



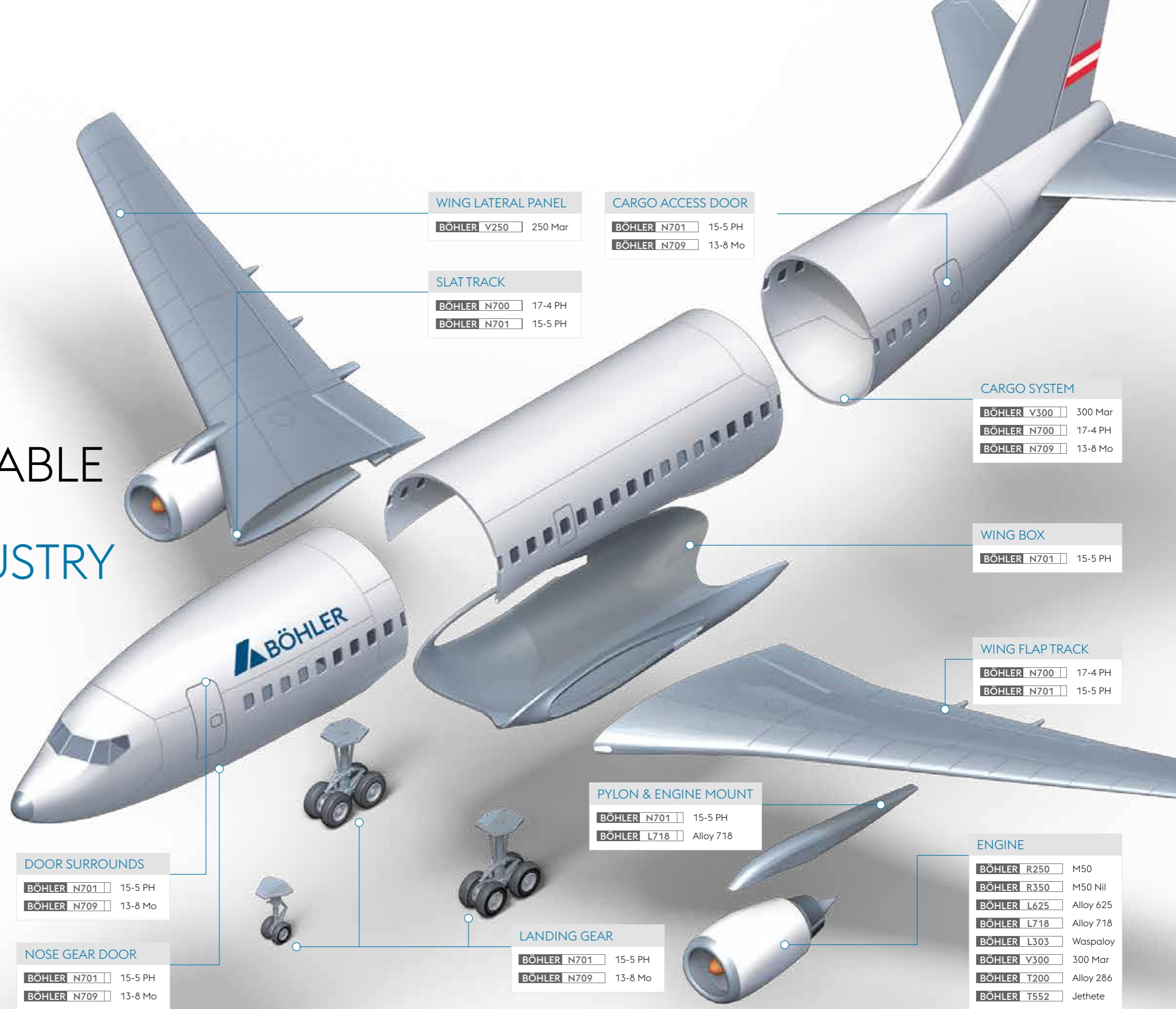
AEROSPACE MATERIALS

**BÖHLER High Performance Materials
for the aerospace industry**



SPECIAL MATERIALS AEROSPACE

YOUR MOST RELIABLE PARTNER IN THE AEROSPACE INDUSTRY



WING LATERAL PANEL

BÖHLER V250 250 Mar

CARGO ACCESS DOOR

BÖHLER N701 15-5 PH

BÖHLER N709 13-8 Mo

SLAT TRACK

BÖHLER N700 17-4 PH

BÖHLER N701 15-5 PH

CARGO SYSTEM

BÖHLER V300 300 Mar

BÖHLER N700 17-4 PH

BÖHLER N709 13-8 Mo

WING BOX

BÖHLER N701 15-5 PH

WING FLAP TRACK

BÖHLER N700 17-4 PH

BÖHLER N701 15-5 PH

PYLON & ENGINE MOUNT

BÖHLER N701 15-5 PH

BÖHLER L718 Alloy 718

ENGINE

BÖHLER R250 M50

BÖHLER R350 M50 Nil

BÖHLER L625 Alloy 625

BÖHLER L718 Alloy 718

BÖHLER L303 Waspaloy

BÖHLER V300 300 Mar

BÖHLER T200 Alloy 286

BÖHLER T552 Jethete

DOOR SURROUNDS

BÖHLER N701 15-5 PH

BÖHLER N709 13-8 Mo

NOSE GEAR DOOR

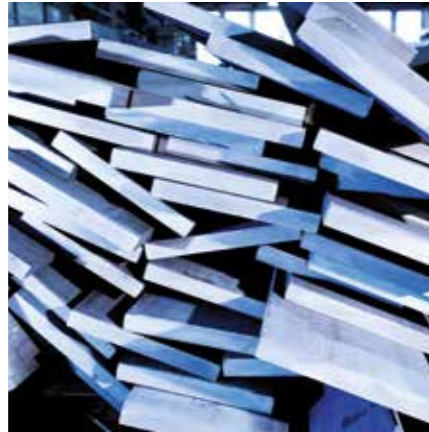
BÖHLER N701 15-5 PH

BÖHLER N709 13-8 Mo

LANDING GEAR

BÖHLER N701 15-5 PH

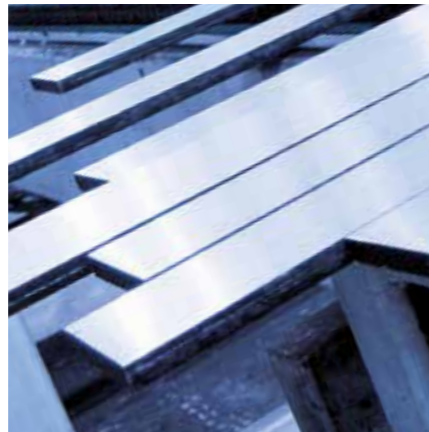
BÖHLER N709 13-8 Mo



Flat steel – blasted



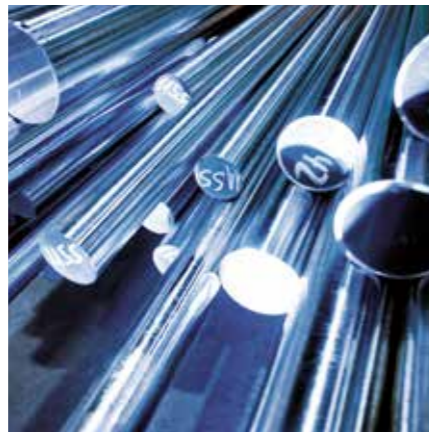
Flat steel – milled



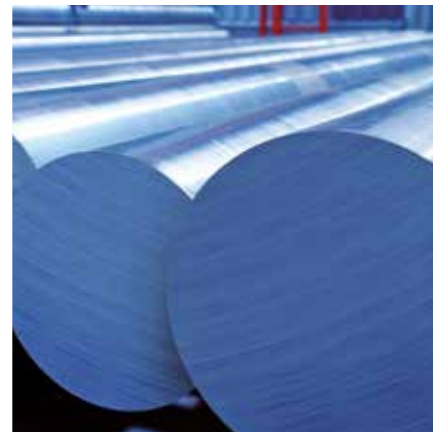
Flat steel – precision ground



Bar steel – ground with bevelled ends



Bar steel – peeled – polished



Bar steel – peeled + ground

YOUR PRODUCTS FOR THE ULTIMATE IN SAFETY

BAR STEEL rolled

| | | |
|---------|------------------------------|---------------------------|
| round: | 12.5 – 150 mm (0.49 – 5.91") | |
| square: | 15 – 130 mm (0.59 – 5.12") | |
| flat: | width | thickness |
| | 15 – 60 mm (0.59 – 2.36") | 5 – 41 mm (0.20 – 1.61") |
| | 60 – 200 mm (2.36 – 7.87") | 5 – 86 mm (0.20 – 3.39") |
| | 100 – 300 mm (3.94 – 11.81") | 15 – 80 mm (0.59 – 3.15") |

ROLLED WIRE

| | |
|-------------------------|---|
| rolled (dia.) | 5.0 – 13.5 mm (0.20 – 0.53") |
| drawn (dia.): | 1.0 – 12.0 mm (0.04 – 0.47") |
| precision shaped round: | 1.0 – 28.0 mm (0.04 – 1.10") |
| precision shaped flat: | 0.5 – 40.0 mm ² (0.00078 – 0.062 sq.in.) |

BAR STEEL forged

| | | |
|---------|-------------------------------|----------------------------------|
| round: | 110 – 1200 mm (4.33 – 47.24") | |
| square: | 90 – 1200 mm (3.54 – 47.24") | |
| flat: | width | thickness |
| | 120 | 50 mm (4.72 – 1.97") minimum |
| | 1600 | 1000 mm (62.99 – 39.37") maximum |

Ratio width/thickness maximum 10:1

Surface condition

- » blasted / milled / peeled / turned
- » peeled and polished
- » belt grinded
- » ground and polished

MATERIALS

SPECIAL NOTES

DFARS:

DFARS 252.225.7014: Clause c1, DFARS 225.872

Buy American:

Austria is listed as a qualified country in DFARS 225.872-1, 252.225-7012 because the United States and Austria have signed reciprocal defense procurement MoU. Austrian material may be used in „Buy America“ applications where the total value of Austrian material is less than 50% of the value of the component.

voestalpine BOHLER Edelstahl is an eligible supply source according to DFARS 252.225-7009.

SELECTION ACCORDING TO BS

| BS | BÖHLER grade | Market grade | Melting route | UNS | ASTM | Others | Industry specifications |
|---------------------|----------------|--------------|----------------|-----|------|-----------------------------|--|
| S80 | BÖHLER N352S1 | 431 | EAF | | | Z15Cr17-03 | |
| S82 S156 | BÖHLER E108 | | EAF or EAF-VAR | | | EN2767 16NCD17 | Liebherr LAT 1-9043 |
| S97 S140 S154 | BÖHLER V141 | | EAF | | | | Bombardier EMCM-001-1013 |
| S98 S99 | BÖHLER V118S1 | | EAF | | | ~40NiMoCr10-5 | Bombardier EMCM-001-1013 |
| S130 | BÖHLER A750 | | EAF | | | X5CrNiNb18-10 Z6CNNb1810 | Airbus ZBF1109, ZBF301438 Boeing DMS QPL 2201 |
| S132 | BÖHLER V358 | E40CDV12 | EAF-VAR | | | E40CDV12 | |
| S151 | BÖHLER T552 | Jethete | EAF | | | | Rolls Royce MSRR 6502 Sneema DMD 0235-20, DMD 0237-20 |
| S162 | BÖHLER V250AMS | Maraging250 | VIM-VAR | | | EZ2NKD18-8-5 | Liebherr LAT 1-9018 |
| S162 | BÖHLER V250 | Maraging250 | VIM-VAR | | | X2NiCoMo18-8-5 | Messier Dowty MAT102 |

* Specific customer approval for a specific size or product range

The data contained in this brochure is merely for general information and therefore shall not be binding on the company. We may be bound only through a contract explicitly stipulating such data as binding. Measurement data are laboratory values and can deviate from practical analyses. The manufacture of our products does not involve the use of substances detrimental to health or to the ozone layer. Printed on an eco-friendly, chlorine-free bleached paper.

SELECTION ACCORDING TO DIN

| WL | BÖHLER grade | Market grade | Melting route | UNS | ASTM | Others | Industry specifications |
|------------------|---------------|--------------|----------------|--------|------------------------|--|---|
| 1.3544 1.4125 | BÖHLER N695 | 440C | EAF or EAF-VAR | S44004 | | X105CrMo17 X102CrMo17 Z100CD17 | |
| 1.3551 ~ | BÖHLER R250 | M50 | VIM-VAR | | | E80DCV40 | GE C50TF56* P&W PWA793*, CPW 378* Sneema DMD119-20* |
| 1.4044 | BÖHLER N352 | 431 | EAF | | | Z15Cr17-03 | Airbus ZBF1109 ; IPSWL1.4044.6 Liebherr LAT1-9070 Cl.A Cond.2 |
| 1.4108 | BÖHLER N360 | X30 | EAF-ESR | | | X30CrMoN15-1 | FAG FL-LA2486 1SX |
| 1.4534 | BÖHLER N709 | 13-8 Mo | VIM-VAR | S13800 | A564 | EZ3CND4 13-8 X3CrNiMoAl13-8-2 EN 3357 EN 3358 | Airbus ZBF1109, ZBF301438, IPSWL1.4534.4-01, ABS 5442C, ABS 5259A, IPS 01-04-004 Bombardier EMCM-001-1013 Liebherr LAT1-9048 |
| 1.4542 | BÖHLER N700 | 17-4 PH | EAF | S17400 | A564 | Z6CNU17.04 X5CrNiCuNb17 4 4 | Boeing DMS QPL 2201, AMS 5643 P&W CPW-S-5643 Sneema DMD 229-20* |
| 1.4545 | BÖHLER N701 | 15-5 PH | EAF-VAR | S15500 | A564 | EZ5CNU15.15 X5CrNiCu15.05 EN 2815 EN 2817 | Airbus/Eurocopter ASNA 3294, ASNA 3297, ASNA 6116, ABS 5750*, ABS 5455*, IPS 01-04-003-02* Aircelle HMDM0022 Boeing D1 4426 (PC660)* Bombardier EMCM-001-1013 Goodrich_AMS5659* Liebherr LAT 1-9037 |
| 1.4546 | BÖHLER A750 | | EAF | | | X5CrNiNb18-10 Z6CNNb1810 | Airbus ZBF1109, ZBF301438 Boeing DMS QPL 2201 |
| 1.4548 | BÖHLER N700 | 17-4 PH | EAF-VAR | | A564 | EZ6CNU17.04 X5CrNiCuNb17 4 4 | Airbus ZBF1109, ZBF301438 ; IPSWL1.4548 Alenia P19X316 |
| 1.4594 | BÖHLER T670 | 520B | EAF | S45000 | | S143, S144 | |
| 1.4939 | BÖHLER T552 | Jethete | EAF or EAF-ESR | S64152 | | Z12CNDV12 | GE C50TF68 Sneema DMD 0242-20 Turbomeca AMS5719* |
| 1.4943 1.4944 | BÖHLER T200SA | A286 | EAF-ESR | S66286 | | EnZ6NCT25 EN2303 | Rolls Royce MSRR 6532 |
| 1.4944 | BÖHLER T200 | A286 | EAF-ESR | S66286 | | EnZ6NCT25 EN2303 | Sneema DMD 0274-22 Turbomeca AMS 5732*, MSRR 6688* Rolls Royce MSRR 6531 |
| 1.6354 | BÖHLER V300 | Maraging 300 | VIM-VAR | | | EZ2NKD18 ~X2NiCoMo18-9-5 | |
| 1.6359 | BÖHLER V250 | Maraging 250 | VIM-VAR | | | X2NiCoMo18-8-5 | Messier Dowty MAT102 |
| 1.6604 | BÖHLER V145 | 30CND8 | EAF | | | 30CND8 30CrNiMo8 | Airbus ZBF1109, ZBF301438 |
| 1.6722 | BÖHLER E108 | | EAF or EAF-VAR | | | EN2767 16NCD17 | Liebherr LAT 1-9043 |
| 1.6745 | BÖHLER V118S1 | | EAF | | | ~40NiMoCr10-5 | Bombardier EMCM-001-1013 |
| 1.7734 1.7736 | BÖHLER V354 | 15CDV6 | EAF or EAF-ESR | | | E 15CDV6 ~14CrMoV6 9 | Airbus ZBF1109, ZBF301438 |
| 1.7765 ~ | BÖHLER V361 | E32CDV13 | VIM-VAR | | | E32CDV13 | Eurocopter ASNA 6128*, ANSA6123* |
| 1.8523 | BÖHLER V358 | E40CDV12 | EAF-VAR | | | E40CDV12 | |
| 2.4632 | BÖHLER L090 | Alloy 90 | VIM-VAR | N07090 | B637 | NCK20TA NiCr20Co18Ti | MTU MTS 1042-2* |
| 2.4654 | BÖHLER L303 | Waspaloy | VIM-VAR | N07001 | B637 | NC20K14 NiCr19Co14MoTi | Sneema DMD 0426-22** on request |
| 2.4665 | BÖHLER LHX | Alloy X | VIM-ESR | N06002 | B572 | NC22FeD | GE B50TF31-A Sneema DMD 491-23 ** on request |
| 2.4668 | BÖHLER L718 | Alloy 718 | VIM-VAR | N07718 | B637 | NiCr19NbMo NC19FCNb | Boeing D1 4426 (PC696)* GE B50TF15 A/D/E; C50TF6 only melting process and chemistry, spec is for forged parts; B50A809* Goodrich AMS5662* MTU MTS 1424-1*, MTS 1424-3* P&W PWA-S-5662 Cl.2, PWA-S-5663 Cl.2 Sneema DMD 424-22 ** on request |
| 2.4856 | BÖHLER L625 | Alloy 625 | VIM-ESR | N06002 | B446-03 G1 B564-06A | NiCr22Mo9Nb NC22DNb | Honeywell EMS 55425P cond B Sneema DMD 491-23 ** on request |

SELECTION ACCORDING TO AMS

| AMS | BÖHLER grade | Market grade | Melting route | UNS | ASTM | Others | Industry specifications |
|----------------------|----------------|--------------|-----------------------|--------|------------------------|--|--|
| 5629 | BÖHLER N709 | 13-8 Mo | VIM-VAR | S13800 | A564 | EZ3CND4 13-8 X3CrNiMoAl13-8-2 EN 3357 EN 3358 | Airbus ZBF1109, ZBF301438, IPSWL1.4534.4-01, ABS 5442C, ABS 5259A, IPS 01-04-004 Bombardier EMCM-001-1013 Liebherr LAT1-9048 |
| 5643 | BÖHLER N700 | 17-4 PH | EAF | S17400 | A564 | Z6CNU17.04 X5CrNiCuNb17 4 4 | Boeing DMS QPL 2201, AMS 5643 P&W CPW-S-5643 Sneema DMD 229-20* |
| 5646 | BÖHLER A750 | | EAF | | | X5CrNiNb18-10 Z6CNNb1810 | Airbus ZBF1109, ZBF301438 Boeing DMS QPL 2201 |
| 5659 | BÖHLER N701 | 15-5 PH | EAF-VAR | S15500 | A564 | EZ5CNU15.15 X5CrNiCu15.05 EN 2815 EN 2817 | Airbus/Eurocopter ASNA 3294, ASNA 3297, ASNA 6116, ABS 5750*, ABS 5455*, IPS 01-04-003-02* Aircelle HMDM0022 Boeing D1 4426 (PC660)* Bombardier EMCM-001-1013 Goodrich_AMS5659* Liebherr LAT 1-9037 |
| 5659 | BÖHLER N701AMS | 15-5 PH | EAF-VAR | | A564 | EZ5CNU15.15 X5CrNiCu15.05 | Liebherr LAT 1-9037 Cond A; only AMS5659 |
| 5666 | BÖHLER L625 | Alloy 625 | VIM-ESR | N06002 | B446-03 G1 B564-06a | NiCr22Mo9Nb NC22DNb | Honeywell EMS 55425P cond B Sneema DMD 491-23 ** on request |
| 5719 | BÖHLER T552 | Jethete | EAF or EAF-ESR | S64152 | | Z12CNDV12 | GE C50TF68 Sneema DMD 0242-20 Turbomeca AMS5719* |
| 5754 | BÖHLER LHX | Alloy X | VIM-ESR | N06002 | B572 | NC22FeD | GE B50TF31-A Sneema DMD 491-23 ** on request |
| 5773 | BÖHLER T671SB | Custom 450 | EAF-ESR | | | | |
| 5829 | BÖHLER L090 | Alloy 90 | VIM-VAR | N07090 | B637 | NCK20TA NiCr20Co18Ti | MTU MTS 1042-2* |
| 5898 | BÖHLER N360 | X30 | EAF-ESR | | | X30CrMoN15-1 | FAG FL-LA2486 1SX |
| 6265 | BÖHLER E105 | 9310 | EAF-VAR or VIM-VAR | | | AISI 9310 | Agusta 199-20-005 |
| 6278 | BÖHLER R350 | M50 Nil | VIM-VAR | | | E13DCNV40 | GE B50TF211* |
| 6414 | BÖHLER V124SC | 4340 | EAF-ESR or EAF-VAR | G43400 | | SAE 4340 ~40NiCrMo6 ~E40NCD7 | Agusta 199-20-007 Bombardier EMCM-001-1013 |
| 6444 | BÖHLER R100 | 52100 | EAF-VAR or VIM-VAR | | | 100Cr6 E100C6 | |
| 6481 | BÖHLER V361 | E32CDV13 | VIM-VAR | | | E32CDV13 | Eurocopter ASNA 6128*, ANSA6123* |
| 6491 | BÖHLER R250 | M50 | VIM-VAR | | | E80DCV40 | GE C50TF56* P&W PWA793*, CPW 378* Sneema DMD119-20* |
| 6512 | BÖHLER V250AMS | Maraging 250 | VIM-VAR | | | EZ2NKD18-8-5 | Liebherr LAT 1-9018 |
| 6514 | BÖHLER V300 | Maraging 300 | VIM-VAR | | | EZ2NKD18 ~X2NiCoMo18-9-5 | |
| 5618 5630 | BÖHLER N695 | 440C | EAF or EAF-VAR | S44004 | | X105CrMo17 X102CrMo17 Z100CD17 | |
| 5622 5643 | BÖHLER N700 | 17-4 PH | EAF-VAR | | A564 | EZ6CNU17.04 X5CrNiCuNb17 4 4 | Airbus ZBF1109, ZBF301438 ; IPSWL1.4548 Alenia P19X316 |
| 5662 5663 | BÖHLER L718 | Alloy 718 | VIM-VAR | N07718 | B637 | NiCr19NbMo NC19FCNb | Boeing D1 4426 (PC696)* GE B50TF15 A/D/E; C50TF6 only melting process and chemistry, spec is for forged parts; B50A809* Goodrich AMS5662* MTU MTS 1424-1*, MTS 1424-3* P&W PWA-S-5662 Cl.2, PWA-S-5663 Cl.2, Sneema DMD 424-22 ** on request |
| 5704 5706 5707 | BÖHLER L303 | Waspaloy | VIM-VAR | N07001 | B637 | NC20K14 NiCr19Co14MoTi | Sneema DMD 0426-22** on request |
| 5731 5732 | BÖHLER T200 | A286 | EAF-ESR | S66286 | B637 | EnZ6NCT25 EN2303 | Sneema DMD 0274-22 Turbomeca AMS 5732*, MSRR 6688* Rolls Royce MSRR 6531 |

* Specific customer approval for a specific size or product range

EXPERTISE IN ALL MATERIAL MATTERS

Main System Approvals

» TÜV Süd EN 9100:2016, AS 9100D

Jet Engines

» GE Aviation S1000
 » ITP AS9100
 » MTU MTV
 » NHBB AS9100
 » Pratt & Whitney LCS/MCS
 » Rolls Royce SABRE
 » SAFRAN QDR-01 / GRP-0125
 » SKF Aeroengines IHA-0064

Air Frame

» Leonardo AQM-002, A/0698
 » Airbus Germany QVA-V06-02-00
 » Airbus UK Ltd. AUK/SA/001-3 / 228415
 » BAE Systems (operations) Ltd. BAE/AG/QC/SC1 Parts 1 to 7
 » BAE Systems Regional Aircraft RALOA/00503/3 Appendix 1
 » BOEING D1-4426
 » Bombardier Aerospace EMCM001, Code 1013
 » Gulfstream SQAR - 0003
 » United Technologies ASQR-01
 » Hawker Beechcraft Corp. Code HBIFSAS/Part3/0815
 » Korean Air KQMSS-A-05-022
 » Safran Landing Systems GRP 0087
 » Westland Helicopters code V08122
 » Spirit Aerosystems (Europe) AERO-ALL-QU-SC-ALL-125

Laboratory Approvals

» NADCAP Chemical, Mechanical, Corrosion Testing,
 Metallography and Hardness, Heat treatment
 » GE Aviation S400
 » Pratt & Whitney LCS/MCS MCL F17
 » SAFRAN FAL n°310 acc. PRO 0430
 » Rolls Royce MSRR 9951
 » Airbus France MM 049
 » BOEING D1-4426

NDT Approvals

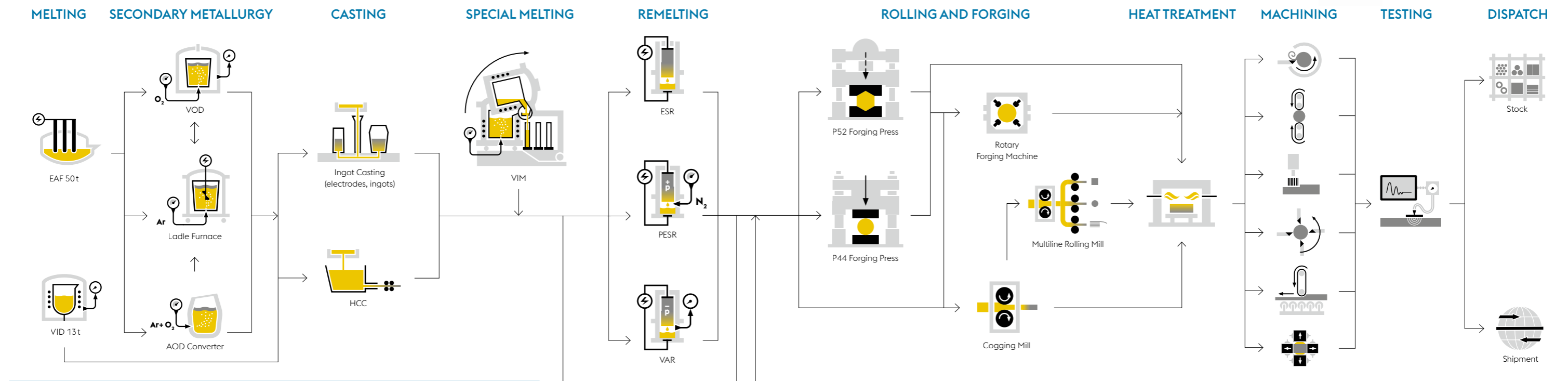
» NADCAP AMS-STD 2154
 » GE Aviation P3TF34, P3TF15
 » Pratt & Whitney SIM 14, SIS 45
 » Pratt & Whitney, Canada CPW 382
 » SAFRAN DMC0022 / Pr-5125
 » Rolls Royce RRP 58002
 » Gulfstream GAMPS 9102
 » BOEING D1-4426



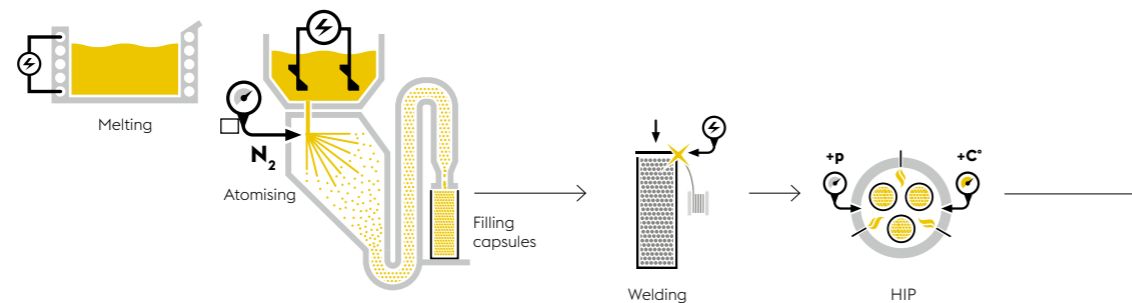
TRENDSETTING TECHNOLOGIES FOR HIGHEST METALLURGICAL PERFORMANCE



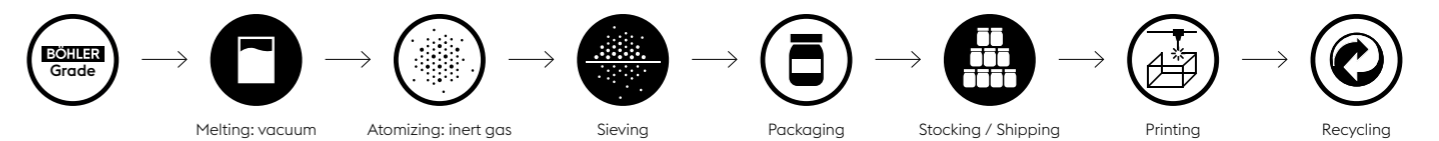
FLOW OF MATERIAL



POWDER METALLURGY



AMPO



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ONE STEP AHEAD.