pewag group

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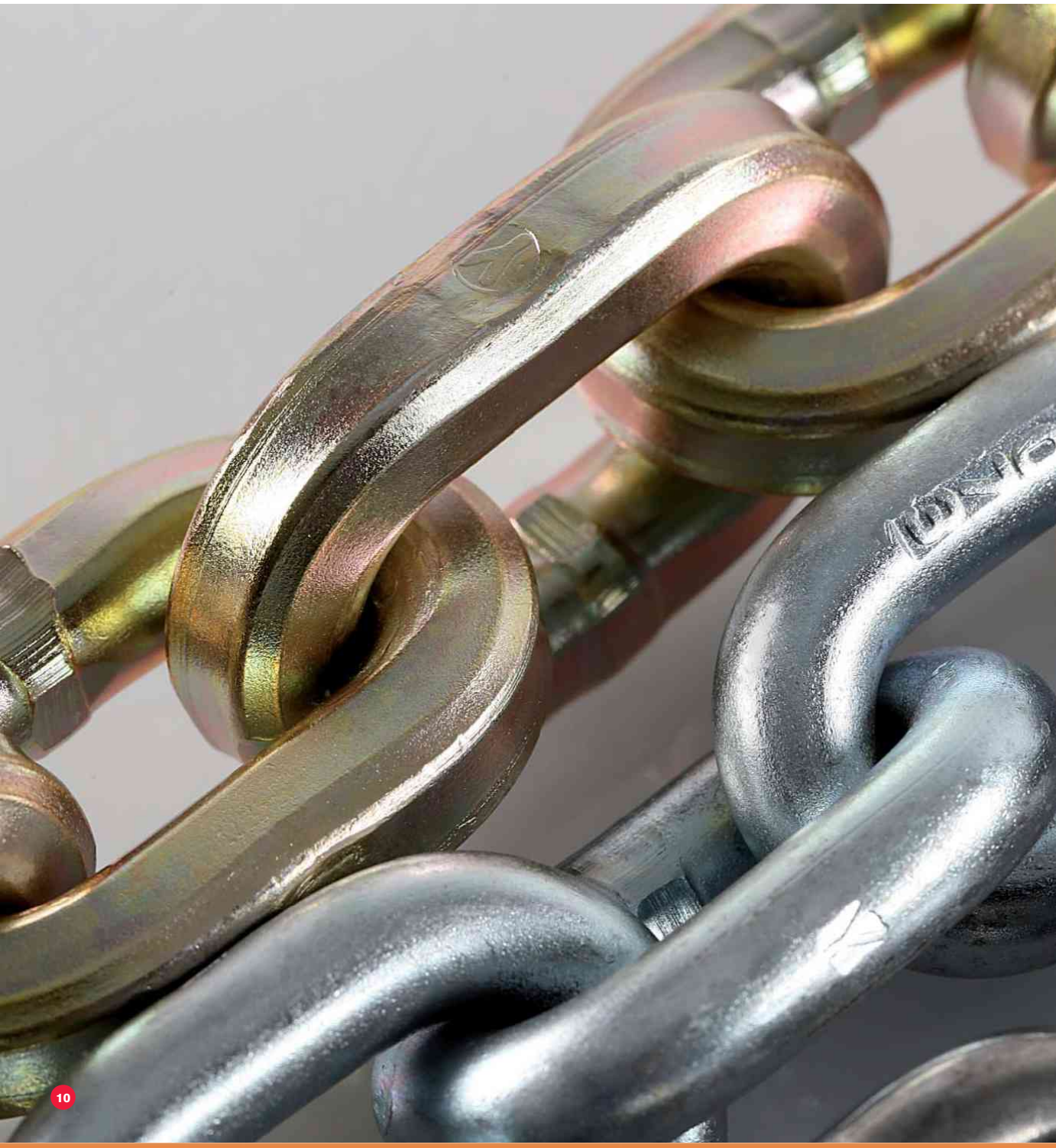

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pewag hoist chains

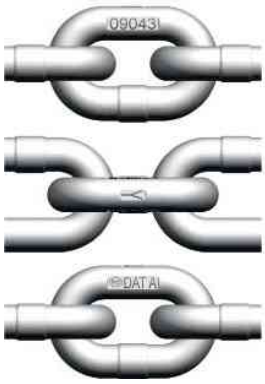
Advantages

Advantages of pewag hoist chains

- Produced on state-of-the-art chain production machines for high dimensional accuracy and tight tolerances to ensure smooth run of the chains over chain wheels.
- Heat treated in environment friendly continous working heat treatment systems for even hardness and strength of each individual chain link.
- High corrosion resistance and consistent quality of the zinc layer due to electrogalvanizing on pewag developed continous working facility.
- Assurance of the high quality of pewag hoist chains in accordance with ISO 9001 quality assurance system.
- Stamped with a five-digit identification number ensuring traceability of production data and quality checks back to the raw material.
- For our customers: Research in cooperation with
  - Technische Universität Graz
  - Montanuniversität Leoben
  - Ruhruniversität Bochum
- Possibility of testing and development on our numerous test benches and test machines.
- High degree of flexibility in the customized production of hoist chains with specific dimensions and qualities according to our customer's specification.

Continuous heat treatment line

Continuous galvanizing line



Stamping

ISO-Certificate

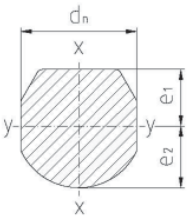
Profile steel chain

pewag is the first hoist chain manufacturer offering profile chains for hoists. Profile chains show several advantages, compared with round-steel-chains:

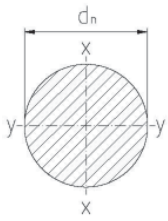
- 7% smaller chain diameter compared to round steel chains with same cross section areas. This enables a smaller chain drive and finally a smaller hoist.
- Increased bending resistance of the intelligent profile section provides a higher fatigue resistance and higher safety factor against fatigue breakages.
- Increased wear life time due to plane contact areas between chain, chain wheel and chain guide.

Profile steel chain

Round steel chain



Profile steel chain – Profile



Round steel – Profile

Comparison of the section modulus

Data depending on cross section	Advantages profile chain	Profile steel chain	Round steel chain
Nominal diameter	-7%	d=11 mm	d=11,8 mm
Chain cross-section	+/- %	A=109,8 mm²	A=109,8 mm²
Bending section-module	+6,5%	W_x=172,9 mm³	W_{xy}=162,3 mm³
	+13,3%	W_{y1}=183,9 mm³	W_{xy}=162,3 mm³
	+1,7%	W_{y2}=165,1 mm³	W_{xy}=162,3 mm³

Profile steel chain vs. Round steel chain

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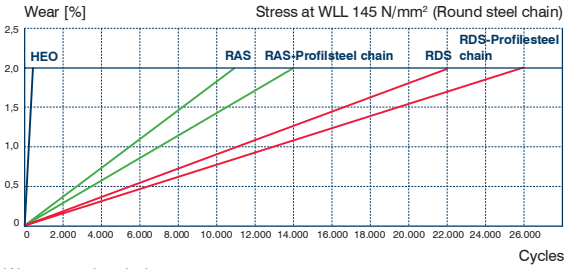
Wear values

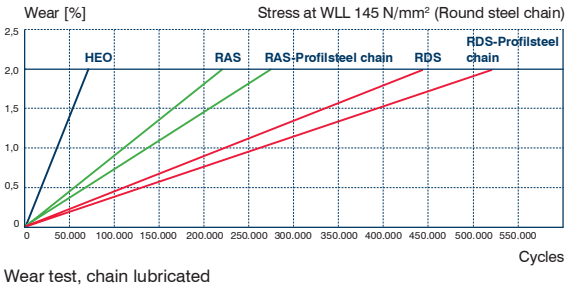
The values have been determined on the pewag test rig for dry and lubricated chains in one-strand-operation.

Dry running condition



Wear test, dry chain

Lubricated with motor oil



Wear test, chain lubricated

Duty rating groups

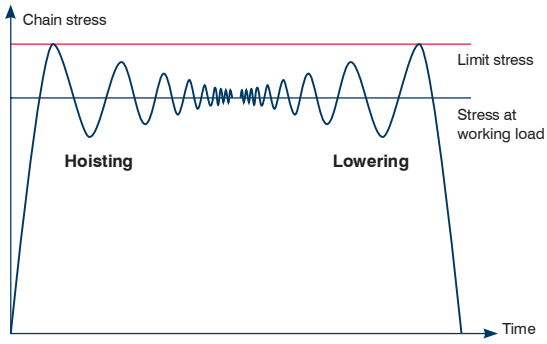
Depending on the intended usage, hoists are rated in duty rating groups according to ISO 4301-1. The duty rating group indicates the permissible working time and permissible utilization of the hoist equipment at full or partial load. Depending on the duty rating group, the safety factor of the chain (ratio of working and breaking load) is determined.

Duty rating group according to IS0 4301-1

M1	Manual hoists
M2, M3, M4, M5	Motor-driven hoists

Permissible limit stress

During hoist operations, it must be ensured that the maximum limit stress of the chain according to EN 818-7 and ISO 3077 is not exceeded. As chains run over the wheels oscillating forces are generated, which load the chain above the working load (polygone effect of the chain wheel, acceleration-, breaking shocks). The quotient „Limit stress / at working load limit“ is the shock-factor of the hoist.



$$\text{Max. shock factor} = \frac{\text{Limit stress}}{\text{Stress at working load}}$$

Fatigue test

According to EN 818-7 and ISO 3077, hoist chains must be submitted to a fatigue test with a maximum stress of 200 N/mm² and a minimum stress of 40 N/mm² for more than 2 million cycles. pewag does subject the chains to a standard test at a higher maximum stresses of 220 N/mm² and 230 N/mm².