

Price List

Germanischer Lloyd Prüflabor GmbH

Status: January 1, 2010

**Mechanical-technological, metallographic,
chemical and nondestructive material testing,
test reports, failure analysis as well as
inspection certificates 3.1.C / 3.2 acc. to EN 10204**

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Managing Directors: Dr. Manfred Feyer and Dr. Andreas Bracke

Notes on the Price List

- All prices indicated in this price list are quoted without legal VAT and for tests and inspections according to standard.
- **The minimum invoice charge per inspection and testing assignment is 80.- €**
- For the mechanical-technological tests of Sections 1 and 2 the costs for mere specimen preparation and/or mere testing amount to 70 % of the stated prices.
- For taking specimens from components and fittings as well as for materials with a strength of more than 1000 MPa, high-alloy steels and non-ferrous base materials price surcharges of 30 - 300% may be charged.
- Within the framework of examination of routine testing we make every effort to process orders within a period of 3 to 5 workdays. Priority treatment may be individually agreed upon against a surcharge after consultation and according to available capacities.
- For sampling and material marking within the framework of GLP inspections an hourly rate of 80.- € for travelling, working and waiting times as well as a mileage allowance of 0.70 €/km is charged.
- For work outside of the standard working hours (Mondays to Fridays from 6:00 a.m. to 6:00 p.m.) price surcharges of 25 – 100% on the respective price entered in the price list may be charged.
- Engineering work is invoiced at 140.- € per hour.
- For documentation on CD-ROM 15.- € are charged.
- Costs for foreign bookings are invoiced at 30.- €.
- Sending of test reports in advance by e-mail is invoiced at 10.- € per test report.
- Impact test acc. ASME / ASTM plus 30.- € per set.
- Return of sample material is effected freight collect or against invoicing of the shipping charges.
- Administrative extra expenses, e.g. invoicing, sample management, documentation or duplicate issuing and reissuing of test and examination reports without the fault of GLP will be invoiced separately.
- The inclusion of partial results of the material manufacturer as well as of subcontractors in test reports or inspection certificates of GLP is effected according to DIN EN ISO 17025 and may be charged with 30.- € per incidence.

1. Mechanical-technological Tests on Metals

plates, steel sections, bars, castings and forgings

(prices including specimen preparation)

Test	Wall Thickness [mm]	Price [€]
1.1 Tensile test at room temperature ①②③④⑦⑧	up to 20	50.00
	> 20 to 40	52.00
	> 40 to 60	54.00
	> 60 to 100	58.00
	> 100 to 200	62.00
	> 200	72.00
1.2 Tensile test on microspecimens (diam. < 6 mm or non-standardized flat specimens)		85.00
1.3 Tensile test in thickness direction (3 specimens)	up to 300	160.00
1.4 Hot tensile test up to 400°C ①② <i>Temp. > 400°C plus 10.- € per +100°C</i>	up to 20	97.00
	> 20 to 40	102.00
	> 40 to 60	107.00
	> 60 to 100	114.00
	> 100 to 200	119.00
	> 200	129.00
Microspecimens for hot tensile test (e.g. incl. necessary weldments)		plus 65.00
1.5 Tensile test at sub-room temperature without microstrain down to -60°C <i>Temp. < -65°C plus 5.- € per -10°C</i>	up to 20	125.00
	> 20 to 40	130.00
	> 40 to 60	135.00
	> 60 to 100	140.00
	> 100 to 200	145.00
	> 200	155.00
1.6 Impact test at Rt ⑤⑥ (1 set = 3 specimens)	up to 20	75.00
	> 20 to 40	80.00
	> 40 to 60	85.00
	> 60 to 100	90.00
	> 100 to 200	95.00
	> 200	105.00
1.7 Impact test at temperatures down to -20°C ⑤⑥⑨ (1 set = 3 specimens)	up to 20	90.00
	> 20 to 40	95.00
	> 40 to 60	100.00
	> 60 to 100	105.00
	> 100 to 200	110.00
	> 200	120.00
1.8 Impact test at temperatures down to -40°C ⑤⑥⑨ (1 set = 3 specimens)	up to 20	95.00
	> 20 to 40	100.00
	> 40 to 60	105.00
	> 60 to 100	110.00
	> 100 to 200	115.00
	> 200	125.00

1. Mechanical-technological Tests on Metals

(Continued I)

plates, steel sections, bars, castings and forgings

(prices including specimen preparation)

Test	Wall Thickness [mm]	Price [€]
1.9 Impact test at temperatures down to -65°C ⑤⑥⑨ (1 set = 3 specimens)	up to 20	100.00
	> 20 to 40	105.00
	> 40 to 60	110.00
	> 60 to 100	115.00
	> 100 to 200	120.00
	> 200	130.00
1.10 Impact test at temperatures < -65°C ⑤⑥⑨ (1 set = 3 specimens)	up to 20	105.00
	> 20 to 40	110.00
	> 40 to 60	115.00
	> 60 to 100	120.00
	> 100 to 200	125.00
	> 200	135.00
1.11 Impact test at temperatures up to +300°C ⑤⑥⑨ (1 set = 3 specimens) - heating in heating furnace!		see 1.10!
1.12 Technological bend test	up to 20	25.00
	> 20 to 40	30.00
	> 40 to 60	35.00
	> 60 to 100	40.00
	> 100 to 200	45.00
	> 200	55.00
1.13 Weld bead bend test	up to 300	110.00
1.14 Tests on bolts and nuts Tensile test on the whole bolt without microstrain measurement Tensile test on prepared specimen with microstrain measurement Tensile test on turned-off specimen up to M27 ① Tensile test on turned-off specimen from M27 ① Oblique tensile test on bolts (Size and property class acc. to previous agreement !) Proof load test on bolts or nuts Flaring test on nuts Head impact test acc. DIN EN ISO 898-1 up to M10		50.00
		see 1.1 o.1.2!
		55.00
		65.00
		60.00
		50.00
		50.00
		40.00
1.15 Erichsen cupping test 3 indentations – incl. specimen preparation each further indentation	up to 3	50.00
		10.00

ADDITIONAL TESTS

①	Determination of the microstrain limits (Rp0.2 / Rp1.0 / Rt0.5)	10.00
②	Determination of the elastic modulus	30.00
③	Diabolo test for cast grey iron , e.g. acc. to DIN 50109 up to and incl. M20	65.00
④	Diabolo test for cast grey iron , e.g. acc. to DIN 50109 from M 20	90.00
⑤	Determination of lateral expansion and crystalline fracture portion (set)	30.00
⑥	Test in aged condition incl. annealing per set plus	90.00
⑦	Strain hardening (r value) and anisotropy (n value) determination, in each case	30.00
⑧	Determination of Poisson's ratio	30.00
⑨	Impact test acc. ASME / ASTM plus 30.- € per set.	30.00

1. Mechanical-technological Tests on Metals (Continued II)

plates, steel sections, bars, castings and forgings
(prices including specimen preparation)

Test	Wall Thickness [mm]	Price [€]
1.16 Hardness test (Vickers > HV5, Brinell, Rockwell) without specimen preparation - 3 indentations with specimen preparation - 3 indentations each further indentation		30.00 40.00 5.00
1.17 Low-load hardness test 3 indentations each (Vickers HV0.2 – HV5, Knoop KHN0.2 – KHN2) plus microsection, see 7.3 each further indentation		40.00 6.00
1.18 Microhardness test 3 indentations each (Vickers HV0.1, Knoop KHN0.1) plus microsection, see 7.3 each further indentation		50.00 7.00
1.19 Hardness profile (e.g. Chd (Eht), Nht, Rht etc.) maximum 30 indentations plus microsection, see 7.3 each further indentation		85.00 6.00

2. Mechanical-technological Tests on welded joints

(prices including specimen preparation)

Test	Wall Thickness [mm]	Price [€]
2.1 Tensile test (perpendicular to the weld)		90.00
2.2 Tensile test in the weld metal (round tensile specimen)		90.00
2.3 Bend test Bend test incl. elongation (GL-Rules) per face, root or side bend test		40.00 50.00
2.4 Cruciform tensile test (GL-Rules)		70.00
2.5 Hardness profile per weld (e.g. DIN EN 1043) max. 30 indentations, each further indentation plus macro- / microsection, see 7.1 and 7.3		85.00 3.00
2.6 Fracture test (e. g. DIN EN 1320)		45.00
2.7 Tube pull-out test (e. g. DIN EN ISO 15614-8)		45.00
2.8 Pipe wedge test		30.00

2. Mechanical-technological Tests (Continued I)

on welded joints

(prices including specimen preparation)

Test	Wall Thickness [mm]	Price [€]
2.9 Impact test at Rt ⑤⑥⑨ (1 set = 3 specimens)	up to 20	95.00
	> 20 to 40	100.00
	> 40 to 60	105.00
	> 60 to 100	110.00
	> 100 to 200	115.00
	> 200	125.00
2.10 Impact test at temperatures down to -20°C ⑤⑥⑨ (1 set = 3 specimens)	up to 20	110.00
	> 20 to 40	115.00
	> 40 to 60	120.00
	> 60 to 100	125.00
	> 100 to 200	130.00
	> 200	140.00
2.11 Impact test at temperatures down to -40°C ⑤⑥⑨ (1 set = 3 specimens)	up to 20	115.00
	> 20 to 40	120.00
	> 40 to 60	125.00
	> 60 to 100	130.00
	> 100 to 200	135.00
	> 200	145.00
2.12 Impact test at temperatures down to -65°C ⑤⑥⑨ (1 set = 3 specimens)	up to 20	120.00
	> 20 to 40	125.00
	> 40 to 60	130.00
	> 60 to 100	135.00
	> 100 to 200	140.00
	> 200	150.00
2.13 Impact test at temperatures < -65°C ⑤⑥⑨ (1 set = 3 specimens)	up to 20	125.00
	> 20 to 40	130.00
	> 40 to 60	135.00
	> 60 to 100	140.00
	> 100 to 200	145.00
	> 200	155.00
2.14 Impact test at temperatures up to +300°C ⑤⑥⑨ (1 set = 3 specimens)- heating in heating furnace!		see 2.13!

3. Mechanical-technological Tests

on reinforced concrete

Test	Price [€]
3.1 Tensile test according to DIN 4099-2 (08/2003)	50.00
3.2 Bend test according to DIN 4099-2 (08/2003)	30.00
3.3 Shearing test according to DIN 4099-2 (08/2003)	65.00

4. Technological Tests

on pipes

(prices including specimen preparation)

Test	Price [€]
4.1 Drift expanding test (GL-rules)	60.00
4.2 Ring flattening test	40.00
4.3 Ring expanding test	60.00
4.4 Ring tensile test	40.00

5. Heat Treatment up to 1250 °C

in the laboratory annealing furnace (350 x 250 x 500 mm, W x H x D)

Annealing Process	Price [€]
5.1 Stress relieving / tempering	70.00
5.2 Soft annealing	95.00
5.3 Normalizing	95.00
5.4 Solution heat treatment	105.00
5.5 PWHT annealing (1 cycle)	95.00
5.6 Jominy-test without normalizing plus hardness profile, see 1.18	130.00
5.7 Jominy-test test with normalizing plus hardness profile, see 1.18	225.00
5.8 Blank hardening annealing plus mechanical testing !!!	140.00

NOTE:

All above mentioned prices are understood to include the fourth annealing hour

For more than 4 annealing hours an additional charge per hour 25.00

An annealing diagram / report may be requested!

6. Examination of the Chemical Composition

(For chemical analyses vacuum emission spectrometers are available for which samples with a minimum examination surface of 15 mm x 15 mm are required. Preparation of smaller samples is invoiced separately.)

Analyses	Price [€]
6.1 Sample preparation	
Samples with a flat surface < diam. 13 mm	45.00
of microsamples or chips by remelting to form a compact sample	100.00
remelting of cast iron to the white-solidified state.	100.00
6.2 Fe base	
Standard analysis (14 elements) – without nitrogen	75.00
Standard analysis with nitrogen (15 elements)	85.00
Complete analysis including nitrogen	95.00
in addition determination of the C-equivalent (CEV)	8.00
in addition determination of the carbon equivalent (PCM)	8.00
in addition determination of the pitting resistance equivalent (PRE)	8.00
6.3 Cast iron base (white-solidified sample)	90.00
6.4 Ni base	120.00
For more than 3 analyses per examination assignment	100.00
6.5 Al base	120.00
For more than 3 analyses per examination assignment	100.00
6.6 Cu base	120.00
For more than 3 analyses per examination assignment	100.00
6.7 Co base	240.00
For more than 3 analyses per examination assignment	220.00
6.8 Ti base - without gases	240.00
For more than 3 analyses per examination assignment	220.00
6.9 Mg base	240.00
For more than 3 analyses per examination assignment	220.00

7. Metallographic Examinations

Test	Wall Thickness [mm]	Price [€]
7.1 Macrosection / fibre flow	up to 20	55.00
	> 20 to 40	60.00
	> 40 to 60	65.00
	> 60 to 100	80.00
	> 100 to 200	100.00
	> 200	120.00
7.2 Baumann sulphur print	up to 20	65.00
	> 20 to 40	70.00
	> 40 to 60	75.00
	> 60 to 100	85.00
	> 100 to 200	95.00
	> 200	105.00
7.3 Microsection if necessary, plus embedding diameter of the embedding mould diameter of the embedding mould	up to 50 > 50	75.00 35.00 70.00
7.4 LIM photograph For panoramic photographs, each individual image is invoiced!		20.00
7.5 LIM photograph with special expenditure (e.g. colour etching, point preparation for cracks)		30.00
7.6 Macro documentation of components/cases of failure/ damage (incl. 3 photographs, other photogr.. s. section. 7.7 - 7.9)		80.00
7.7 Macrophotograph		15.00
7.8 Macrophotograph with increased expenditure		20.00
7.9 Photograph at digital microscope / stereo microscope (e.g. large components, reflecting surfaces etc.)		25.00
7.10 Additional copies or print-outs	per photograph	3.00
7.11 Scanning electron microscopy (SEM) including EDX microanalysis plus images and EDX spectra / mappings, see 7.12	per h	190.00
7.12 SEM photograph or EDX documentation plus evaluation / interpretation, see 7.14 / 7.15		20.00
7.13 Ambulant metallography Hourly rate on site or in the laboratory per employee consumables lump-sum per assignment	per h	140.00 100.00
7.14 Metallographic and fractographic evaluation Approx. value for individual evaluations, see 7.15	per h	140.00

7. Metallographic Examinations (Continued I)

(Metallographic and fractographic preparations/evaluations are invoiced at cost (140 €/h). The following list shows approximate values for individual characteristic parameters and measuring methods.)

Test	Price [€]
7.15 Metallographic and fractographic evaluation	
All evaluation variables plus macro- and microsection - see 7.1 and 7.3!	
- Determination of micro structure per photograph / microsection	10.00
- Interpretation of SEM photographs and EDX microanalyses	10.00
- Determination of the degree of purity at cost <i>For costing it can be started from a steel molten according to modern metallurgical methods of an evaluation time of approx. 30 - 60 min. per microsection!</i>	per h 140.00
- Grain size determination by comparison with the classification chart (e.g. DIN EN ISO 643 or ASTM E 112)	10.00
- Determination of coating/ layer thickness (mean value determined from three individual measurements)	10.00
- Image or object dimensioning	5.00
- Image lettering	5.00
- Hot crack investigation	20.00
- Throat thickness determination	5.00
- Determination of surface decarburization	10.00
- Weld evaluation according to DIN EN ISO 5817 per evaluation criterion	10.00
- Determination of the graphite structure of cast iron by comparison with the classification chart (e.g. DIN EN ISO 945)	10.00
- Determination of the sulphide structure in free-cutting steels by comparison with the classification chart (e.g. SEP 1572)	10.00
- Delta-ferrite content determination by image analysis	70.00
- Phase content determination by image analysis	70.00
- Ferrite content determination by the magnetic induction method	50.00

8. Corrosion Tests

(prices including specimen production and all machining surcharges)

Test	Price [€]
8.1 Test for resistance to intercrystalline corrosion acc. to DIN EN ISO 3651-2 formerly DIN 50914 (Strauß test) Procedure A	90.00
Sensitizing annealing	50.00
8.2 Test for resistance to intercrystalline corrosion acc. to SEP 1877 and ASTM A-262 Practice E and DIN EN ISO 3651-2 procedures B and C	110.00
Sensitizing annealing	50.00
8.3 Streicher test acc. to ASTM G-28, Practice A and ASTM A262, Practice B	330.00
Sensitizing annealing	50.00
8.4 Huey test acc. to ASTM A-262 Practice C and DIN EN ISO 3651-1 formerly DIN 50921	400.00
Sensitizing annealing	50.00
8.5 Stress corrosion cracking test for copper base alloys acc. to DIN 50916	300.00
8.6 Pitting corrosion test acc. to ASTM G-48, Practice A and B	230.00
8.7 Stress corrosion cracking test on unalloyed and low-alloy steels for intergranular stress corrosion cracking in nitrate-containing attacking agents acc. to. DIN 50915 The price is understood per set, i.e. for 4 specimens	500.00
8.8 Stress corrosion cracking test by residual stress at copper alloys (mercury nitrate test) acc. to. DIN 50911 Dimension up to Ø150mm Larger dimension only on request	750.00

8. Corrosion Tests (Continued I)

(prices including specimen production and all machining surcharges)

Test	Price [€]
8.9 HIC test in acidified NaCl solution (test solution A)	
acc. to. DIN EN 10229 or NACE TM 0284 with photographic documentation	
0 to 88 mm wall thickn. (3 specimens)	1500.00
> 88 to 114 mm wall thickn. (4 specimens)	2000.00
> 114 to 142 mm wall thickn. (5 specimens)	2500.00
> 142 to 170 mm wall thickn. (6 specimens)	3000.00
> 170 to 198 mm wall thickn. (7 specimens)	3500.00
> 198 to 226 mm wall thickn. (8 specimens)	4000.00
> 226 to 254 mm wall thickn. (9 specimens)	4500.00
> 254 mm wall thickn.	On request!
Determination of the H ₂ S concentration by iodometric titration	75.00
8.10 HIC test in artificial seawater (test solution B)	
acc. to. DIN EN 10229 or NACE TM 0284 with photographic documentation	
0 to 88 mm wall thickn. (3 specimens)	1600.00
> 88 to 114 mm wall thickn. (4 specimens)	2100.00
> 114 to 142 mm wall thickn. (5 specimens)	2600.00
> 142 to 170 mm wall thickn. (6 specimens)	3100.00
> 170 to 198 mm wall thickn. (7 specimens)	3600.00
> 198 to 226 mm wall thickn. (8 specimens)	4100.00
> 226 to 254 mm wall thickn. (9 specimens)	4600.00
> 254 mm wall thickn.	On request!
Determination of the H ₂ S concentration by iodometric titration	75.00

9. Nondestructive Examination

The examinations are invoiced at the time expended (travelling, working and waiting time). The hourly rates include the provision of test equipment. For the surface crack test, the examination media are invoiced as required. A travelling expense rate of EUR 0.70 per kilometer is invoiced.

Test		Price [€]
9.1	Ultrasonic examination (conventional)	per h 80.00
9.2	Ultrasonic examination (phased array technique)	per h 90.00
9.3	Liquid penetrant examination	per h 80.00
9.4	Magnetic particle examination (manual)	per h 80.00
	Magnetic particle examination (semi-automatic)	per h 120.00
9.5	Crack depth measurement	per h 80.00
9.6	Wall thickness measurement	per h 80.00
9.7	Layer thickness measurement	per h 80.00
9.8	Mobile hardness test	per h 80.00
9.9	Roughness measurement	per h 120.00
9.10	Mobile spectrometry (hourly rate on site or in the laboratory per employee)	per h 180.00
9.11	NDT engineer, level 3 acc. DIN EN 473	per h 140.00

10. Failure Analysis / Consultation / Training

For damage investigations, consultations and training by engineers and technicians, EUR 135.- per hour are invoiced. Material tests are in addition invoiced according to price list.

Test		Price [€]
10.1	Processing of failure analysis analogously to VDI 3822 Visual inspection, evaluation and interpretation Report preparation by engineer or technician	per h 140.00
10.2	Consultancy by engineer or technician Recommendations for material selection Recommendations for the optimum material state etc.	per h 140.00
10.3	Training by engineers or technicians Material science and material testing Preparation and execution are invoiced! Possibly plus travelling expenses, out-of-pocket expenses, etc. ! Possibly additional course lump sum per participant!	acc. to offer!

11. Material Testing of Polymer and Composite Materials

(Prices including specimen production)

Test	Wall Thickness [mm]	Price [€]
11.1 Tensile test acc. to DIN EN ISO 527 at Rt ①②	up to 10 ③	150.00
Tensile test acc. to DIN EN ISO 527 up to -20°C ①②	up to 10 ③	170.00
Tensile test acc. to DIN EN ISO 527 up to -40°C ①②	up to 10 ③	190.00
Tensile test acc. to DIN EN ISO 527 up to -60°C ①②	up to 10 ③	210.00
Tensile test acc. to DIN EN ISO 527 up to -80°C ①②	up to 10 ③	230.00
Tensile test acc. to DIN EN ISO 527 up to +250°C ①②	up to 10 ③	230.00
ADDITIONAL TESTS AND NOTES		
① Determination modulus of elasticity		40.00
② (1 set = 5 specimens)		
③ Larger wall thicknesses and composite materials on request !		
11.2 Impact test acc. to ISO 179 at Rt (1 set = 3 specimens)		90.00
11.3 Bend test acc. to ISO 178 at Rt (1 set = 3 specimens)		150.00
11.4 Hardness test acc. to Shore (Shore A, Shore D) acc. to DIN 53505, ISO 868, ASTM D 2240 5 indentations		30.00

12. Microscopic Examination of Polymer and Composite Materials

Test		Price [€]
12.1 Microsection		110.00
12.2 LIM photograph		20.00
12.3 Macrograph at the photographing stand		15.00
12.4 Plastographic evaluations		
Determination of the degree of cristallinity	per h	140.00
Determination of porosity	per h	140.00
Determination of fibre portions	per h	140.00

13. Additional Destructive and Nondestructive Examinations

Additional destructive and nondestructive examinations on request. Invoicing is effected at cost.

14. Inspection Certificate 3.1.C of GLP acc. to EN 10204

Issue of 3.1.C inspection certificates of Germanischer Lloyd Prüflabor (GLP) is included in the testing costs. If the requirements for the material according to the delivery conditions (standard or specification) are not met, a test report is prepared. Re-issue of a certificate or report is invoiced at EUR 80.-. Travelling and stamping times within the framework of 3.1.C GLP inspections are charged at EUR 80.- per hour.

15. Inspection Certificate 3.1.C / 3.2 of GL acc. to EN 10204

For issuing 3.1.C and 3.2 inspection certificates of Germanischer Lloyd (GL), the current fees (personal costs) of Germanischer Lloyd are charged at the standard rate in addition to the testing costs of GLP.

16. Handling Costs for Components and Large Components

For the handling of components and large components including their dismantling an hourly rate of EUR 80.- per hour and employee can be charged.

17. Acceptance by Others

For the involvements of third parties for examination orders a lump sum payment of EUR 80.- per order can be charged for the necessary extra expenditure!

18. International Assignment of Nondestructive Inspection and Engineering Personnel

For assignments of our nondestructive inspection personnel abroad, the daily rates listed in the following table are invoiced per employee. The indicated daily rates include the administrative activities of trip preparation and applies to a daily working time of 10 hours. Travelling times are considered as working time. For surface crack tests, the test media costs are charged as required.

Test		Price [€]
18.1 Nondestructive material examination according to Sections 9.1 to 9.9 For more than 10 hours of working time plus shipping costs and insurance for inspection and test equipment plus travelling expenses, out-of-pocket expenses, etc. !	Daily rate	1400.00
	in addition per h	140.00
18.2 Mobile spectrometry For more than 10 hours of working time plus shipping costs and insurance for inspection and test equipment plus travelling expenses, out-of-pocket expenses, etc. !	Daily rate	2800.00
	in addition per h	250.00
18.3 Ambulant metallography For more than 10 hours of working time Consumables lump-sum per assignment plus shipping costs and insurance for inspection and test equipment plus travelling expenses, out-of-pocket expenses, etc. !	Daily rate	1900.00
	in addition per h	190.00
		100.00
18.4 Engineer services consulting and evaluation on site For more than 10 hours of working time plus travelling expenses, out-of-pocket expenses, etc. !	Daily rate	1900.00
	in addition per h	190.00

If the Customer requests a reaction time within 24 hours after placing of an order an express surcharge of 70 % may be charged on the prices stated in section 18. At an reaction time within 48 hours an express surcharge of 50% may be charged on the prices stated in section 18. The reaction times stated are not to be equated with the time until the testing personnel and testing equipment are available at the place of examination, but are referred to the start of preparation for the assignment. It must be clarified by GLP in advance, if the assignment can be realized in the requested period.

General Terms and Conditions

A. General

Germanischer Lloyd Prüflabor GmbH (GLP GmbH) is an independent test laboratory.

GLP GmbH acts in an impartial and neutral manner.

The General Terms and Conditions in their respective latest version as well as the relevant technical regulations apply to all services of GLP GmbH including those which are performed within the scope of orders placed by official authorities even if the effectiveness of these regulations is not separately agreed in the individual case. If contractual relations are established between GLP GmbH and other persons than the Customer, the relevant technical regulations and the provisions of items G 1 - 7 below shall also apply in respect of such third parties.

B. Reservation

The issue of a confirmation or certificate does not release the Customer from its contractual obligations to third parties.

Certificates of GLP GmbH are issued with the reservation that they can be cancelled at any time. This may be done, for instance, if adjustments of the technical rules and regulations to the state of current technology make this necessary or if the Customer fails to meet requirements or instructions of GLP GmbH in a timely manner.

It is exclusively up to GLP GmbH to issue a confirmation or certificate (certificates) of correspondence of a technical state of facts or of a product with the technical regulations issued by Germanischer Lloyd (GL).

If the corresponding certificates of GLP GmbH are not available it is not allowed to make any reference indicating that the regulations of GLP GmbH were observed during the manufacture of a product.

The application of the technical regulations of GLP GmbH does not affect any third-party industrial property rights.

C. Scope and performance

The type and scope of the services of GLP GmbH depends on the agreements made. In this respect the regulations effective at the time of inspection and/or testing are to be applied - subject to separate explicit agreements. The Customer is to create all conditions to facilitate a fast and smooth performance of service by GLP GmbH. GLP GmbH is to be granted unrestricted access and the opportunity of inspection to the required extent.

D. Confidentiality

GLP GmbH observes confidentiality with regard to all documents and other information which it obtains in connection with orders placed with it. The passing-on of documents and information can be effected only with the consent of the party entitled to dispose of them.

E. Remuneration

The services of GLP GmbH are to be remunerated according to the rates of GLP GmbH or according to the price quoted in the offer. In addition GLP GmbH will invoice the incidental expenses connected with the services (e.g. travelling expenses, other expenses and value added tax/turnover tax, if any).

Additional expenses incurred e.g. by faulty organization on the part of the Customer or by repeated tests for which GLP is not responsible will be separately charged at the charge rates applicable at the respective time.

F. Maturity of invoices

1. Payment for all services rendered by GLP GmbH is to be effected within 21 days of the date of invoice. In the event of delayed payment GLP GmbH is entitled, subject to further claims, to claim interest on arrears, to withhold certificates and other documents and/or to suspend or revoke the validity of certificates.
2. Commercial lien as well as any other right of retention of the Customer are ruled out. Set-off against counter-claims of the Customer is also ruled out unless the counter-claim is undisputed or has been determined as legally binding.

G. Liability

1. The liability of GLP GmbH for defects of quality is limited to subsequent performance within the scope of a contract for work and services. If this subsequent performance fails, the Customer is entitled, without prejudice to the right arising from § 637 of the German civil code, to reduce the remuneration (abatement) or to reverse the contract (cancellation).
2. Any claims of the Customer which are based on defects in quality become statute-barred one year after acceptance of the services of GLP GmbH by the Customer, unless the defect has been fraudulently concealed or intentionally caused by GLP GmbH.
3. Provided that GLP GmbH has not violated an essential contractual obligation its liability in other respects is restricted, in case of a negligent breach of duty arising from the obligation with the Customer, to five times the amount of the remuneration for the respective individual service of GLP GmbH. This limitation of liability also applies to damage claims of the Customer in the event of a negligent tortious act on the part of GLP GmbH. If GLP GmbH is to blame for intent or gross negligence, it is liable in accordance with the legal provisions.
4. Personal liability of the organs or auxiliary persons of GLP GmbH is excluded unless these act with intent or gross negligence.
5. GLP GmbH expressly points out to the Customer that it may agree further liability with GLP GmbH. A condition for this is, however, that the Customer requests more liability with GLP GmbH and that it is prepared to take over the corresponding premium for the additional insurance cover and that the insurance company of GLP GmbH agrees to this.
6. Damage claims outside the claims according to a contract for work and services which are based on a defect, except for those claims arising from tortious act and/or according to the product liability Act, become statute-barred one year after acceptance of the respective service of GLP GmbH by the Customer unless GLP GmbH is to blame for intent or tortious act.
7. As far as injuries to life, body or health are concerned the legal provisions shall apply instead of the statutory limitation rules included in above section G.

H. Place of performance - Place of jurisdiction - Governing Law

1. The place of performance for all obligations arising from or in connection with the order is Mülheim (Ruhr) unless indicated otherwise in the order.
2. The exclusive place of jurisdiction for all legal actions against GLP GmbH is Mülheim (Ruhr) provided that the Customer is a merchant.
3. German law is applicable to the performance of the order and to all claims arising from or in connection with the order.

I. Separability clause

Should individual provisions of this order or of these General Terms and Conditions be ineffective in whole or in part this shall not affect the validity of the remaining conditions.

In the event of doubts about the interpretation of these General Terms and Conditions the German version shall be authoritative.

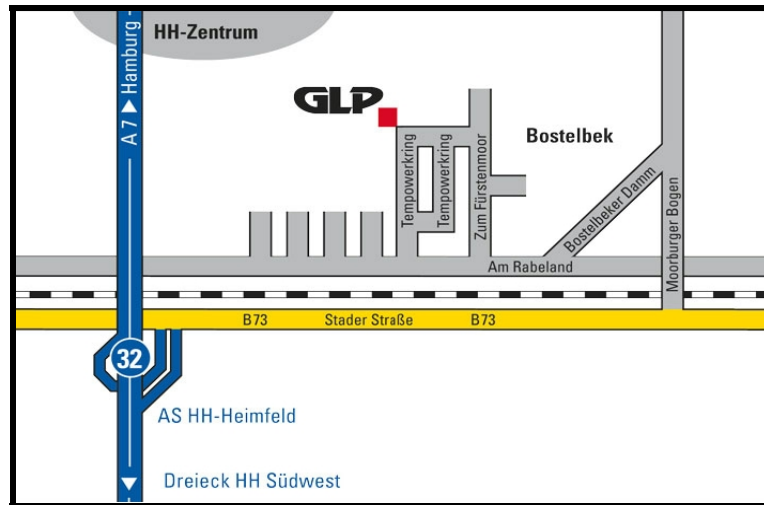
Germanischer Lloyd Prüflabor GmbH
2010-01-01

Other

Archiving of reports, certificates and sample material

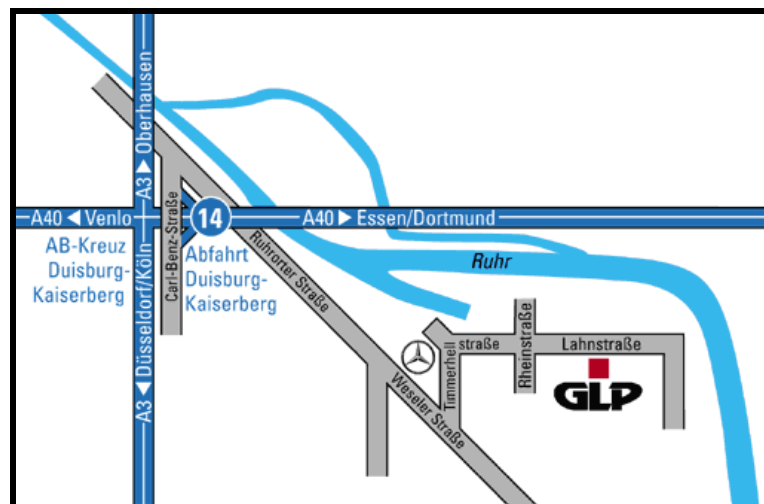
1. Technical records (test reports, test certificates, examination reports, etc.) will be archived for a period of 10 years.
2. After completion of the contract-related work the test specimens from standard tests are stored for 1 month unless other instructions are provided in the ordering documents of the Customer.
3. The test specimens and samples from damage analyses will be stored for a period of 5 years after completion of the examinations at the GLP locations of Hamburg, Mülheim and Herne unless the Customer provides other instructions.
4. Residual workpieces from damage analyses will be stored for 1 month after completion of the tests at the GLP location of Stuttgart and are subsequently disposed of unless instructed otherwise by the Customer. As a matter of principle, ground sections, broken pieces and test samples are stored at the GLP location of Stuttgart for a period of 1 year.
5. Return of test specimens and samples may be agreed with the Customer and can be documented in writing, if necessary.
6. After expiry of the respective archiving periods reports will be destroyed and test specimens as well as samples scrapped, unless instructed otherwise by the Customer.

How to reach the Hamburg laboratory:



Germanischer Lloyd Prüflabor GmbH
 Tempowerkring 11
 21079 Hamburg
 Telefon: +49 (0)40 2000397-0
 Telefax: +49 (0)40 2000397-10
glp-hh@gl-group.com

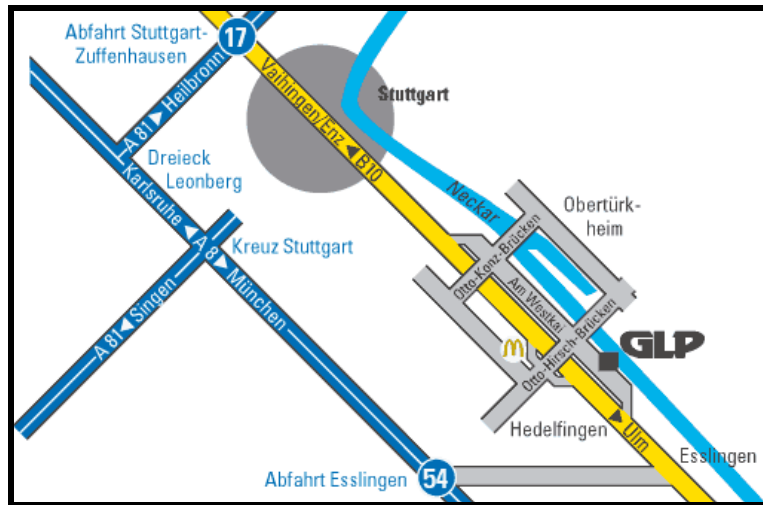
How to reach the Mülheim/Ruhr laboratory:



Germanischer Lloyd Prüflabor GmbH
 Lahnstraße 26
 45478 Mülheim an der Ruhr
 Telephone: +49 (0)208 58982-0
 Fax: +49 (0)208 58982-10
glp-mh@gl-group.com

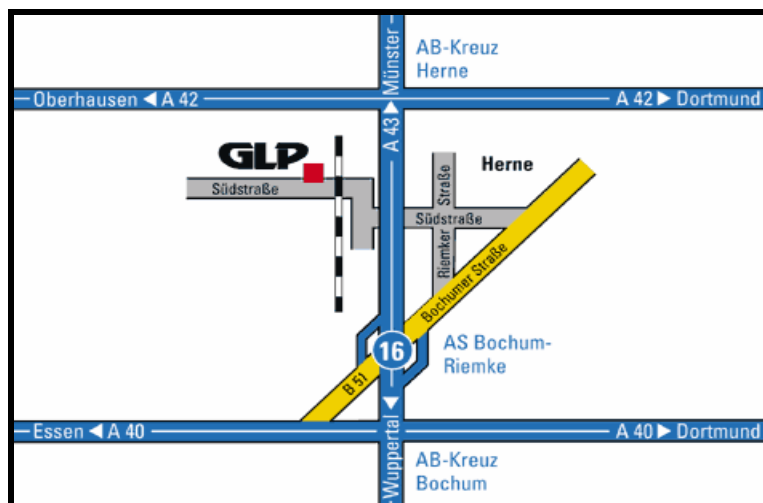
Or visit us on the Internet: www.gl-group.com/glp

How to reach the Stuttgart laboratory:



Germanischer Lloyd Prüflabor GmbH
 Am Westkai 39/1
 70329 Stuttgart
 Telephone: +49 (0)711 918949-0
 Fax: +49 (0)711 918949-22
glp-s@gl-group.com

How to reach the Herne laboratory:



Germanischer Lloyd Prüflabor GmbH
 Südstraße 59
 44625 Herne
 Telephone: +49 (0)2325 41033
 Fax: +49 (0)2325 41034
glp-her@gl-group.com

Or visit us on the Internet: www.gl-group.com/glp