



# METKON

## Application Note

Metallographic preparation of coated steel sheet

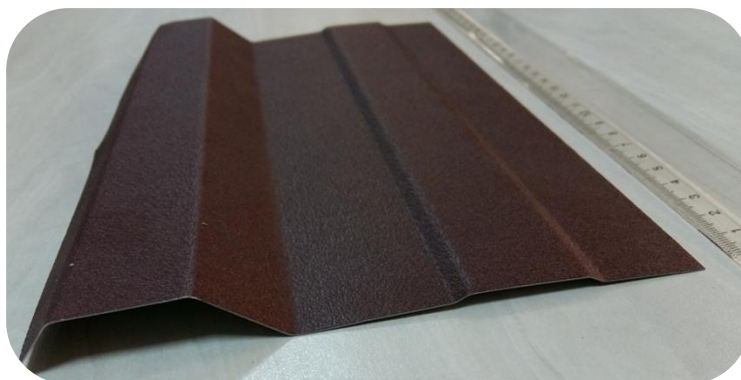


### INDEX

1. INTRODUCTION
2. APPLICATION REQUIREMENTS
3. SAMPLE PREPARATION PROCESSES
4. RESULT



In this application, steel sheet that has plastic and zirconium phosphate will prepare as metallographic purpose.



## Application Requirements



	Order Code	Description
Equipment Used	14 67	SERVOCUT 401 AA
Clamping Devices	15 01	Vertical Clamping Device with clamping shoe up to 90mm
	15 02	Vertical Clamping Device with clamping shoe up to 115mm
Cutting Fluid	19 902	Nature Friendly Soluble Oil, 5 lt.
Cutting Disc	19-060 / 19 062	TRENO NF Ø 350 mm and TRENO M Ø 350

	Order Code	Description
Equipment Used	17 06	MICRACUT 201
Clamping Device	GR 0548	Quick acting clamping vise assembly
	GR 0400	Universal specimen vise
Cooling Fluid	19 905	METCOOL II Cooling Fluid, 1 lt.
Cutting Disc	19-151	TRENO HP Ø150 mm

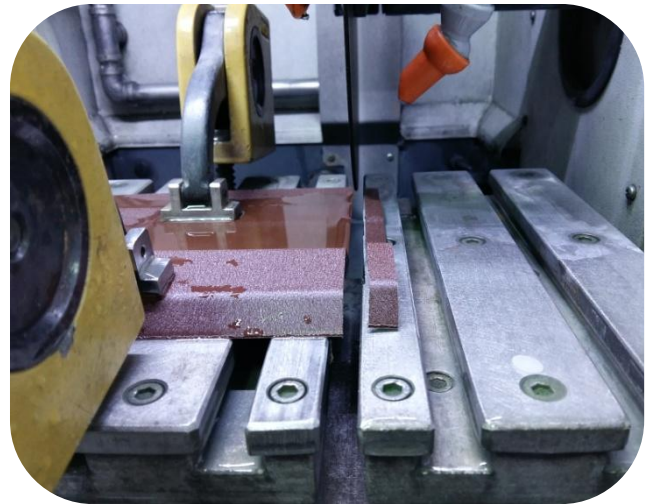
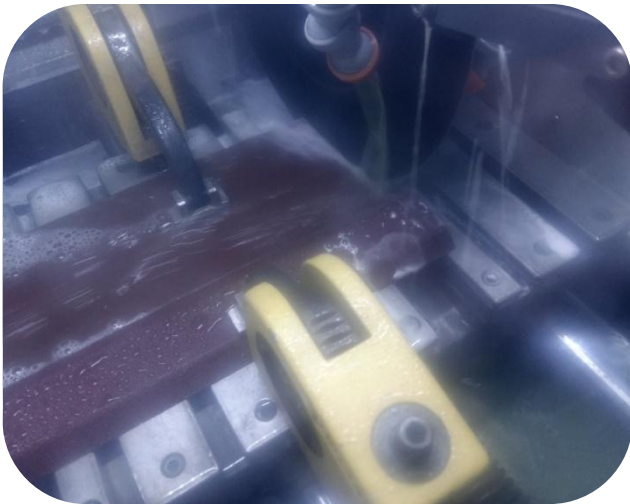
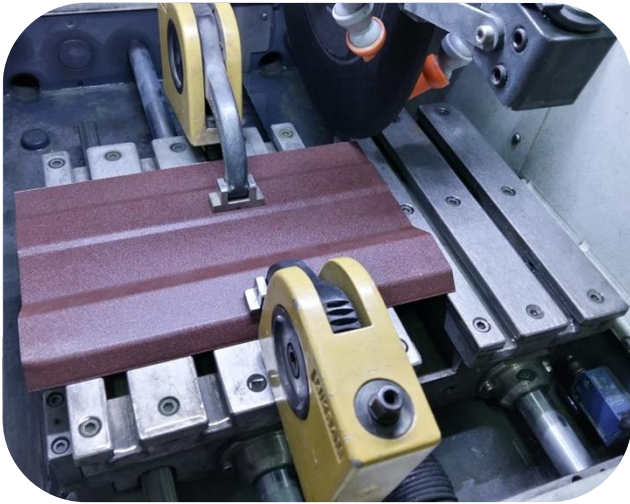


	Order Code	Description
Equipment Used	25 07	ECOPRESS 100
Accessories	26 06-02	Mould Assembly, 40mm
	29 601	Stainless steel clips
Mounting Powder	29-010	NET 1kg.

	Order Code	Description
Equipment Used	36 09-250 / 30 09	FORCIPOL 2V / FORCIMAT
Accessories	31 22	Aluminum Disc, 250 mm
	31 63	Splash Guard, 250 mm
	39-003-250	Ø 250 mm, Special Magnetic Foil
	39-093-250	Ø 250 mm, Thin Metal Plate(5 pcs)
Sample Holder	33 01	Sample holder, 6 x Ø40 mm

## Sample Preparation Processes

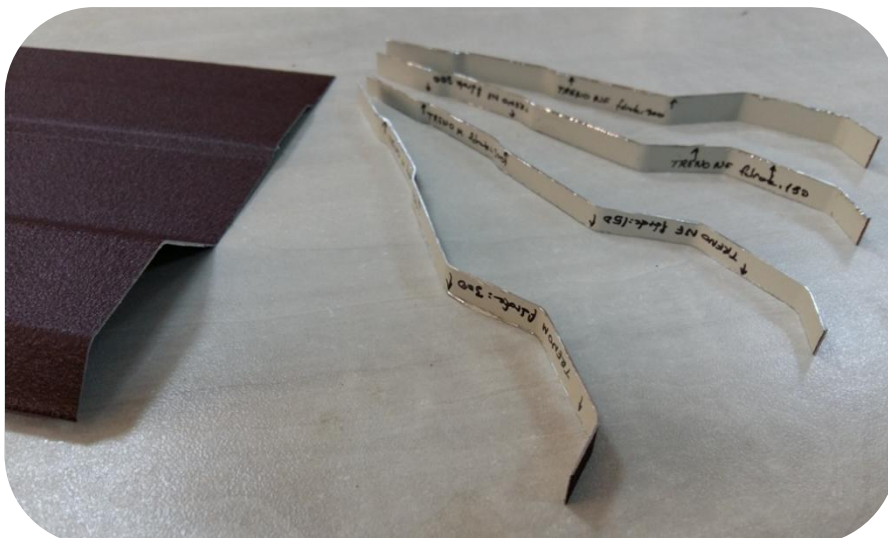
Samples clamped with the help of 15 01 & 15 02 Vertical Clamping Devices and fix to the SERVOCUT 401 table.



In the cutting operation, that two kind of disc (TRENO NF / TRENO M) were used for comparison of cutting surface.

Cutting parameters are:

**Feed rate:** 150 - 300  $\mu$ /sec. **RPM:** 2800 r/min.

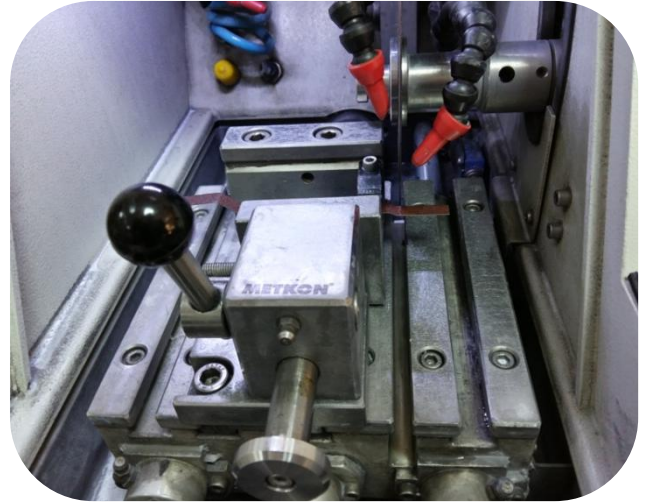




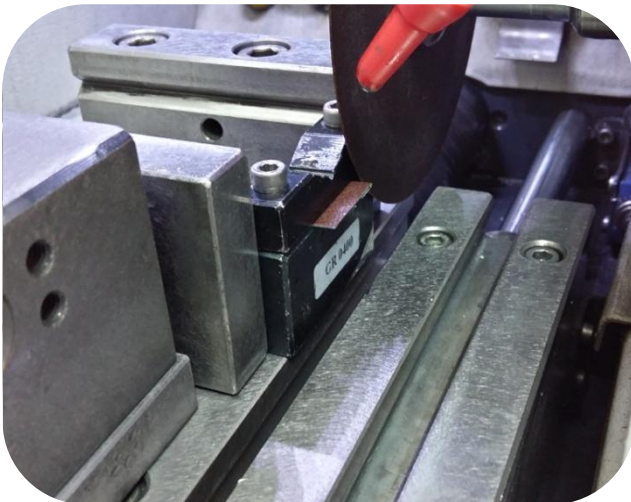
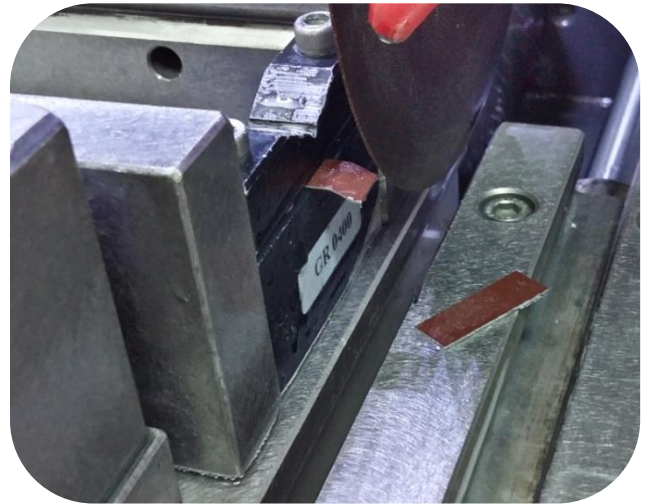
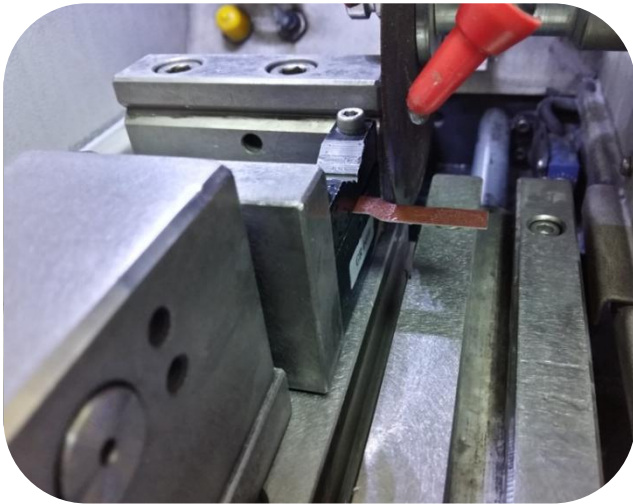
In the precision cutting step, GR 0548 and GR 0400 vises were preferred.



GR 0400

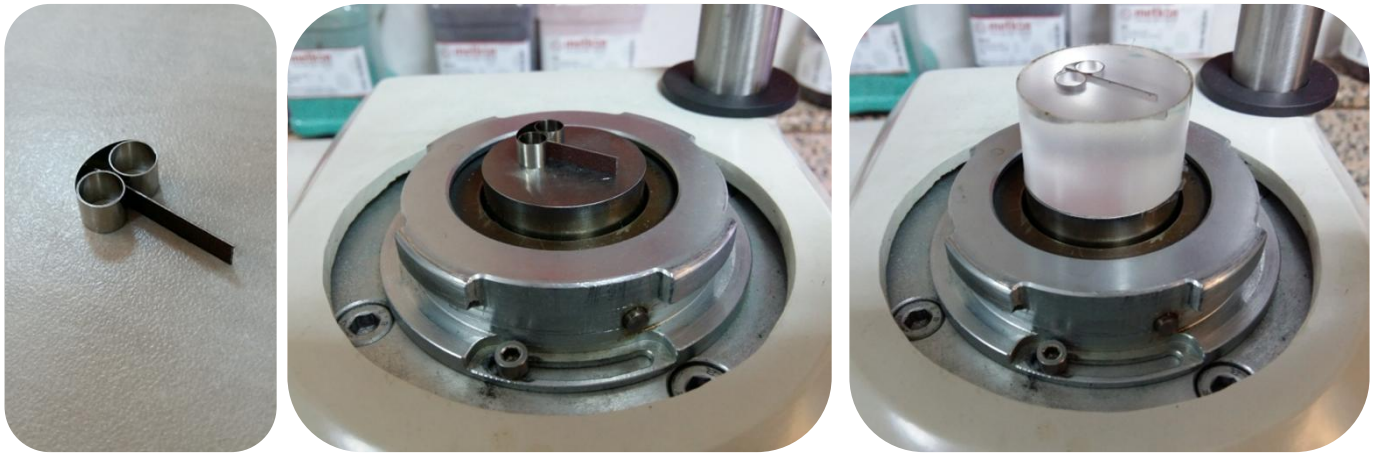


GR 0548 & GR 0400



Precision cutting parameters are:  
**Feed rate:** 20  $\mu$ /sec. **RPM:** 3000 r/min.

Cutted sample mounted with ECOPRESS 100 Automatic mounting press.

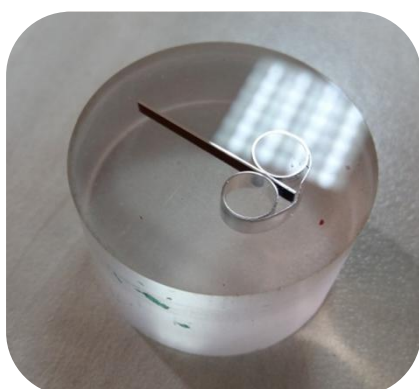


Mounting parameters;

**Heating Temperature** : 180°C  
**Pressure** : 250 bar  
**Heating Time** : 3 mins.  
**Cooling Type** : Slow cooling Open:5 Close:30  
**Cooling Temperature** : 35°C

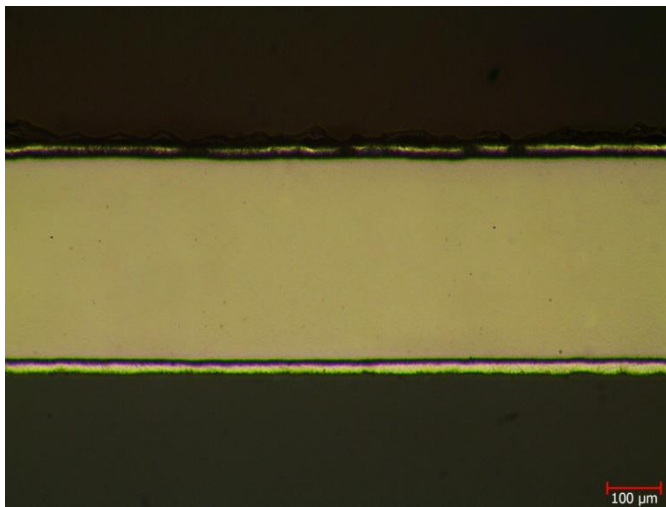
Samples have been prepared with the parameters below;

	<i>Surface</i>	<i>Abrasive</i>	<i>Lubricant</i>	<i>Force per sample(N)</i>	<i>Time(min.)</i>	<i>Disk speed(rpm)</i>	<i>Head speed(rpm)</i>
Grind. Step 1	<i>DEMPAX</i> [38-040-320]	320 grit SiC	Water	15 N	Until Plane.	250 CW	100 CW
Grind. Step 2	<i>DEMPAX</i> [38-040-600]	600 grit SiC	Water	20 N	2 min.	250 CW	100 CW
Grind. Step 3	<i>DEMPAX</i> [38-040-1200]	1200 grit SiC	Water	20 N	2 min.	250 CW	100 CW
Polishing Step 1	<i>Metapo-P</i> [39-013-250]	<i>DIAPAT-M 6μ</i> [39-430-M]	<i>DIAPAT</i> [39-502]	20 N	2 min.	150 CW	75 CCW
Polishing Step 2	<i>Metapo-B</i> [39-033-250]	<i>DIAPAT-M 3μ</i> [39-420-M]	<i>DIAPAT</i> [39-502]	20 N	2 min.	150 CW	75 CCW
Polishing Step 3	<i>FEDO-1</i> [39-065-250]	<i>DIAPAT-M 1μ</i> [39-410-M]	<i>DIAPAT</i> [39-502]	15 N	1 min.	150 CW	50 CCW

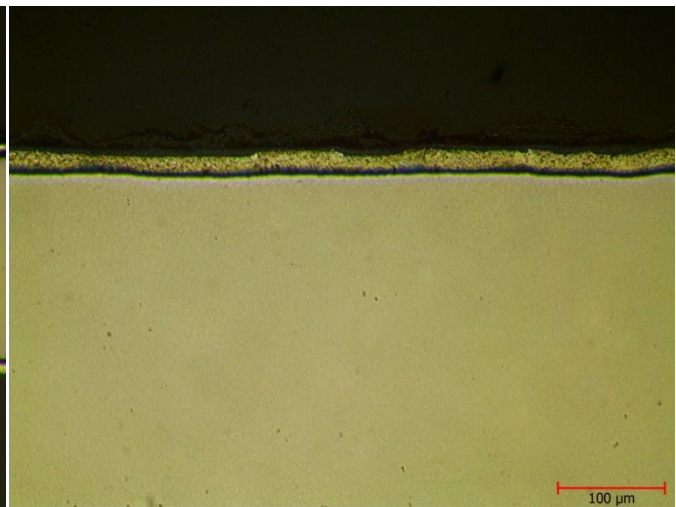




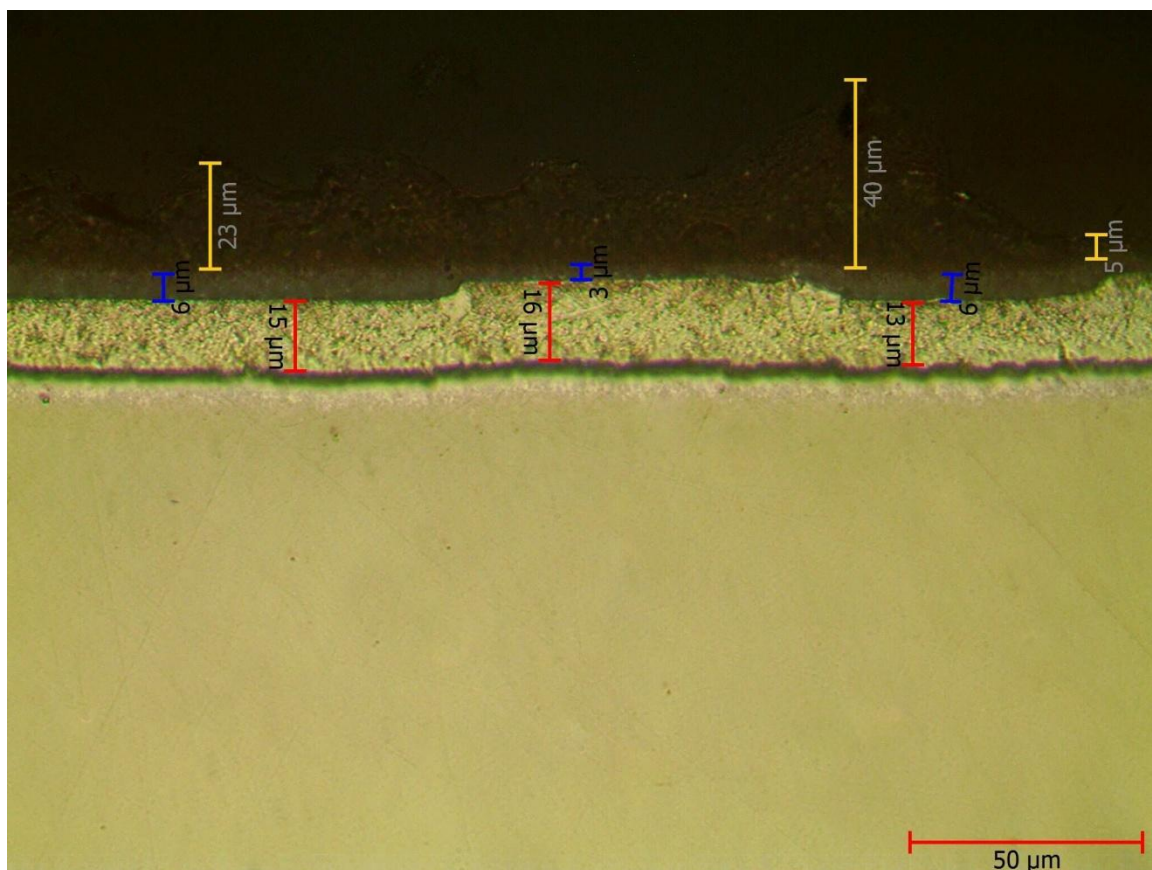
Sample photos from under the microscope and measurement of coating.



100x



200x



500x



**metkon**<sup>®</sup>  
Technology behind Specimen

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