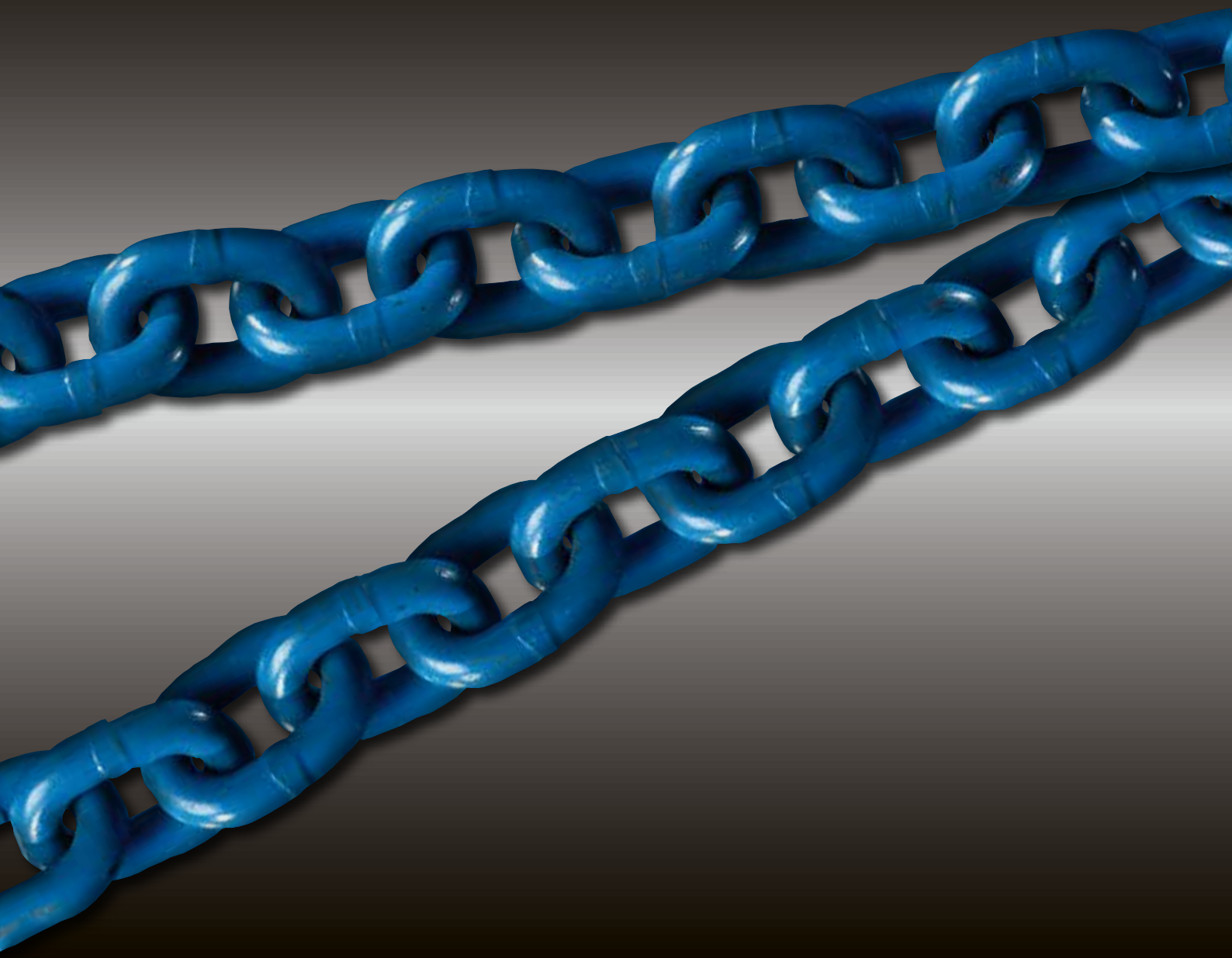
Chain

Grade 10 • Grade 8 • Short Link • Mid-link • Long-link



GUNNEBO Industries

Chain

Technical Information

WARNING:
Failure to read, understand and comply with the instructions, working load limits and specifications in this publication may result in serious injury or damage to property.

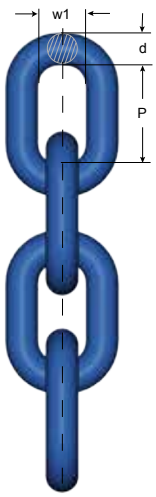
GrabiQ Chain KLA, Grade 10 (200)

Short link lifting chain

Heat treatment
Hardened and tempered.
Note! For chain grade 10 (200) the maximum in service temperature is 200°C.

Surface treatment
Painted blue

Fulfills the requirements in:
ASTM A973/A973M-07(2012)
EN 818+2:2008 (WLL+25%, reduced temperature range)



Art. no. Box	Code	WLL tonnes	d nom.	p	w1	Weight kg/m	MPF kN	Breaking force kN
Z802300 - 1 x 200 m	KLA 6-10 (200)	1.5	6	18	8.5	0.8	36.8	58.9
Z802337 - 1 x 200 m	KLA 7-10 (200)	1.95	7	21	10.0	1.1	48	77
Z802301 - 1 x 200 m	KLA 8-10 (200)	2.6	8	24	11.0	1.4	63	102
Z802302 - 1 x 100 m	KLA 10-10 (200)	4.0	10	30	14.0	2.3	98	158
Z802303 - 1 x 100 m	KLA 13-10 (200)	6.8	13	39	17.7	3.8	166	268
Z802304 - 1 x 100 m	KLA 16-10 (200)	10.3	16	48	21.9	5.6	251	402
Z802305 - 1 x 50 m	KLA 20-10 (200)	16.0	20	60	27.0	9.4	393	630
Z802246 - 1 x 50 m	KLA 22-10 (200)	20.0	22	66	29.0	11.9	491	785
Z802248 - 1 x 50 m	KLA 26-10 (200)	27.0	26	78	35.0	16.4	664	1062
Z802440 - 1 x 25 m	KLA 32-10 (200)	40.0	32	96	41.6	25.8	981	1610

All dimensions in mm

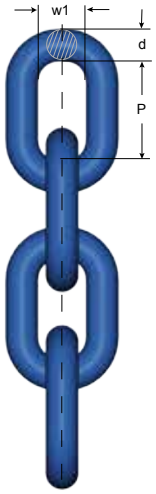
GrabiQ Chain KLA, Grade 10 (400)

Short link lifting chain

Heat treatment
Hardened and tempered.
Note! For chain grade 10 (400) the maximum in service temperature is 400°C.

Surface treatment
Painted blue

Fulfills the requirements in:
EN 818-2:2008 (WLL+25%, material dimension Ø +10%)



Note: This chain is marked with "8+" in addition to the marking required by the machine directive

Art. no. Box	Code	WLL tonnes	d nom.	p	w1	Weight kg/m	MPF kN	Breaking force kN
Z802306 - 1 x 200 m	KLA 6-10 (400)	1.5	6.6	18	8.9	1.0	36.8	58.9
Z802307 - 1 x 200 m	KLA 8-10 (400)	2.5	8.8	24	11.2	1.7	63	102
Z802308 - 1 x 100 m	KLA 10-10 (400)	4.0	11.0	30	14.4	2.6	98	158
Z802309 - 1 x 100 m	KLA 13-10 (400)	6.7	14.3	39	19.2	4.5	166	268
Z802310 - 1 x 100 m	KLA 16-10 (400)	10.0	17.3	48	23.0	6.7	251	402

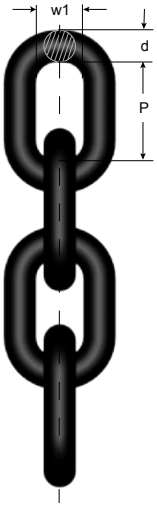
Classic Chain KLB/KLU, Grade 8

Short link lifting chain

Heat treatment
Hardened and tempered.

Surface treatment
Painted black (KLB)
Painted yellow (KLU)

Fulfills the requirements in:
EN 818-2:2008, AS 2321:2014, ASTM A391/A 391M-07 (2012)



Art. no. Box	Code	WLL tonnes*	d nom.	p	w1	Weight kg/m	MPF kN	Breaking force kN
Z802174 - 1 x 200 m	KLB 6-8E	1.12	6	18	8.5	0.8	28.3	45.2
Z802175 - 1 x 200 m	KLB 7-8E	1.57	7	21	10.0	1.1	38.5	62
Z802176 - 1 x 200 m	KLB 8-8E	2.0	8	24	11.0	1.4	50.3	80.6
Z802156 - 1 x 100 m	KLB 10-8E	3.2	10	30	14.0	2.3	79	130
Z802157 - 1 x 100 m	KLB 13-8E	5.4	13	39	17.7	3.8	133	214
Z802177 - 1 x 100 m	KLB 16-8E	8.2	16	48	21.9	5.6	201	322
Z801203 - 1 x 100 m	KLB 19-8E	11.6	19	57	27.0	7.8	284	457
Z801228 - 1 x 50 m	KLB 22-8E	15.5	22	66	29.5	10.6	380	610
Z801231 - 1 x 50 m	KLB 26-8E	21.6	26	78	35.0	14.8	531	850
Z801232 - 1 x 25 m	KLB 32-8E	32.8	32	96	41.6	21.6	804	1300

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Galvanized Chain KLZ, Grade 8

Short link lifting chain

Heat treatment
Hardened and tempered.

Surface treatment
Hot Dip Galvanized

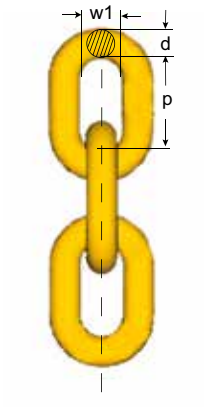
Fulfills the requirements in:
EN 818-2:2008 (material dim. Ø +10%)
ISO 1461:2009
ASTM A391/A391M-07 2012 (material dim. Ø +10%)

Art. no.	Code	WLL tonnes*	d nom.	p	w1	Weight kg	MPF kN	Breaking force kN	Delivery length
ZG802306	KLZ-6-8 HDG	1.12	6.6	18	8.9	1.0	36.8	45.2	1 x 100 m
ZG802307	KLZ-8-8 HDG	2.0	8.8	24	11.2	1.7	63.0	80.6	1 x 100 m
ZG802308	KLZ-10-8 HDG	3.2	11.0	30	14.4	2.6	98.8	130	1 x 100 m
ZG802309	KLZ-13-8 HDG	5.4	14.3	39	19.2	4.5	166	214	1 x 100 m
ZG802310	KLZ-16-8 HDG	8.2	17.3	48	23.0	6.7	251	322	1 x 100 m

*Safety factor 4:1

All dimensions in mm

Short Link Chain KLFU, Grade 8



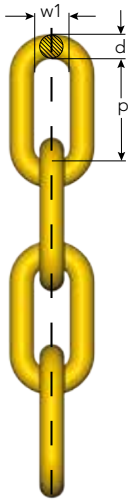
Not for lifting purposes

Heat treatment
Hardened and tempered,
Stress relieved

Surface treatment
Painted yellow

Art. no.	Code	d. nom.	p	w1	Weight kg/m	Min. breaking load tonnes	Delivery length
Z802330	KLFU-10-8	10	30	14.0	2.2	12.6	1 x 100 m
Z802331	KLFU-13-8	13	39	17.6	3.7	21.4	1 x 100 m
Z801146	KLFU-16-8	16	48	21.5	5.8	32.2	1 x 100 m
Z327377	KLFU-19-8	19	57	27.0	8.0	45.4	1 x 100 m
Z327385	KLFU-22-8	22	66	30.0	11.0	61.0	1 x 50 m
Z801505	KLFU-26-8	26	78	35.0	14.8	86.0	1 x 50 m

Mid-link Chain MLFU, Grade 8



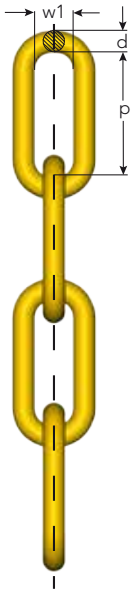
Not for lifting purposes

Heat treatment
Hardened and tempered,
Stress relieved

Surface treatment
Painted yellow

Art. no.	Code	d nom.	p	w1	Weight kg/m	Min. breaking load tonnes	Delivery length
Z802332	MLFU-10-8	10	40	14.4	2.0	12.6	1 x 100 m
Z802333	MLFU-13-8	13	55	20.2	3.3	21.4	1 x 100 m
Z800564	MLFU-16-8	16	65	20.5	5.0	32.2	1 x 100 m
Z800476	MLFU-19-8	19	75	29.0	7.1	45.4	1 x 100 m
Z800661	MLFU-22-8	22	88	30.0	9.4	61.0	1 x 50 m
Z801770	MFLU-26-8	26	91	34.0	13.9	86.0	1 x 50 m

Long Link Chain LLU, Grade 8



Not for lifting purposes

Heat treatment
Hardened and tempered,
Stress relieved

Surface treatment
Painted yellow

Art. no.	Code	d nom.	p	w1	Weight kg/m	Min. breaking load tonnes	Delivery length
Z801935	LLU-11-8	11	64	18.5	2.1	15.4	4 x 100 m
Z801936	LLU-13-8	13	80	21.1	2.9	21.4	3 x 100 m
Z802160	LLU-16-8	16	100	27.0	4.6	32.2	1 x 100 m
Z601983	LLU-19-8	19	100	27.0	6.5	45.4	1 x 100 m
Z700526	LLU-22-8	22	120	35.0	8.7	61.0	1 x 50 m

*Safety factor 4:1

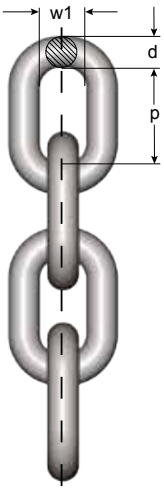
All dimensions in mm

Short Link Chain KLFZ, Grade 7

Not for lifting purposes

Heat treatment
Hardened and tempered

Surface treatment
Hot Dip Galvanized (HDG)



Art. No	Code	d nom.	p	w1	Min. breaking load tonnes	Weight kg/m	Delivery length
Z800666	KLFZ-10-7	10	30	14.0	11	2.2	1 x 100 m
Z802329	KLFZ-13-7	13	39	17.2	18	3.7	1 x 100 m
Z801644	KLFZ-16-7	16	48	21.5	28	5.8	1 x 100 m
Z801409	KLFZ-17-7	17	48	23.2	30	6.4	1 x 100 m
Z801407	KLFZ-19-7	19	57	27.0	40	8.0	1 x 100 m

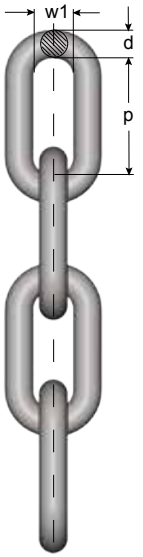
Fulfills requirements in: EN 1461:2009 (Average surface thickness 85 µm)

Mid-link Chain MLFZ, Grade 7

Not for lifting purposes

Heat treatment
Hardened and tempered

Surface treatment
Hot Dip Galvanized (HDG)



Art. No	Code	d nom.	p	w1	Min. breaking load tonnes	Weight kg/m	Delivery length
Z802455	MLFZ 10-6**	10	40	14.4	10	2.0	1 x 100 m
Z802335	MLFZ-13-7	13	55	20.2	18	3.3	1 x 100 m
Z801645	MLFZ-16-7	16	65	20.5	26.2	5.0	1 x 100 m
Z801477	MLFZ-19-7	19	75	29.0	37	7.1	1 x 100 m

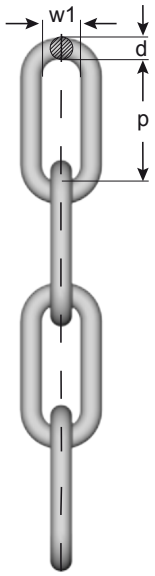
Fulfills requirements in: EN 1461:2009 (Average surface thickness 85 µm)
** Average surface thickness 70 µm

Long Link Chain LLZ, Grade 6

Not for lifting purposes

Heat treatment
Hardened and tempered

Surface treatment
Hot Dip Galvanized (HDG)



Art. No	Code	d nom.	p	w1	Min. breaking load tonnes	Weight kg/m	Delivery length
Z802454	LLZ-11-6**	11	64	18.5	11.6	2.1	4 x 100 m
Z800682	LLZ-13-6	13	80	21.1	16.3	2.9	3 x 100 m
Z802207	LLZ-13-6	13	80	21.1	16.3	2.9	1 x 229,5 m
Z801567	LLZ-16-6	16	100	28	24.7	4.6	1 x 100 m
GS1073	LLZ-16-6	16	100	28	24.7	4.6	1 x 200 m
Z801458	LLZ-19-6	19	100	28	34.8	6.5	1 x 120 m
Z801887	LLZ-22-6	22	120	36	46.6	8.7	1 x 50 m
Z802447	LLZ-25-6	25	140	39	60.0	12.0	1 x 50 m
Z802449	LLZ-28-6	28	150	39	75.3	14.9	1 x 50 m
Z802451	LLZ-32-6	32	170	44	98.3	19.0	1 x 50 m

Fulfills requirements in: EN 1461:2009 (Average surface thickness 85 µm)
** Average surface thickness 70 µm

*Safety factor 4:1

All dimensions in mm

Technical information

Chain manufacturing - Quality and strength requirements

Chains are divided into grades based on minimum nominal breaking stress.

Chain Grade	Surface treatment	Code	Minimum breaking stress N/mm²	Load factors			Typical use
				WLL	MPF	Breaking force	
8	Yellow U Black B Hot Dipped Galvanized Z	KL	800	1	2.5	4	General lifting (KL), Container lashing (LL). Extra heavy towing (ML), Lashing (KL, LL). Fishing (KL, ML, LL)
		ML	800	-	1	4	
		LL	800	-	1	4	
10	Blue A	KL	1000	1	2.5	4	General lifting

Testing and quality control GrabiQ & Classic Chain (Grade 10 & 8)

In each step of the manufacturing of the chain, our systematic quality monitoring will ensure the highest safety and the longest life span in the product. Here are some especially important aspects of quality:

Material

The incoming material is supplied with test certificates only from qualified manufacturers and according to our stated material specifications.

Manufacturing

During forming and welding, the operators continuously control that the links meet the specified dimensions both before and after welding.

Single link samples are continuously mandrel tested on the weld. Shape, dimensions and deburring are then inspected visually.

Sample lengths are heat treated and then destruction load tested. Following these tests, the chain is heat treated.

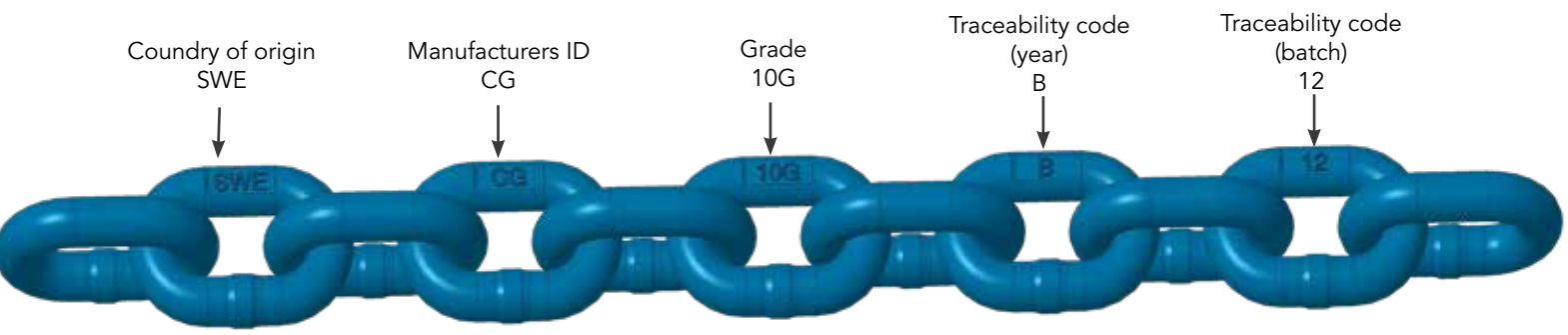
Hardening and tempering is carried out continuously in computer controlled induction furnaces with regular samplings.

Proof force

The entire chain is test loaded. The manufacturing proof force for short link chain is 2.5 times the permitted working load limit. This gives the chain high safety in use. The chain is then visually inspected and cut into delivery lengths. A sample is taken from every length and tested to destruction. Dimensions and shape are also checked. All results are documented.

Marking and traceability

The international standards for lifting chain require that the chain is marked with Grade and Manufacturers ID. On our chain we stamp “SWE - CG - 10G - - 4”, where the “H” and the “4” is the combination for the traceability code. In case of the unlikely event of chain failure, we can trace the specific chain link back to the very batch and raw material as well as the year and place of manufacture. Each individual delivery length also has its unique batch number.



Use

- Never lift with a twisted chain.
- Use shortening hooks, knotting is not allowed.
- Use edge protectors to prevent sharp edges from damaging the chain.

Maintenance

Periodic thorough examination must be carried out at least every 12 months or more frequently according to local statutory regulations, type of use and past experience.

1. Overloaded chain slings must be taken out of service.
2. Chain and components including load pins which have been damaged, deformed, elongated, bent or showing signs of cracks or gouges shall be replaced. Carefully grind away small nicks and burrs.
3. Additional testing by magnetic particle inspection and/or proof loading at max. 2 x WLL may be carried out. The wear of the chain and component shall in no place exceed 10% of the original dimensions.
4. The chain link wear - max. 10% - is defined as the reduction of the mean diameter measured in two directions.

Severe environment

Chain and components must not be used in alkaline (>pH10) or acidic conditions (<pH6). Comprehensive and regular examination must be carried out when used in severe or corrosive inducing environments. In uncertain situations consult your Gunnebo Industries dealer.

Extreme temperature conditions

The in service temperature effects the WLL as following :

Temperature (°C)	Reduction of WLL			
	Grade 10 chain (400)	Grade 10 chain (200)	Grade 10 components	Grade 8 chain & components
-40 to +200 °C	0 %	0 %	0 %	0 %
+200 to +300 °C	10 %	Not allowed	10 %	10 %
+300 to +400 °C	25 %	Not allowed	25 %	25 %

After short heat exposure, maximum one hour, the sling reverts to its full capacity. Upon return to normal temperature, the sling reverts to its full capacity within the above temperature range. Chain slings should not be used above or below these temperatures.
For chain grade 10 the maximum in service temperature is 200° C.

Definitions

Proof force:
Each individual chain link is tested to the Manufacturing Proof Force (MPF) level before delivery. The MPF level is 2.5 times the WLL, equal to 62.5% of the Minimum Breaking Force.

Breaking force (BF):
The highest static force a chain is exposed to during test loading before breaking.

Working load limit (WLL):
The maximum permitted load on a lifting chain under normal (vertical) lifting conditions.

Total ultimate elongation:
The elongation of the test item, relative to the original length, at the moment of breaking.