5% PAA	specification
PERACLEAN® 15	approx. 15% PAA	

## Reliability

Evonik's global presence as well as our highly developed supply chain management guarantees a reliable worldwide product availability.

HYPROX® and PERSYNT® are available in railcars, trucks and ISO-containers.

PERACLEAN® can be delivered in 30 kg cans, 220 kg drums, 1 m<sup>3</sup> containers and in bulk.



## Chemical pulp

In the bleaching of Kraft pulp, the internationally most important pulp type, HYPROX® is one of the chemicals applied in multi-stage processes. Alkaline conditions are required to generate the active bleaching species from HYPROX®, the perhydroxyl anion. Consequently, extraction stages can be used for peroxide addition to boost the effects on delignification and brightness.

If applied in the last stage of the bleaching sequence, HYPROX® allows top brightness levels with improved brightness stability, optimized economy through savings in the total chemicals required, low residue of halogenated compounds both in pulp (OX) and in effluent (AOX) and low effluent colour.

HYPROX® is applied as the exclusive bleaching agent in brightening of sulfite pulp. In single or two-stage processes it allows bleaching to full brightness. PERSYNT® is recommended, if the pulp is used in food applications.

## Mechanical pulp

Mechanical pulp, generated by the conventional ground-wood process or modern refining technology (TMP, CTMP), is bleached with HYPROX® to high brightness levels. Yield and fibre properties are kept on a very high level. The conventional approach is the application of HYPROX® together with caustic soda as alkali source, sodium silicate for stabilization and buffering and a chelant for the sequestering of heavy metal traces in the wood pulp.

The alternative approach is to replace caustic soda by magnesium oxide, soda ash or calcium hydroxide.

HYPROX® gives high brightness and high brightness stability against aging and yellowing, moderate effluent load and good biodegradability.

## De-inked pulp

In paper recycling the removal of printing inks is the most important objective when the fibres are reused in the manufacture of graphic papers or tissue grades. Brightness and colour removal are secondary targets.

Fibre brightening is achieved mainly with HYPROX®. The alkaline conditions during the repulping of the recovered paper are ideally suited for a simultaneous bleaching step. A relatively low dosage of HYPROX® is sufficient to improve brightness and prevent alkaline yellowing.

In a post-bleaching stage, e. g. in a hot disperser followed by a bleaching tower, the brightness is further improved.

## Water treatment

In many mills there is a need to disinfect the water system to prevent microbial contamination of fibrous material in the circulation water. Polysaccharides, which are leached from the pulp, act as nutrients for microbial growth and result into formations of microbial or semi-chemical slimes. These cause critical failures in papermaking and reduction in the quality of paper, resulting in overall losses. The uncontrolled growth of slimes can ultimately cause the breakages of paper and, as a consequence, a stoppage of the production line.

Solutions of PERACLEAN® have been proved to be an effective bio-film remover in the water systems and are used as an environmentally friendly oxidizing biocide in the pulp & paper industry.

The addition of HYPROX® into the effluent is a useful tool to prevent odors and anaerobic conditions.



## Services of Evonik

Evonik has a long history in improving our customer's processes to increase product quality and competitiveness. In the past 40 years, more than 100 technical papers have been presented at conferences or published in pulp & paper magazines.

A variety of additional services are offered to our customers such as:

- Laboratory trials for optimization of bleaching sequences or for evaluation of alternative processes
- Mill trials for implementation of optimized process parameters for cost effective production
- Start-up assistance and troubleshooting in bleach plants
- Safety training, on-site safety inspections and audits
- Technical and engineering services for tank and dosing units including design, construction, consultancy and emergency assistance
- Supply chain management including well-trained customer service, supply network and vendor managed inventory
- Provision of information such as product documentation, scientific papers and patents
- Support during registration and certification processes, e.g. Eco-labelling

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