Pioneering Wear Protection
VAUTID ASW hardfacing welding consumables

VAUTID hardfacing welding consumables can be used in a great variety of applications. They offer a solution to different problems protecting high-wear components in plant and machinery.

VAUTID VVP composite wear plates

Extended service lifetimes on high-wear surfaces become a reality with VAUTID composite wear plates which are an efficient, use-anywhere solution.

VAUTID GUSS cast products

VAUTID has extensive experience as a supply chain partner for high wear-resistance cast components, which are manufactured to customer specifications.

INNOVATION FROM THE INVENTOR: FOR PROFITABLE OPERATION AND LONG SERVICE LIFE

“With our innovative spirit and over 70 years of experience in wear protection, we develop leading system solutions in casting and welding technologies worldwide.”
VAUTID continues to set the standard. V100 has been the #1 product in the industry in metal-based wear protection for over 65 years.

Only machines and industrial systems that operate efficiently can generate profits. Continuous, low-maintenance operations and a long service life ensure sustainable business success. The road to prosperity is made possible through innovative VAUTID wear protection in casting and welding technology.

VAUTID for manufacturers and end users. VAUTID system solutions are designed for original industrial plant equipment and process engineering machinery as well as the subsequent protection and regeneration of elements exposed to wear. VAUTID plans, develops and manufactures comprehensive wear protection solutions. Custom-tailored VAUTID concepts are perfectly aligned in terms of technology and economy and ensure reliable, profitable production.

Consistent performance and return on investment with VAUTID

VAUTID consulting and design. Our goal is to develop the best solutions for reducing wear in original equipment operation and maintenance of systems and machines. To achieve this goal, VAUTID engineers analyze your requirements, prepare a fail-safe diagnosis and design a custom solution for protecting wear-exposed parts. The right VAUTID materials are selected to ensure optimum protection against wear, corrosion or heat. VAUTID uses its expertise to cut wear costs and maximize the service life of the equipment.
VAUTID research and development. To ensure maximum wear protection, VAUTID focuses all of its strengths on developing leading, innovative, metallurgic and constructive solutions to wear problems. In the VAUTID wear laboratory, a wide variety of structural tests, strength tests, and analyses (such as FEM) are conducted. By using 3D-CAD designs, model building, and simulated solidification, VAUTID innovations are prepared for market faster and more reliably. By cooperating with universities and institutions and participating in government-backed research projects, VAUTID can incorporate cutting-edge knowledge to ensure a long service life and profitable operation.

Proven a million times over and continuously developed

VAUTID production. As a specialist in comprehensive wear protection, VAUTID produces all of its materials in accordance with high VAUTID quality standards in its own production facilities. Here, special raw materials, careful attention to detail, and cutting-edge process engineering are combined with the expertise and commitment of our staff to produce VAUTID premium products. With the ongoing expansion of further production sites, VAUTID will be able to deliver even more highly customized solutions faster than ever before.

VAUTID quality assurance

VAUTID has been ISO 9002 certified since 1993 and ISO 9001 certified since 1996. All VAUTID deposition welding materials, composite wear plates, and casting products are developed, tested and produced in accordance with these strict quality requirements. This guarantees a consistently high standard for all VAUTID premium products.
Tailor-made VAUTID wear solutions: Cutterhead of a tunnel boring machine.

Courtesy of Herrenknecht AG, Schwanau-Allmannsweier

The unique VAUTID product portfolio ranges from wear-proof deposition welding materials to composite wear plates to casting products – all offering first-rate protection for wear-susceptible parts in continuous abrasive operations.

Advantages. VAUTID deposition welding materials can be applied quickly and are an especially efficient solution to a variety of wear problems on site. In order to meet every requirement in every field of application perfectly, VAUTID deposition welding materials are available in a variety of material types, alloys and qualities, including hardfacing welding materials, rust-free auxiliary welding materials, auxiliary repair welding materials and special materials. These materials are available as stick electrodes or tubular wire.

VAUTID deposition welding materials offer cost-efficient, lasting protection.

Fields of application. Typical applications for VAUTID deposition welding materials include coating of mixing tools, hardfacing of excavator teeth, powder deposition welding of fan blades, hardfacing of bucket chain excavators and sinter crushers.

VAUTID deposition welding materials can be applied universally and in a short amount of time. They provide long-lasting, cost-efficient protection for high wear-and-tear parts.

VAUTID tubular wire

Manual hardfacing using VAUTID stick electrodes

VAUTID deposition welding materials
### VAUTID hardfacing welding programme on iron base

<table>
<thead>
<tr>
<th>Forms of stress</th>
<th>Applications</th>
<th>VAUTID Type</th>
<th>Form</th>
<th>Alloy type</th>
<th>Hardness Vickers HV 30</th>
<th>Hardness Rockwell HRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>buffer layers, rails, parts for chemical industry, joint welding</td>
<td>VAUTID 18/6</td>
<td>stick electrode</td>
<td>X15CrNiMo1886</td>
<td>200</td>
<td>40*</td>
<td></td>
</tr>
<tr>
<td>buffer layers, rails, parts for chemical industry, for materials difficult to weld</td>
<td>VAUTID 30/9 (29/9)</td>
<td>stick electrode</td>
<td>X10CrNi2009</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>build-up and buffer layers, idlers</td>
<td>VAUTID 30</td>
<td>stick electrode</td>
<td>low alloyed Fe, Cr, Si, Mn</td>
<td>300</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>crushing heads, hammers for crushers, crushing jaws</td>
<td>VAUTID 50 (beta)</td>
<td>stick electrode</td>
<td>high alloyed Fe, Cr, C, Mn</td>
<td>220</td>
<td>40*</td>
<td></td>
</tr>
<tr>
<td>grinding segments</td>
<td>VAUTID 100</td>
<td>stick electrode</td>
<td>high alloyed Fe, Cr, C, Mn</td>
<td>750</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>screws, gravel pumps, bonbury mixers</td>
<td>VAUTID 110</td>
<td>stick electrode</td>
<td>high alloyed Fe, Cr, C, B</td>
<td>880</td>
<td>66</td>
<td></td>
</tr>
</tbody>
</table>

### VAUTID hardfacing welding programme on tungsten carbide base

<table>
<thead>
<tr>
<th>Forms of stress</th>
<th>Applications</th>
<th>VAUTID Type</th>
<th>Form</th>
<th>Alloy type</th>
<th>Hardness Vickers HV 30</th>
<th>Hardness Rockwell HRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>sinter bars, coke pushers</td>
<td>VAUTID 100 T</td>
<td>stick electrode</td>
<td>high alloyed Fe, Cr, C</td>
<td>750</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>sinter crushers and bars</td>
<td>VAUTID 145</td>
<td>stick electrode</td>
<td>high alloyed Fe, Cr, C, Mo, Nb, V</td>
<td>850</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>furnace top bell facing, hot dust ducts, screens, sinter crushers, mixer components</td>
<td>VAUTID 146</td>
<td>stick electrode</td>
<td>high alloyed Fe, Cr, C, V, Nb, B</td>
<td>850</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>mixer components for parts attacked by corrosion</td>
<td>VAUTID 100 C (VAUTID 100 K)</td>
<td>stick electrode</td>
<td>high alloyed Fe, Cr, C, Ni, Mo</td>
<td>450</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

*cold hardened  *cold hardened
VAUTID hardfacing materials

<table>
<thead>
<tr>
<th>Repair and Buffer</th>
<th>Impact</th>
<th>Impact and Abrasion</th>
<th>Abrasion</th>
<th>Temperature and Abrasion</th>
<th>Corrosion and Abrasion</th>
<th>Extremely High Abrasion</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAUTID 18/8/6</td>
<td>VAUTID 50</td>
<td>VAUTID 40</td>
<td>VAUTID 100</td>
<td>VAUTID 100 T</td>
<td>VAUTID 100 C</td>
<td>VAUTID Ultra 301</td>
</tr>
<tr>
<td>VAUTID 30/9</td>
<td>VAUTID 60</td>
<td>VAUTID 70</td>
<td>VAUTID 100 Mn</td>
<td>VAUTID 145</td>
<td>VAUTID Ultra 303</td>
<td>VAUTID Ultra 302</td>
</tr>
<tr>
<td>VAUTID 30</td>
<td>VAUTID 80</td>
<td>VAUTID 105</td>
<td>VAUTID 146 Mixing</td>
<td>VAUTID Ultra 305</td>
<td>VAUTID Ultra 303</td>
<td>VAUTID Ultra 303</td>
</tr>
<tr>
<td></td>
<td>VAUTID 143</td>
<td>VAUTID 110</td>
<td>VAUTID 147</td>
<td>VAUTID Ultra 304</td>
<td>VAUTID Ultra 304</td>
<td>VAUTID Ultra 305</td>
</tr>
<tr>
<td></td>
<td>VAUTID 150</td>
<td>VAUTID 150</td>
<td>VAUTID 150</td>
<td>VAUTID 150</td>
<td>VAUTID 150</td>
<td>VAUTID 150</td>
</tr>
</tbody>
</table>

VAUTID hardfacing material as stick electrodes

VAUTID hardfacing material as tubular wire

VAUTID tubular wire production

VAUTID tubular wire (barrels)
VAUTID products employ efficient technologies to help extend the service life of system and machine parts subject to heavy loads. Universal composite wear plates provide robust wear protection and ensure low wear costs over the long term.

Advantages. VAUTID composite wear plates are wear-proof and long-lasting. The hard-surface layer can be made to suit the specific application. The plates are also easily installed through back-side welding or bolting. Composite plates are available in a variety of dimensions and qualities. Plates can be cut to size to conform to drawings and heated or cooled to attain the desired shape – for extremely cost-effective and fast wear solutions in a wide variety of applications and industries.

VAUTID composite wear plates can be individually installed and are extremely long-lasting

Fields of application. VAUTID composite wear plates are used where wear protection is desired as a self-supporting structure on large surface areas with no supporting substructure. They guarantee maximum operational reliability, even under high mechanical load. Sample applications include strainers, hopper linings, vibration conveyors, fan impellers, casings, mixers, cyclone separators, and sifters.

With its extensive product portfolio designed for a wide variety of individual wear issues, VAUTID is the world’s leading specialist in comprehensive wear protection.
VAUTID wear plates – available forms and shapes

1. Standard sheets and thicknesses (mm)

Coated surface

- 2,400 x 1,150 from 3+3 to 25+5/20+10
- 2,900 x 1,400 from 3+3 to 25+5/20+10

Base materials

- Steels (e.g. 1.0038, 1.0570)
- Fine grain steels (e.g. 1.89 …)
- Hot steels (e.g. 1.7335 …)
- Heat resistant steels (e.g. 1.4878 …)
- Corrosion resistant steels (e.g. 1.4301 …)

2. Special sizes

Up to largest sizes of

- 1,900 x 3,900 mm from 6+4 to 25+5/20+10

3. Plates cut to size

- from 50 x 50 mm
- square boring from 4 x 4 mm
- circular boring from Ø 3 mm
- tear shape boring from Ø 3 mm
- slots from 1.5 mm

4. Formed plates

Simple cold forming is possible only with VAUTID wear plates because of their low dilution between weld deposit and base material. The smallest cold-rolled diameter is 400 mm.

5. Installation-ready fabrications

- Pipes from 400 mm Ø
- Screens with different perforations
- Chutes
- Cyclones
- Elbows
- Troughs
- Distribution chutes
- Ventilators etc.

Qualities of VAUTID wear plates

Weld deposit analyses

VAUTID wear plates are produced in the following qualities according to DIN 32525-4

<table>
<thead>
<tr>
<th>Qualities</th>
<th>Hard materials</th>
<th>Binder phase</th>
<th>Binder alloys</th>
<th>Hardness in Vickers</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAUTID 100</td>
<td>Chromium Carbides</td>
<td>Fe/Austenite</td>
<td>Mn</td>
<td>pure weld deposit ca. 700 HV 10</td>
<td>linings of ventilators, separators, cyclones, linings of mills in the cement and coal industry, screens in the iron and steel industry</td>
</tr>
<tr>
<td>VAUTID 100T</td>
<td>Chromium Carbides</td>
<td>Fe/Austenite</td>
<td>Ni, Mn</td>
<td>pure weld deposit ca. 700 HV 10</td>
<td>linings of fans for operating temperatures up to 550 °C, screens in the iron and steel industry for operating temperatures up to 950 °C</td>
</tr>
<tr>
<td>VAUTID 130</td>
<td>Chromium + Boron carbides</td>
<td>Fe/Austenite</td>
<td>B, Mn</td>
<td>pure weld deposit ca. 750 HV 10</td>
<td>security and safe plates</td>
</tr>
<tr>
<td>VAUTID 143</td>
<td>Chromium + Nbium carbides</td>
<td>Fe/Austenite</td>
<td>Mn</td>
<td>pure weld deposit ca. 820 HV 10</td>
<td>chutes for open pit mining equipment, conveyor chutes, ventilators</td>
</tr>
<tr>
<td>VAUTID 145</td>
<td>Chromium + Nb, W, V carbides</td>
<td>Fe/Austenite</td>
<td>B, Mn</td>
<td>pure weld deposit ca. 940 HV 10</td>
<td>hot gas ventilators, hot screens for temperatures up to 750 °C, hot dust pipes and bell linings</td>
</tr>
<tr>
<td>VAUTID 146 Mining</td>
<td>Chromium + Nb, V, Nb carbides</td>
<td>Fe-base Austenite</td>
<td>B</td>
<td>pure weld deposit ca. 900 HV 10</td>
<td>chutes, sieves, fans, fan housings, grids, discharge, tables, Bell linings, separators, converters, etc.</td>
</tr>
<tr>
<td>VAUTID 147</td>
<td>Chromium carbides</td>
<td>Fe/Austenite</td>
<td>B, Mn</td>
<td>pure weld deposit ca. 900 HV 10</td>
<td>hot gas ventilators, hot screens for temperatures up to 850 °C, hot dust pipes and bell linings</td>
</tr>
<tr>
<td>VAUTID 150</td>
<td>Chromium + Chromium carbides</td>
<td>Fe/Austenite</td>
<td>B, Mn</td>
<td>pure weld deposit ca. 750 HV 10</td>
<td>pipework in the cement industry, dust and ash pipes with very smooth surface</td>
</tr>
</tbody>
</table>
“70 years of progress and the strictest requirements flow into each and every VAUTID product.

UNIQUE PRODUCT PALETTE
IN QUALITY AND VARIETY
VAUTID offers a custom-tailored and cost-efficient solution for every requirement. Cast products are manufactured in accordance with customer needs using a wide variety of materials and casting methods. Optimized geometry combined with additional wear protection is a valuable asset in many applications.

**Advantages.** VAUTID cast components represent the most cost-efficient method of wear prevention for mass production. Cast products can range in weight from 2 to 30,000 kg depending on the field of application and the type of material. Applications include sand casting, ceramic or Croning molds or lost foam casting. Models, computer simulations and extensive analyses ensure the optimal quality of each component. VAUTID cast products can also be machined directly in the plant to the desired level of precision.

VAUTID casting provides cost-efficient wear protection for series parts

**Fields of application.** VAUTID hard casting offers highly streamlined production and high-quality wear protection through strict VAUTID quality controls and is ideal for use in a wide variety of industries that contain mechanical processes like crushing, mixing, conveyance, storage, agglomeration, and separation.

VAUTID foundries

VAUTID is an experienced partner in component manufacturing for high carbon and stainless steel casting. VAUTID cast products are manufactured and processed in accordance with customer specifications.
**Moulding lines**

<table>
<thead>
<tr>
<th>Moulding line</th>
<th>Size (mm)</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>moulding line</td>
<td>600 x 700</td>
<td>green sand</td>
</tr>
<tr>
<td>moulding line</td>
<td>1,100 x 1,200</td>
<td>furan resin sand</td>
</tr>
<tr>
<td>moulding line</td>
<td>2,000 x 3,000</td>
<td>furan resin sand</td>
</tr>
<tr>
<td>moulding line</td>
<td>2,000 x 4,000</td>
<td>furan resin sand</td>
</tr>
<tr>
<td>jolt squeeze molding</td>
<td>1,100 x 1,200</td>
<td>green-furan resin sand</td>
</tr>
<tr>
<td>hand moulding</td>
<td>max. 4,000 x 5,000</td>
<td>furan resin sand</td>
</tr>
<tr>
<td>lost foam</td>
<td>2,000 x 2,000</td>
<td>sand</td>
</tr>
</tbody>
</table>

**Melting furnaces**

<table>
<thead>
<tr>
<th>Lot sizes</th>
<th>1 to 150,000/a</th>
</tr>
</thead>
</table>

**Materials**

1. Non-alloyed cast steel for general applications (DIN EN 10293)
2. Low-alloyed cast steel for general applications (DIN EN 10293)
3. Heat-resistant cast steel for pressure vessels (DIN EN 10213)
4. Tough and hard cast steel
5. Austenitic manganese steel
6. Heat-resistant cast iron (DIN EN 10295)
7. Stainless cast steel (SEW 410, DIN EN 10213)
8. Chilled iron (DIN EN 12513)
9. VAUTID Chilled iron
10. Ceramic composite casting

**Casting weights**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>2 – 30,000 kg</th>
</tr>
</thead>
</table>

- Own heat treatment at all locations
- Own lab for melting analysis and material tests at all locations
- VAUTID wear test lab

**Quality control**

- Verify of dimensional accuracy
- Chemical analysis
- Hardness (HB, HRC, HV)
- Microstructure
- Tensile strength
- Elongation
- Impact bending strength
- Magnetic powder testing method
- Ultrasonic testing
- Wear tests
- Calcination test
- Destroying test

**Moulding process**

- Green sand
- CO₂ sand
- Furan sand
- Lost Foam
- Hotbox (croning)
- Lost-wax process

**Pattern shop**

Manufacture of patterns in own pattern shop out of
- Metal
- Wood
- Plastics
- Polystyrol

**CAD**

Continual use of CAD supported development and production possibilities for the pattern shop

- Design: 2D/3D-CATIA V5, Solidworks
- Moulding fill simulation: Flow cast
- Solidification simulation: Solid cast
- Rapid Prototyping: Selective laser sintering (SLS)

**Applications cast products, special mechanical engineering, recycling**

- Bi-metal hammer
- Crawler elements on excavator for open pit mining
- Glass recycling: impact crusher for crushing of ceramics
- Grate bars in waste incineration

Applications cast products, special mechanical engineering, recycling
<table>
<thead>
<tr>
<th>No.</th>
<th>VAUTID Materials</th>
<th>Tensile strength N/mm²</th>
<th>Yield strength N/mm²</th>
<th>Elongation after fracture (Lo=5d) min.</th>
<th>Hardness acc. HB (HRC)</th>
<th>KV</th>
<th>Temperature °C</th>
<th>Condition of delivery</th>
<th>Weldability</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VAUTID GE200 – 1.4028</td>
<td>380 – 530</td>
<td>200</td>
<td>25</td>
<td>130 – 140</td>
<td>27</td>
<td>RT</td>
<td>N</td>
<td>good</td>
<td>for mechanical engineering and steel structural work</td>
</tr>
<tr>
<td>2</td>
<td>VAUTID GE400 – 1.4046</td>
<td>450 – 600</td>
<td>240</td>
<td>22</td>
<td>140 – 170</td>
<td>27</td>
<td>RT</td>
<td>N</td>
<td>good</td>
<td>for mechanical engineering and steel structural work</td>
</tr>
<tr>
<td>3</td>
<td>VAUTID GE800 – 1.8508</td>
<td>520 – 870</td>
<td>300</td>
<td>18</td>
<td>150 – 190</td>
<td>31</td>
<td>RT</td>
<td>N</td>
<td>good</td>
<td>for mechanical engineering</td>
</tr>
</tbody>
</table>

**VAUTID Low alloyed cast steel for general applications (DIN EN 10295)**

1. VAUTID DT1Mv – 1.1221 | 490 – 800 | 240 | 24 | 130 – 180 | 27 / 34 | 48 / RT | G | T | good for pressure vessel |
5. VAUTID G40Mv-3.1.7231 | 690 – 1300 | 390 – 700 | 10 – 12 | 190 – 290 | 16 – 31 | RT | G | good for mechanical and plant engineering |
7. VAUTID GE400 – 1.4046 | 480 – 890 | 315 | 20 | 140 – 200 | 27 | RT | GT | preheating + after heat treatment for turbo, pressure vessel, steam boiler |
8. VAUTID GE50N – 1.4104 | 760 – 960 | 550 | 15 | 220 – 280 | 27 | RT | G | preheating + after heat treatment for pressure vessel |
9. VAUTID GE240 – 1.0446 | 450 – 600 | 240 | 22 | 130 – 180 | 27 – 40 | RT | N | good for hammer in the size reduction techniques |
10. VAUTID GE300 – 1.0558 | 520 – 670 | 300 | 18 | 150 – 190 | 27 – 41 | RT | G | good for hammer in the size reduction techniques |

**VAUTID Austenitic-manganese steel**

1. VAUTID MB12 – 1.3943 | – | – | – | – | – | – | AT | good | for crusher jaw, crushing cone |
2. VAUTID MB16-3 | – | – | – | – | – | – | AT | good | for crusher jaw, crushing cone |
3. VAUTID MB20-3 | – | – | – | – | – | – | AT | good | for crusher jaw, crushing cone |
5. VAUTID GE400 – 1.4046 | 480 – 890 | 315 | 20 | 140 – 200 | 27 | RT | GT | preheating + after heat treatment for turbo, pressure vessel, steam boiler |
7. VAUTID GE240 – 1.0446 | 450 – 600 | 240 | 22 | 130 – 180 | 27 – 40 | RT | N | good for hammer in the size reduction techniques |
8. VAUTID GE300 – 1.0558 | 520 – 670 | 300 | 18 | 150 – 190 | 27 – 41 | RT | G | good for hammer in the size reduction techniques |

**VAUTID HEAT RESISTANT CAST IRON**

1. VAUTID K – 1.4270 | – | – | – | – | – | – | VH4 / 800 – 850 | preheating + stress relieve heat treatment for industrial furnace engineering up to 850 °C on air |
2. VAUTID H – 1.4740 | – | – | – | d | – | – | G | preheating + stress relieve heat treatment for industrial furnace engineering up to 800 °C on air |
3. VAUTID H – 1.4706 | – | – | – | d | – | – | G | preheating + coolant in furnace for industrial furnace engineering up to 1,150 °C on air |
4. VAUTID H – 1.4717 | – | – | – | – | d | – | G | preheating + coolant in furnace for industrial furnace engineering up to 1,150 °C on air |
5. VAUTID H – 1.4823 | min. 550 | min. 256 | 3 | d | – | – | G | good for industrial furnace engineering up to 1,000 °C on air |
6. VAUTID H – 1.4825 | min. 450 | min. 256 | 15 | – | – | – | G | good for industrial furnace engineering up to 1,000 °C on air |
7. VAUTID H – 1.4826 | min. 450 | min. 256 | 8 | – | – | – | G | good for industrial furnace engineering up to 950 °C on air |
8. VAUTID H – 1.4827 | min. 450 | min. 256 | 8 | – | – | – | G | good for industrial furnace engineering up to 1,150 °C on air |
9. VAUTID H – 1.4848 | min. 450 | min. 256 | 8 | – | – | – | G | good for industrial furnace engineering, petroleum and natural gas plants up to 1,300 °C on air |

**VAUTID Stainless cast steel (SEW 410, DIN EN 10213)**

1. VAUTID K – 1.4096 | – | – | – | 260 – 330 | – | – | G | preheating + coolant in furnace for food/technique, chemical industry |
2. VAUTID K – 1.4036 | 440 – 940 | 200 | 30 | – | 60 | RT | AT | good | for accessories, mechanical engineering |
3. VAUTID K – 1.4012 | – | – | – | – | – | – | AT | good | for pump construction |
5. VAUTID K – 1.4046 | 480 – 890 | 420 | 40 | – | – | – | RT | AT | good | for pressure vessel |
6. VAUTID K – 1.4446 | – | – | – | 256 – 350 | – | – | G | preheating + heat treatment for chemical industry, fluid-gas desulfurization |
7. VAUTID K – 1.4517 | 690 – 850 | 480 | 22 | – | 56 | RT | AT | good | for pressure vessel, chemical industry |
8. VAUTID K – 1.4539 | 440 – 460 | 180 | 20 | – | 60 | RT | AT | good | for pressure vessel |
9. VAUTID K – 1.4552 | 440 – 460 | 200 | 25 | – | 40 | RT | AT | good | for pressure vessel, chemical industry |
10. VAUTID K – 1.4581 | 440 – 960 | 210 | 25 | – | 40 | RT | AT | good | for pressure vessel, chemical industry |

**Mechanical properties a) reference values; exact values according to the condition of delivery and thickness can be taken from the appropriate standard.**
### VAUTID Material program, Cast products

<table>
<thead>
<tr>
<th>Material Program</th>
<th>Mechanical Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAUTID Materials</td>
<td>Tensile strength N/mm²</td>
</tr>
<tr>
<td>No.</td>
<td>VAUTID</td>
</tr>
<tr>
<td>1</td>
<td>VAUTID R1</td>
</tr>
<tr>
<td>2</td>
<td>VAUTID R2</td>
</tr>
<tr>
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<td>VAUTID R3</td>
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### VAUTID Chilled iron (DIN EN 12513)

<table>
<thead>
<tr>
<th>VAUTID Chilled iron (DIN EN 12513)</th>
<th>Tensile strength N/mm²</th>
<th>Crushing strength N/mm²</th>
<th>E-Modul [kN/mm²]</th>
<th>Hardness (HRC)</th>
<th>Fracture toughness Kic [kN/mm²]</th>
<th>Machinability</th>
<th>Condition of delivery</th>
<th>Weldability</th>
<th>Applications</th>
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<tbody>
<tr>
<td>No.</td>
<td>VAUTID</td>
<td>N/mm²</td>
<td>N/mm²</td>
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<td>1</td>
<td>GJN-HV520 – 0.9620</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>approx. 52</td>
<td>–</td>
<td>–</td>
<td>G</td>
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<tr>
<td>2</td>
<td>GJN-HV600(XCr18) – 0.9645</td>
<td>–</td>
<td>–</td>
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<td>approx. 55</td>
<td>–</td>
<td>–</td>
<td>G</td>
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### VAUTID chilled iron (own developments)

<table>
<thead>
<tr>
<th>VAUTID chilled iron (own developments)</th>
<th>Tensile strength N/mm²</th>
<th>Crushing strength N/mm²</th>
<th>E-Modul [kN/mm²]</th>
<th>Hardness (HRC)</th>
<th>Fracture toughness Kic [kN/mm²]</th>
<th>Machinability</th>
<th>Condition of delivery</th>
<th>Weldability</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>VAUTID</td>
<td>N/mm²</td>
<td>N/mm²</td>
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<td>600 – 750</td>
<td>165 – 180</td>
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<td>–</td>
<td>na</td>
<td>G</td>
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<tr>
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<td>VAUTID W4</td>
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<td>600 – 750</td>
<td>165 – 180</td>
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<td>–</td>
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<td>G</td>
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<td>VAUTID W7</td>
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<td>2.800 – 3.300</td>
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<tr>
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<td>yes</td>
<td>hardened</td>
<td>hardened</td>
</tr>
</tbody>
</table>

### Applications Cast Products

**Crushing**
- Sinter breaker star steel industry
- Hammer for rock crushing

**Mixing**
- Mixer blade for planet mixer
- Mixing tool for double-shaft mixer

**Conveying**
- VAUTID T-tube

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1. VAUTID Materials for recycling industry
2. VAUTID Chilled iron (DIN EN 12513)
3. VAUTID chilled iron (own developments)

 Forms of stress:
- Temperature
- Corrosion
- Abrasion
- Impact

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**Surfaces for material developments according to customer requirements:**

1. VAUTID Materials are reference values depending on geometry and cross section of components
2. G = as cast
3. K = hardened

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**Mechanical Properties are reference values depending of geometry and cross section of components**
VAUTID GROUP. Maintaining a Local Presence Worldwide.

Reliability through strong partnership. The VAUTID GROUP is represented by subsidiaries and agencies in over 40 countries. VAUTID employees and distribution specialists worldwide are committed to employing the highest standards in pursuing a common goal: developing custom system solutions for excellent wear protection.