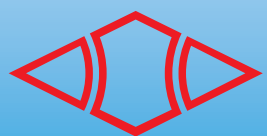


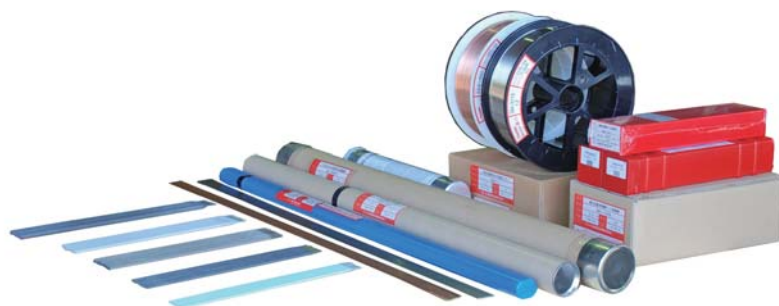
# HISHIKO Welding Consumables



**Hishiko Corporation**

# CONTENTS

<b>Welding Consumables for Surfacing and Repairing on the Mold</b> .....	1
<b>For repairing and overlaying on cast iron</b> GRICAST1 ▪ GRICAST31 ▪ GN - 311 ▪ GN - 55SN ▪ GN-311S .....	2
<b>For direct hardfacing on cast iron</b> MH - 1 ▪ MH-300C ▪ MH - 1S ▪ MH - 2S ▪ MH - 100S ▪ OMH - 1 ▪ MH - 400S .....	3
<b>For hardfacing on steel</b> EA600W ▪ GRIDUR61 ▪ MH-5 ▪ EDS-600 ▪ MH-5S .....	4
<b>For abrasion-resistant from earth and sand</b> WEARSHIELD ME(e) ▪ KF - 30CR ▪ KF - 25CR - 3 .....	5
<b>For repairing on stainless steel and high-carbon steel</b> GRINOX29 ▪ GRINOX29S .....	6
<b>For aluminum alloy</b> GRILUMIN14 .....	7
<b>Gas welding consumable for copper and copper alloy</b> EXTRON .....	7



## Welding Consumables for Surfacing and Repairing on the Mold

Application	Remark	Covered Electrode	MAG Weling Wire	TIG Welding Electrode	Cr Plating		PVD	CVD	PPD
					Fluoride Bath	Sergeant's Bath			
For Overlaying on Cast Iron	100%Ni	GRICAST1 GN-100	GN-100S	GN-100T	△	○*1			
	55%Ni-Fe	GRICAST3	GN-55SN	GN-55T					
	55%Ni-Fe clad rod	GRICAST31							
	40%Ni-Fe clad rod	GN-311	GN-311S	GN-311T					
	Steel Type	GN-V5	GRIDUCT S-V5	GN-V5T					
GN-80K		GN-80KS	GN-80KT						
For Direct Hardfacing on Cast Iron	HRC 55~58	MH-1	OMH-1	OMH-1T	○	○			○
	HRC 50	MH-300C	MH-400S	MH-400T					
		MH-500S							
		MH-1S							
	HRC 40~45	MH-100S	MH-400S	MH-400T					
		MH-100M							
HRC 30~40	MH-100C	MH-100CS	MH-100CT		△	○			
HRC 20~30	MH-200C	MH-200CS	MH-200CT						
For Hardfacing on Cast Iron	For underlaying	MH-2S	MH-400S	MH-400T	○	○	○	○	
	For overlaying	EA600W	EDS-600	EDS-600T					
	HRC 55~60	GRIDUR61	MH-61S	GRIDUR61T					
For Hardfacing on Steel	HRC 55~60	EA600W	EDS-600	EDS-600T	○	○	△		
	HRC 50~55	KT-11CR	MH-13HS	MHP-13T					
	* Marageing Steel As Welded Condition: HRC35~40 After Ageing Treatment: HRC45~50	MH-NCM1	NCM-1S	NCM-1T					
For Flame-hardened Steel	HMD, ICD, OKS, SX105V and etc.	MH-5	MH-5S	MH-5T	○	○			
For Hardfacing on Tool Steel and etc.	HRC 60~63	GRIDUR36	—	MH-115T	△				
	HRC 55~60	—	—	MH-11T	○	○	○	○	
GRIDUR61		MH-61S	GRIDUR61T						
SK, SKS, SKD and etc.  * Surfacing after Heat Treatment * SKD11: Before Quenching	HRC 53~58	EA600W	EDS-600	EDS-600T	○	○			
		MH-650	MH-61S	GRIDUR61T					
		MH-650R							
For Anti Scuffing	Special Aluminum Bronze	HCU-8AN	HCU-8ANS	HCU-8ANT	-	○*1	-	-	
Repairing cracks and dissimilar metal welding (SUS312 type)		GRINOX29	GRINOX29S	GRINOX29T	-	-	○	△	

PVD: Physical Vapor Deposition

CVD: Chemical Vapor Deposition

PPD: Pulsed Plasma Deposition

\*1: Can be plated but adhesion is weak

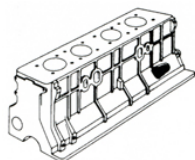
- : Nothing Particular

# For repairing and overlaying on cast iron

## GRICAST 1

JIS E C Ni-CI  
AWS ENi-CI

Equivalent to MAG welding solid wire GN-100S  
Equivalent to TIG welding electrode GN-100T

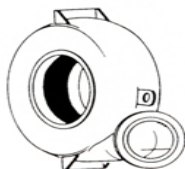


Pure Nickel cold welding on cast iron. Good welding activity. Crack repairing, filling of defects, joint welding on cast iron, overlaying and repairing on mould and cylinder block, cast iron tube, machinery fixture repairing and joint welding.

## GRICAST 31

JIS E C NiFe-CI  
AWS ENiFe-CI

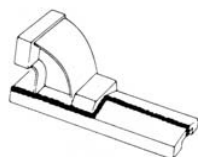
Equivalent to MAG welding solid wire GN-55SN  
Equivalent to TIG welding electrode GN-55T



Cold welding covered electrode (55% Nickel) with Iron and Nickel clad rod. No over-heat during continuous welding with stable arc. Tensile strength of deposited metal, resistance to cracking and machinable. Usable with all-position.

## GN-311

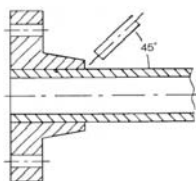
Equivalent to MAG welding solid wire GN-311S  
Equivalent to TIG welding electrode GN-311T



The Nickel content of deposited metal is 40%. Good adherability in case of applying hard chrome-plating on mould for automobile after welding.

## GN-55SN

Equivalent to covered arc electrode GRICAST31  
Equivalent to TIG welding electrode GN-55T



Iron/Nickel solid wire for overlaying on cast iron and Nickel content is about 55%. Less crack and blowhole and better bead appearance compared to flux cored wire. Most suitable for overlaying on mould.

## GN-311S

Equivalent to covered arc electrode GN-311  
Equivalent to TIG welding electrode GN-311T

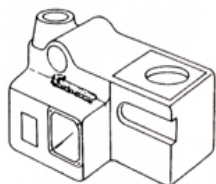


Iron/Nickel MAG solid welding wire for repairing and overlaying on cast iron. Nickel content of deposited metal is about 40%. Good adherability in case of applying hard chrome-plating on mould for automobile after welding.

# For direct hardfacing on cast iron

## MH-1

Equivalent to solid wire OMH-1  
Equivalent to TIG welding electrode OMH-1T



Covered electrode for hardfacing on cast iron and can be welded on cast iron directly. Also, the hardness of weld metal is HRC55~60 in the second layer.

## MH-300C

Equivalent to TIG welding electrode MH-400T

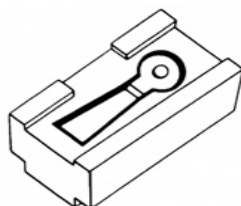


MH-300C is the covered electrode for direct hardfacing on cast iron. MH-300C can be welded on cast iron directly. The hardness of the deposited metal is between HRC45 and HRC50. MH-300C is suitable for hardfacing on the press mold which abrade severely or is subjected to high contact pressure.

## MH-1S

Equivalent to TIG welding electrode MH-400T

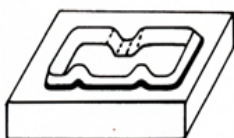
Covered electrode for direct hardfacing on cast iron and the hardness of deposited metal is about HRC50. Most suitable for underlaying of EA600W on mould edge preparation and repairing on mould surface.



## MH-2S

Equivalent to TIG welding electrode MH-400T

The hardness of MH-2S is lower than that of MH-1 and 1st layer HRC50, 2nd layer HRC40 and 3rd layer HRC30. Covered electrode which can be directly welded on cast iron mould as substitute for conventional Fe-Ni type.



## MH-100S

Equivalent to MAG welding solid wire MH-400S  
Equivalent to TIG welding electrode MH-400T

Suitable for hardfacing on die face surface of which abrasion property is high and bead part which has high pressure press. Designed to be directly welded on cast iron base metal so that underlaying with Nickel or Iron/Nickel on cast iron is not required.

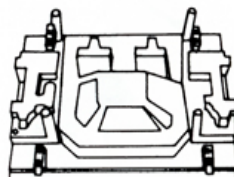
## OMH-1

Equivalent to covered arc electrode MH-1  
Equivalent to TIG welding electrode OMH-1T

Solid wire for edge preparation which can be directly welded on cast iron mould. The hardness of weld metal is HRC55~58 and stable. Compared to flux cored wire, less blow hole and better bead appearance.

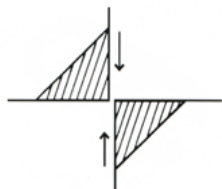
## MH-400S

Equivalent to covered arc electrode MH-100S  
Equivalent to TIG welding electrode MH-400T



MH-400S is solid wire for MAG welding equivalent to aforementioned MH-100S. The performance is equal to MH-100S. Less fume compared with flux cored wire and good welding activity and bead appearance.

# For hardfacing on steel



## EA600W

Equivalent to MAG welding solid wire EDS-600  
Equivalent to TIG welding electrode EDS-600T

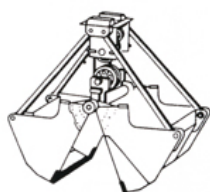
Low hydrogen type covered electrode, hardness HRC55~60, less uneven hardness due to high alloy core wire. Composition of deposited metal is even. Excellent performance as antiwear and heat resistant overlaying. Most salable item for edge preparation and overlay-repairing on mould in automobile industry.



## GRIDUR 61

Equivalent to MAG welding solid wire MH-61S  
Equivalent to TIG welding electrode GRIDUR 61T

Low hydrogen type covered electrode designed for welding SKD11 or similar product and shows high antiwear from low to high temperature. The deposited metal consists of martensite composition as the base and various carbides and has excellent anti-crack performance.



## MH-5

Equivalent to MAG welding solid wire MH-5S  
Equivalent to TIG welding electrode MH-5T

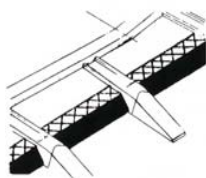
This covered electrode is low hydrogen type and is suitable for hardfacing on automobile cold mould (HMD-5, ICD-5, SX105V, etc.) and the hardness of deposited metal is HRC50 after welding and about HRC60 after quenching. High welding activity and anti-crack performance



## EDS-600

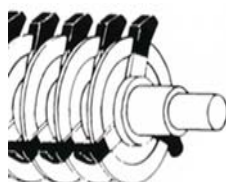
Equivalent to covered arc electrode EA600W  
Equivalent to TIG welding electrode EDS-600T

Most suitable solid wire for edge preparation on mould. The hardness of deposited metal is HRC55~58 and usable combined with EA600W.



## MH-5S

Equivalent to covered arc electrode MH-5  
Equivalent to TIG welding electrode MH-5T

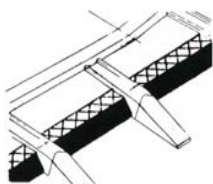


MH-5S is solid wire for MAG welding which is equivalent to aforementioned MH-5. The performance is equal to MH-5. Less fume compared with flux cored wire and good welding activity and bead appearance.

# For abrasion-resistant from earth and sand

## **WEARSHIELD ME (e)**

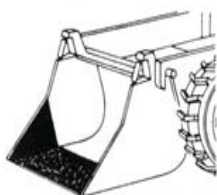
Equivalent to carbon dioxide flux wire  
KFW-30Nb



The deposited metal contains chrome carbide with high abrasion-resistant, good and stable arc start, and also good detachability. Not suitable for multi-overlaying and 2 or 3 layers are perfectly suit. For hardfacing on structural steel, cast steel, machinery parts and devices made of manganese steel and high abrasion-resistant from sand, gravel, mineral ore, etc .

## **KF-30CR**

Equivalent to carbon dioxide flux wire  
KFW-30Nb

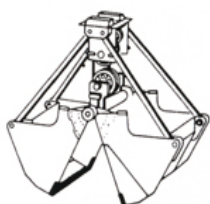


Excellent abrasion-resistant as the deposited metal contains high hardness chrome carbide. Good arc start and detachability of slag. Not suitable for multi-overlaying and ES309 equivalent is used on underlayer in case of over 3 layers. For hardfacing on structural steel, cast steel, machinery parts and devices made of manganese steel and high abrasion-resistant from sand, gravel, mineral ore, etc.



## **KF-25CR-3**

Equivalent to carbon dioxide flux wire  
KFW-30Nb3



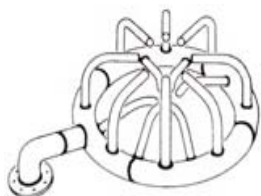
Covered electrode for hardfacing with special carbide for abrasion-resistant. The deposited metal contains C, Cr, Nb, Mo, W, and V. Used for abrasion-resistant overlaying on machinery parts extremely worn out by sand, gravel, coal mineral ore, cement, etc. The deposit metal is only machined by grinder. Not suitable for welding over 3 layers.

## For repairing on stainless steel and high-carbon steel

### GRINOX 29

JIS ES312-16  
AWS E312-16

Equivalent to MIG solid wire GRINOX 29S  
Equivalent to TIG welding electrode GRINOX 29T



Lime-titania type and austenite + ferrite type special covered electrode. Suitable for connecting alloy with high sensitive crack, corrosion resistant and abrasion resistant by overlaying and inter layer welding for crack prevention as it is designed to be a component which has less contraction stress during cooling process. Good work hardening and impact wear. Also, good result against high-temperature oxidization due to high Cr. Excellent workability and stable arc even with low electric current. Good adhesion and flat and smooth bead. Applicable to dissimilar metal welding, steel with unknown component, steel with difficult welding and tool steel. HV250 hardness, HV440 hardness after work hardening and 800N/mm<sup>2</sup> tensile strength.

### GRINOX 29S

JIS Y312  
AWS ER312

Equivalent to covered arc electrode GRINOX 29  
Equivalent to TIG welding electrode GRINOX 29T

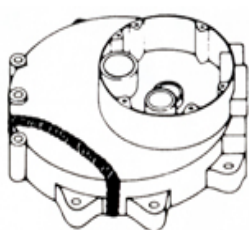


GRINOX29S is solid wire of which deposited metal has the same performance as GRINOX29. Suitable for steel welding with high cracking sensitivity as the setup is to minimize the stress of expansion and contraction generated during heating and cooling process. Good for underlaying of GRIDUR61 and repairing alloy tool steel such as SKD11 and SKD61.



## For aluminum alloy

### GRILUMIN 14 JIS AI-43



Covered electrode for aluminum alloy. Preferable to be used with a DC drooping characteristic welding machine which has fine adjustment at over 70V non-load voltage. Suitable all types of aluminum alloy welding. Good adhesion and less blow hole due to special coating. Needs to hold a electrode vertically against base metal. Tensile strength 160N/mm<sup>2</sup> and elongation 15% .

## Gas welding consumable for copper and copper alloy

### EXTRON



brass gas welding electrode. 880°C solidus line, 895°C liquidus line, 880°C~950°C working temperature. Superior soldering and welding for steel/special steel/cast iron by combination use with vaporised flux or SILVAX compared to brass brazing and tobin type rod. Used for connecting on bicycle frame, automobile parts, steel pipe furniture, various pipework and brazing, overlaying, repairing . Cu、Zn、Ni and other components and tensile strength 390N/mm<sup>2</sup> .







# Hishiko Corporation

## International Trading Department

3-13-1 Hongo, Bunkyo-ku, Tokyo 113-0033 Japan

Tel: +81-3-5800-6656 Fax: +81-3-5800-6657

Mail: kokusaibu@hishiko.co.jp

## Special Welding Consumables Department

<http://www.hishiko.co.jp>

3-13-1 Hongo, Bunkyo-ku, Tokyo 113-0033 Japan

Tel: +81-3-5800-6656 Fax: +81-3-5800-6657

Mail: welding@hishiko.co.jp

### Tokyo Office

3-13-1 Hongo, Bunkyo-ku, Tokyo 113-0033 Japan

Tel: +81-3-5800-6655 Fax: +81-3-5800-6658

### Head Quoter

3-13-1 Hongo, Bunkyo-ku, Tokyo 113-0033 Japan

Tel: +81-3-5800-6655 Fax: +81-3-5805-6931

### Nagoya Office

12-9 Ushimaki town, Mizuho-ku, Nagoya city,  
Aichi 467-0863 Japan

Tel: +81-52-883-3031 Fax: +81-52-883-5345

### Osaka Office

2-4-15, Chuo, Jyoto-ku, Osaka city,  
Osaka 586-0005 Japan

Tel: +81-6-6939-2043 Fax: +81-6-6939-7910

### Kawagoe Factory

2-8-9 Yoshinodai, Kawagoe-city,  
Saitama 350-0833 Japan

Tel: +81-49-223-1701 Fax: +81-49-223-1901

### Kawagoe Delivery Center

2-8-9, Yoshinodai, Kawagoe-city,  
Saitama 350-0833 Japan

Tel: +81-49-223-1456 Fax: +81-49-223-1444

### Distributor

• Due to constant improvements, the specification in this text is subject to change without prior notice.  
The content of this is current as of June 2016.