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CORODUR

VERSCHLEISS-SCHUTZ GMBH THALE

Standard Flux cored wires –

regarding application and properties

content

Standard Flux cored wires:

CAST IRON WELDING

Product-name	Corthal® NiFe36
Deposit hardness	140-160HB
Properties	NiFe36 is a Ni-, Fe-alloyed flux-cored wire electrode (36% Ni) for welding cast iron, joining steel and cast iron. This alloy has an extremely low coefficient of thermal expansion and is machinable.
Product-name	Thaloy NiFe 60/40
Deposit hardness	160-190 HB
Properties	This Ni-, Fe-alloy flux-cored wire electrode deposits a weld metal with a high percentage of nickel with globular graphite, tempered cast iron and for joining cast iron with steel.

TOOL STEELS

Product-name	Corthal® WZ 50
Deposit hardness	48-50HRc *Structure:* *Martensitic*
Properties	This C-, CR- V-, W-alloyed flux-cored wire electrode is suitable for repair and build-up applications on hot working steels of similar or lower alloyed hot working tools. The weld deposit is machinable, heat treatment is possible and has a retention of hardness up to 550°C.
Product-name	Corthal® WZ 59
Deposit hardness	57-59HRc *Structure:* *Martensitic*
Properties	This C-, CR- V- and high W-alloyed flux-cored wire electrode is suitable for welding hot working steels. The weld deposit is machinable with special tools, heat treatment is possible and the deposit has a retention of hardness up to 600°C.
Product-name	Corthal® WZ 6356
Deposit hardness	ca. 35HRc *Heat treated* *up to 51 HRc*
Properties	This flux-cored wire electrode is suitable for surfacing tools that should be machined. The weld deposit is martensitic cured. Trough heat treatment the hardness can be increased. Applications include press and drawing dies, extruding dies and forms for the aluminium and plastic industry.

TUNGSTEN CARBIDE HARDFACING

Product-name	Corthal® WSC Dur Fe
Deposit hardness	Matrix: 65-67 HRc
Properties	WSC Dur Fe is a flux-cored wire electrode filled with fused tungsten carbide for semi-automatic applications where extreme abrasive wear is encountered. The hardness of the tungsten carbide is approximately 2400 HV0.4. To prevent destroying the tungsten carbide, low weld parameters are recommended.
Product-name	Corthal® WSC Dur Ni
Deposit hardness	Matrix: 54-56 HRc
Properties	WSC Dur Ni is a flux-cored wire electrode filled with fused tungsten carbide and Ni, Si, Cr, B for semi-automatic welding applications. WSC Dur Ni was developed to protect surfaces where extreme abrasive wear in combination with corrosion are encountered.

COBALT-BASE ALLOYS

Product-name	Corolit1
Deposit hardness	52-55 HRc
Properties	Corolit 1 deposits a cobalt-base alloy with an austenitic-ledeburitic structure. This is the hardest of the standard cobalt-base alloys. It has a high resistance to corrosion, especially to reducing acids, impact, extreme wear and thermo shocks. The alloy is only machinable by grinding . Best used on wear pads, rotary seal rings, pump sleeve sand centerless grinder work rests.
Product-name (Deposit hardness)	Corolit 6 (40-43 HRc) Corolit 6LC (36-39 HRc) Corolit 6HC ()43-46 HRc
Properties	Cobalt-base alloys with an austenitic-ledeburitic structure bearing chrome and tungsten carbides. These alloys are resistant against high corrosion and abrasion, high impact stress and extreme thermal shocks. The deposit is machinable by hard metal tools. Best used on steam and chemical valves and on equipment handling hot steel, such as tong bits, shear blades etc..
Product-name	Corolit 12
Deposit hardness	45-48 HRc
Properties	Cobalt-base alloy with high resistance against abrasion, thermal shocks and corrosion. This alloy is suitable for hardfacing cutting edges of long knifes and other tools used in the wood, plastic, paper, carpet and chemical industries.
Product-name	Corolit 21
Deposit hardness	30-35 HRc *workhardened* *45 HRc*
Properties	This cobalt-base alloy is the toughest, with highest corrosion and thermal resistance of all cobalt-base alloys. The weld deposit is machinable and is used on components that are exposed to high temperatures, corrosion and impact stress, such as valve seats as well as components in the chemical industry.

NICKEL-BASE-ALLOYS

Product-name	Thaloy® CO
Deposit hardness	200-260 HB *workhardened* *400HB*
Properties	High temperature resistance alloy for hot working tools. When first applied to hot forging dies, the overlay is very cohesive. Put under impact, pressure load and high temperature, the resulting overlay increases hardness up to 400 HB without deforming. The deposit is heat and wear resistant to oxidation, reduction and other corrosive media.
Product-name	Thaloy ® 520
Deposit hardness	32-35 HRc *workhardened* *35-45 HRc*
Properties	Coroloy 520 deposits a Cr-, Co-, Mo-, Ti-, Al- and W-alloy in a nickel base. The weld metal is a precipitated, easily hardenend alloy with an exeptional combination of high temperature mechanical properties, formability and corrosion resistance.
Product-name (Deposit hardness)	Thaloy ® SE 21/35 (33-36 HRc) Thaloy ® SE 6/40 (41-43 HRc) Thaloy ® SE 12/50 (45-50 HRc) Thaloy ® SE 1/58 (55-60 HRc)
Properties	Ni-, Si-, Cr-, B-alloys. These alloys leave a nickel-base weld deposit. The essential characteristics corresponded to the cobalt-base alloys, especially the hardness, corrosion resistance, heat resistance, wear resistance and thermal shock constancy. Applications are found in the chemical industry, nuclear technology field etc.

WORKHARDENING; AUSTENITIC HARDFACING

Product-name	Corthal® 200K
Deposit hardness	Deposited 180-200HB *Workhardened* *400HB* *Structure: Austenitic*
Properties	The austenitic weld deposit of the high- alloyed flux-cored wire electrode is corrosion resistant, self hardening, anti-magnetic and heat and thermal shock resistant up to 850°C. Depending on the high elongation (40%) the alloy is suitable for ductile bufferlayers on old hardfacings and joining dissimilar and difficult weldable steels.
Product-name	Corthal® 240K
Deposit hardness	Deposited 200-230 HB *Workhardened* *450HB* *Structure: Austenitic*
Properties	The flux-cored wire electrode is suitable for welding parts of manganese steel ("Hadfield type"), wich are exposed to high impact wear and tear. The non-magnetic austenitic deposit is tough, crack-free and work hardening. Typical applications can be found in the rebuilding of crusher jaws, railroad components, bucket teeth and lips, and it is designed for reclaiming worn parts of manganese base material.
Product-name	Corthal® 250K
Deposit hardness	Deposited 220-250 HB *Workhardened* *500HB* *Structure: Austenitic*
Properties	Austenitic high manganese and chromium-alloyed flux-cored wire electrode. The fully-austenitic weld deposit is corrosion resistant, non-magnetic, has high plasticity and acts as a buffer, especially on old hardfacing. Deposits are work hardening up to 500 HB. The deposit resits shrinkage, stress and high impact loading. Lower weld decay as CORODUR 240K.

IMPACT RESISTANT APPLICATIONS

Product name	Corthal® 300
Deposithardness	280-325 HB *295-340 HV* *Structure: Bainitic*
Properties	Alow-alloeyed flux-cored wire electrode for building au applications that can be used for multi-layer welding because the weld metal is crack-free and ductile. Deposits are machinable with carbide tools. Used primarily on tractor wheels, steel shafts, gear and trunion rail links.
Product name	Corthal® 450
Deposithardness	Deposited 42-45 HRc *420-450 HV* *Structure:* *Bainitic+Martensitic*
Properties	CORODUR 450 is a tubular wire that produces a low alloyed deposit for hardfacing of approximately 450 HB. Deposits are machinable. This electrode can be used for multi-layer welding. Applications are, e.g. wheel rims, chain links, bucket chains. For base materials with higher carbon content, a buffer layer or preheating must be anticipated.
Product name	Corthal® 600 Corthal® 606 Corthal® 609
Deposithardness	54-57 HRc *580-630 HV* *Structure:* *Martensitic*
Properties	Alloyed flux-cored wire electrodes for abrasion and impact resistant hardfacing. The deposit is crack-free, hard and though. For base materials that are difficult to weld, a buffer layer of 250K or preheating is recommended. Applications are crusher wheels, dredger parts, pan grinders, and as the final grinder for hardfacing manganese steel.
Product name	Corthal® 601
Deposithardness	55-58 HRc *600-660 HV* *Structure: Martensitic*
Properties	A C-, Cr-, Mn-, Mo-, W- and V-alloyed weld deposit with excellent properties of resistance to abrasion and impact. The deposit has a high hot hardness up to 550 °C. Deposits can be heat treated to increase the hardness. For use on hammer and blooming table rolls, blowbars and bucket teeth.

Product name	Corthal® 612
Deposithardness	54-56 HRc *580-610 HV* *Structure:* *Martensit*
Properties	High Cr-alloyed (12.5% Cr) flux-cored wire electrode for welding wear resistant layers with a martensitic microstructure. The welding deposit is resistant against corrosion, cavitation and high compressive load (metal to metal) up to 550 °C. Typical applications are leading rolls, armatures, liquid and sand pumps.
Product name	Corthal® 600 TiC
Deposithardness	56-58 HRc *610-660 HV* *Structure:* *Martensit* *+ Ti-Karbide*
Properties	C-, Cr-, Ti- and Mo-alloyed flux-cored wire electrode for parts that are exposed to high abrasive wear in combination with impact stress. The microstructure of the deposit is martensitic with inserted Titanium-carbides. Applications are cement crusher rolls, pulverizer rolls and hammers.

ABRASION RESISTANT APPLICATIONS

Product name	Corthal® 55Mo
Deposithardness	57-60 HRc
Properties	C-, Cr-, Mo-alloyed flux-cored wire electrode for hardfacing on parts that are exposed to high abrasive mineral wear. In Comparison to Corodur 55, the weld deposit of this electrode has a higher temperature resistance (up to 450 °C). Used for pumps, mixer parts and conveyer screws.
Product name	Corthal® 56
Deposithardness	60-64 HRc
Properties	High Cr-, C-alloyed flux-cored wire electrode for large surfaces that are exposed to high abrasive mineral wear.The weld deposit has a high percentage of M_7C_3 carbides.
Product name	Corthal® 59
Deposithardness	59-61 HRc
Properties	Cr-, C-alloyed flux-cored wire electrode that deposits a high chrome carbide weld metal with excellent resistance to abrasion and moderate impact. Deposits are not machinable.
Product name	Corthal® 59L
Deposithardness	56-59 HRc
Properties	The properties are the same as CORODUR 59. However, the matrix has an higher corrosion resistance than it.
Product name	Corthal® 60
Deposithardness	61-63 HRc
Properties	High Cr-, C-alloyed flux-cored wire electrode for high abrasive wear. The weld deposit consist of chrome- and niobium-carbides. Weld metal is not machinable. Maximum deposit should be limited to three layers.
Product name	Corthal® 61
Deposithardness	62-65 HRc
Properties	High C-, Cr, Nb-, B-alloyed flux-cored wire electrode with special carbides in extreme hardness. This combination results in high abrasion resistance. Applications are found in the hardfacing of mining equipment, augers, impellers and dredgers.
Product name	Corthal® 62
Deposithardness	60-63 HRc
Properties	High C-, Cr, Nb-alloyed flux-cored wire electrode with NbC carbides and a high percentage of hard carbides.
Product name	Corthal® 64
Deposithardness	62-64 HRc Hardness reduction at 400°C app. 15% at 600°C app. 25%

Properties	C-, Cr,B-, W-, V-alloyed flux-cored wire electrode that deposits a very hard martensitic micro structure with carbides. The deposit is resistant against strong mineral abrasion at higher temperatures. This wire can be used for one layer welding without higher hardness lost.
Product name	Corthal® 65
Depositharddness	63-65 HRc *Hardness reduction* *at 400°C app. 4%* *at 600°C app. 10%*
Properties	High C-, Cr-, Mo-, Nb-, V-, W-alloyed flux-cored wire electrode, wich forms extremely hard carbides.This is used for hardfacing against extremely strong mineral wear. The deposit retains its wear resistance up to 650 °C. This wire is recommended for use in sintering plants, augers and blast furnance bells.
Product name	Corthal® 67
Depositharddness	64-67 HRc
Properties	High C-, Cr-, V-alloyed flux-cored wire electrode for extreme abrasive wear even at elevated temperatures. The fine grain structure of the weld deposit prevents a washout of the matrix and therefore the deposit has an extreme high scratch hardness.
Product name	Corthal® 68
Depositharddness	66-68 HRc *Hardness reduction* *at 400°C app. 5%* *at 600°C app. 10%*
Properties	Very high C-, Cr-,B-alloyed flux-cored wire electrodefor extreme hard and non-corrosive hardfacing against very high mineral wear also at high temperatures. The weld deposit has a ledeburitic structure, bearing many various hypereutectic carbides. A maximum deposit thickness of 8 mm (1-2 layers) is recommended.
Product name	Corthal® 72
Depositharddness	60-63 HRc
Properties	High C-, Cr-, Mo-, Nb-, W-alloyed flux-cored wire electrode for abrasive wear. The weld deposit has ledeburitic structure with many different hard carbides. Typical applications are sinter wheel breaker, chutes and coke oven screens.
Product name	Corthal® 75
Depositharddness	62-64 HRc *Hardness reduction* *at 400°C app. 6%* *at 600°C app. 10%*
Properties	High C-, Cr-, Nb-, Mo-, V-, W-alloyed flux-cored wire electrode for mineral wear and use at higher temperatures.