



ESACOTE UA 7023

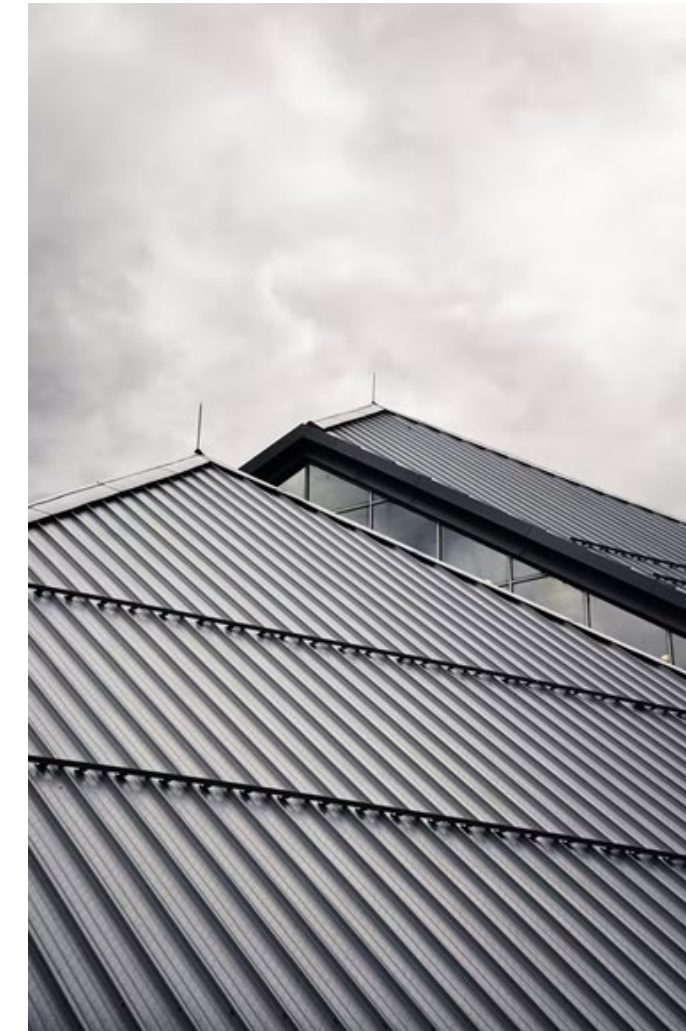
Solvent free & self crosslinking urethaneacrylic for Al coating

Hard substrates film former laboratory



Introduction

- ESACOTE UA 7023 is a new self crosslinking waterborne urethanacrylic binder
- It is based on low VOC technology for being suitable for the most stringent environmental regulations.
- Being co-solvent free and having low VOC allows coating producers maximum without compromising final performance
- It shows outstanding performance as a waterborne binder for aluminium coating
- It is suitable for applications like constructions, home appliances, HVAC, OEM automotive and car refinishing





ESACOTE UA 7023

TECHNICAL DATA & MAIN PROPERTIES

Typical values

Appearance at 25 °C:	opalescent liquid
pH: (at 25°C on supplied product, ASTM E 70):	7.0-9.0
Viscosity (cPs) (Brookfield RVT @ 25 °C, 50 rpm spindle 1)	< 300
Solid content, %:	34.0-36.0

Product properties

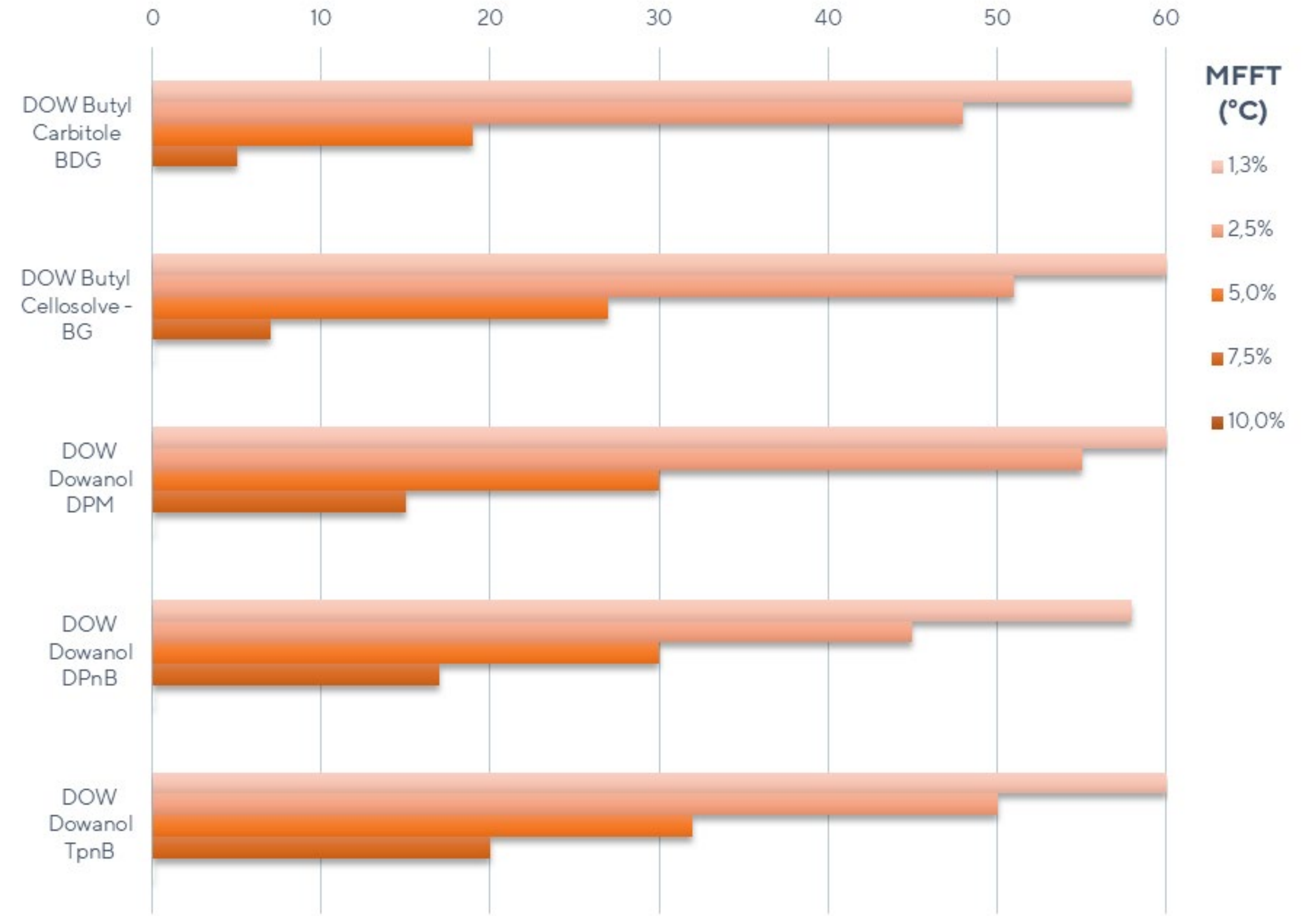
Solvent content, % :	0%
Density, @ 25°C g/ml:	1.01 -1.03
Minimal film forming temperature, °C:	~60
Koenig hardness (s)	~140
Film aspect:	hard, transparent and glossy

Please contact our sales representatives for test methods details.

- Selfcrosslinking urethanacrylic hybrid
- Cosolvent free
- Low VOC
- Quick drying & good hardness development
- High gloss, transparent & tough film
- Good balance of elasticity & hardness
- Good mechanical, stain and chemical resistances also in 1K systems
- Excellent flow and levelling



MFFT reduction



MFFT (°C)

Co-solvent	0,0%	1,3%	2,5%	5,0%	7,5%	10,0%
DOW Butyl Carbitole BDG	60	58	48	19	5<	-
DOW Butyl Cellosolve - BG	60	60	51	27	7	5<
DOW Dowanol DPM	60	60	55	30	15	5<
DOW Dowanol DPnB	60	58	45	30	17	5<*
DOW Dowanol TpnB	60	60	50	32	20	5<*

Solvent premixed with water 1:1

*At 10% of TpNB and DPnB viscosity increased

A scientist with brown hair in a ponytail, wearing a white lab coat, is seen from behind in a laboratory. She is working at a bench with various glassware, including a rack of test tubes and several bottles. The background shows shelves with more laboratory equipment and a window. The text "Laboratory comparison" is overlaid in the center of the image.

Laboratory comparison

Market benchmark vs ESACOTE UA 7023



Laboratory comparison

- We have carried out an internal evaluation on ESACOTE UA 7023 comparing it with a market benchmark well known for aluminium coatings
- Market benchmark is a waterborne polyurethane dispersions based on polycarbonate polyols and containing 8% of cosolvents
- Market benchmark has been approved and regularly used for several different applications in aluminium coating like
 - Home appliances (LCD screens body)
 - OEM automotive (car wheels)
 - Car refinishing (car wheels)
 - Constructions (roller shutters & blinds)
- In the following slides there are summarized results of a comparison in between market benchmark and ESACOTE UA 7023



Products comparison

ESACOTE UA 7023

Typical values

Appearance at 25 °C:	opalescent liquid
pH: (at 25°C on supplied product, ASTM E 70):	7.0-9.0
Viscosity (cPs) (Brookfield RVT @ 25 °C, 50 rpm spindle 1)	< 300
Solid content, %:	34.0-36.0

Product properties

Solvent content, % :	0%
Density, @ 25°C g/ml:	1.01 -1.03
Minimal film forming temperature, °C:	~60
Koenig hardness (s)	~140
Film aspect:	hard, transparent and glossy

Please contact our sales representatives for test methods details.

Market benchmark

Typical values

Appearance at 25 °C:	clear liquid, slightly cloudy
pH: (at 25°C on supplied product, ASTM E 70):	7.0-9.0
Viscosity (cPs) (Brookfield RVT @ 25 °C, 50 rpm spindle 2)	< 600
Solid content, %:	34.0-36.0

Product properties

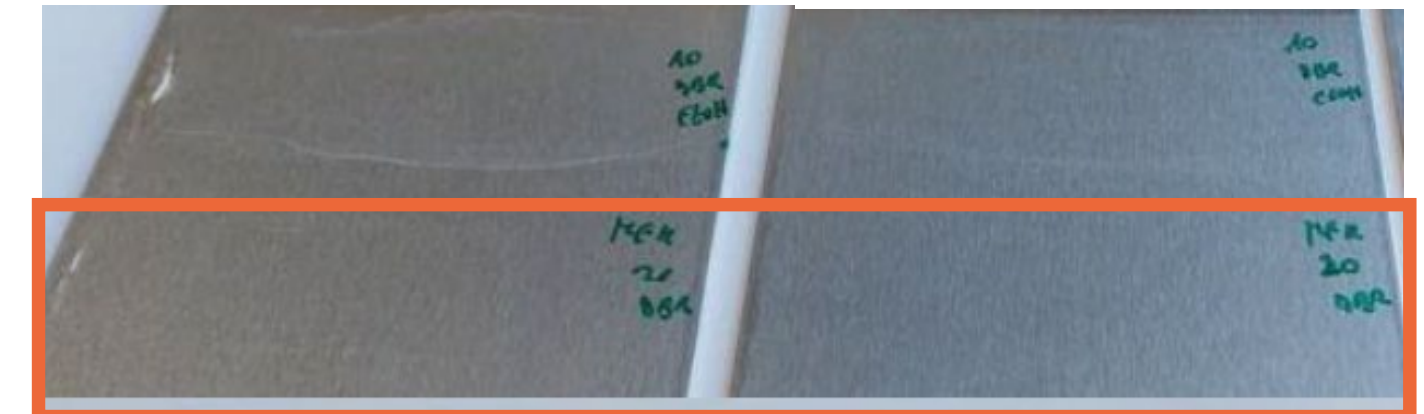
Solvent content, % :	8%
Density, @ 25°C g/ml:	~1.05
Minimal film forming temperature, °C:	~25
Koenig hardness (s)	~127
Film aspect:	hard, transparent and glossy

MEK double rubs

- 4 μm dry film thickness
- **130 °C peak metal temperature**

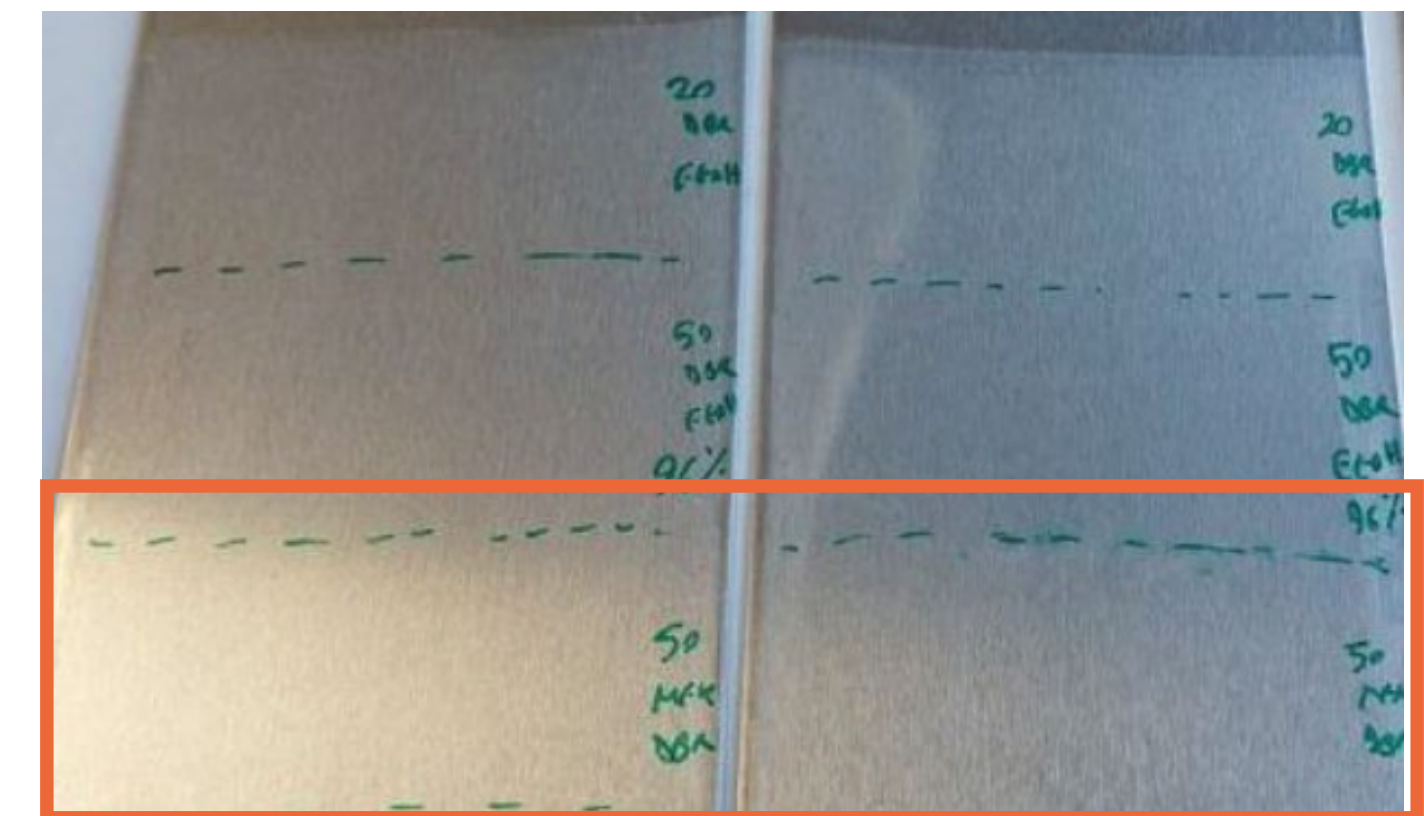
Reference 1K

ESACOTE UA 7023 1K



Reference 2K

ESACOTE UA 7023 2K



SAMPLES	MEK DR
Reference	20 DR – Coating still OK
Reference + 17% BK	50 DR – Coating still OK
ESACOTE UA 7023 + 8% BDG	20 DR – Coating still OK
ESACOTE UA 7023 + 8% BDG + 17% BK	50 DR – Coating still OK

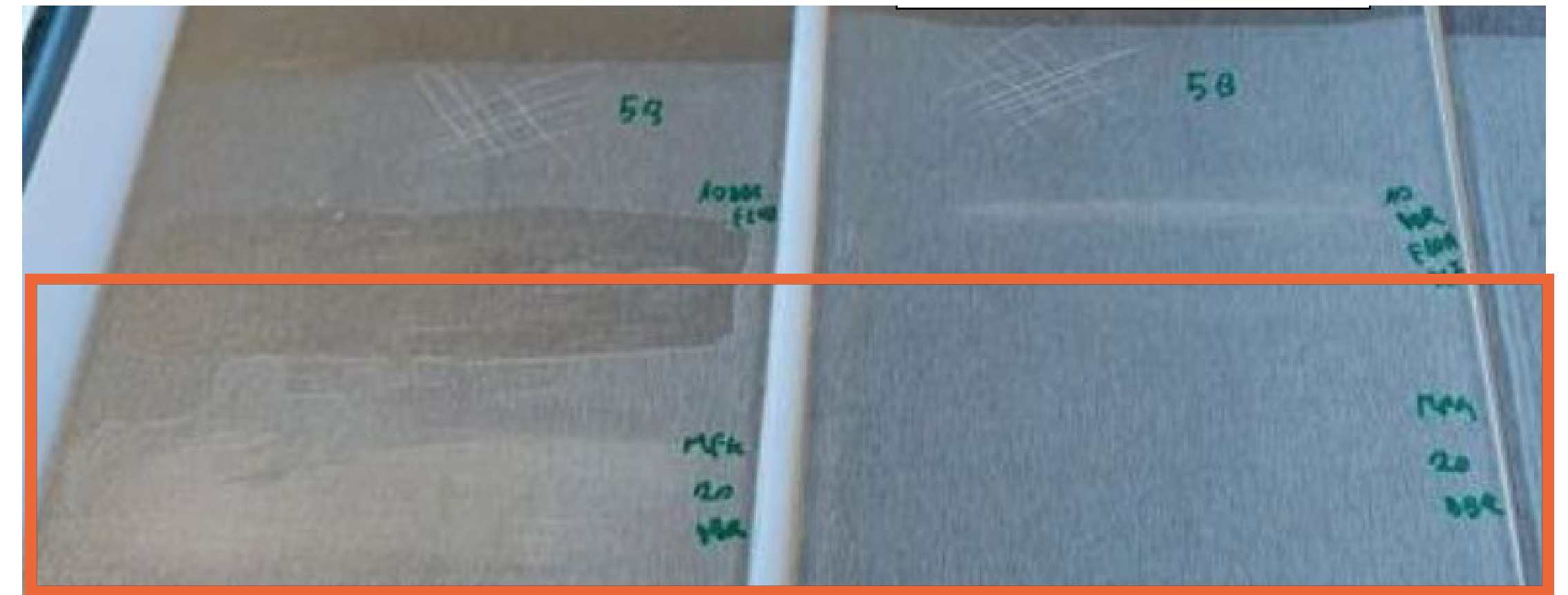
BK = blocked
NCO crosslinker

MEK double rubs

- 4 µm dry film thickness
- **Dried at room temperature**

Reference 1K

ESACOTE UA 7023 1K



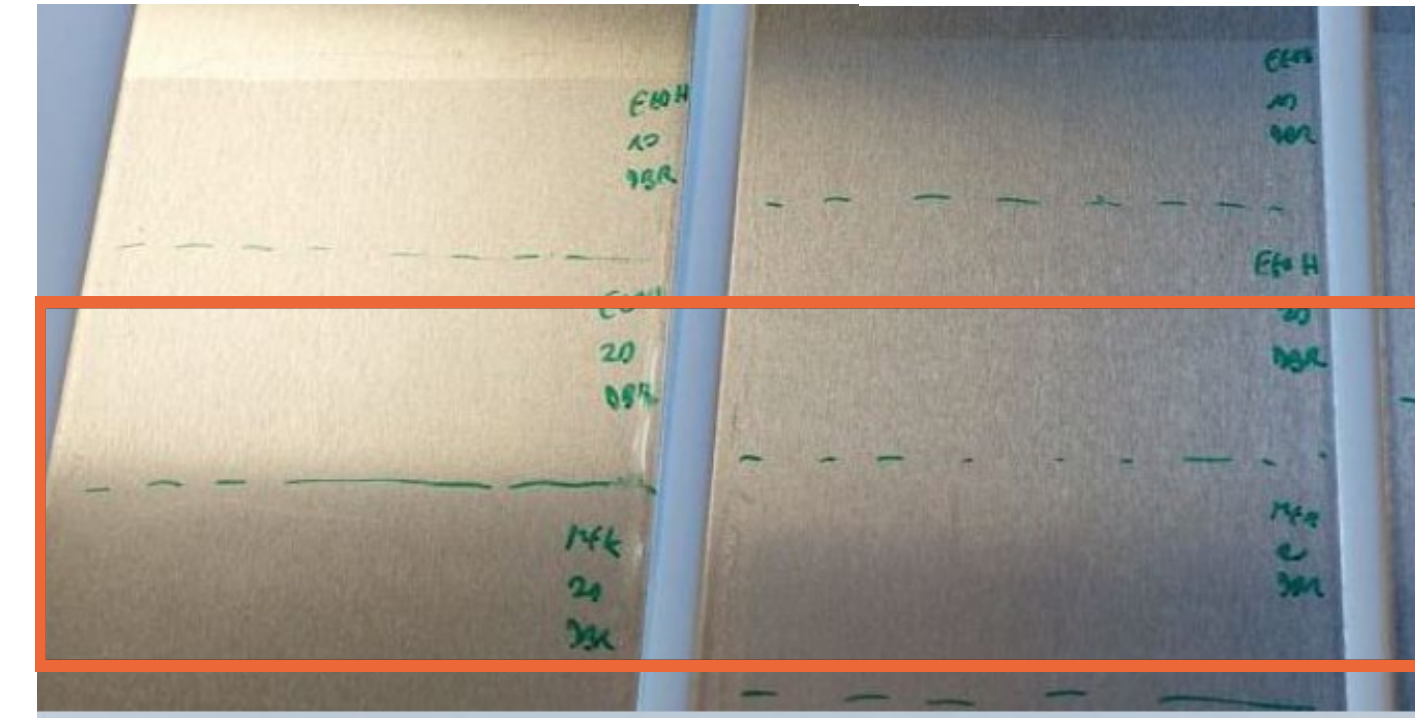
SAMPLES	MEK DR
Reference	20 DR – A little bit of whitening
ESACOTE UA 7023 + 8% BDG	20 DR – Coating still OK

EtOH double rubs

- 4 μm dry film thickness
- **150 °C peak metal temperature**

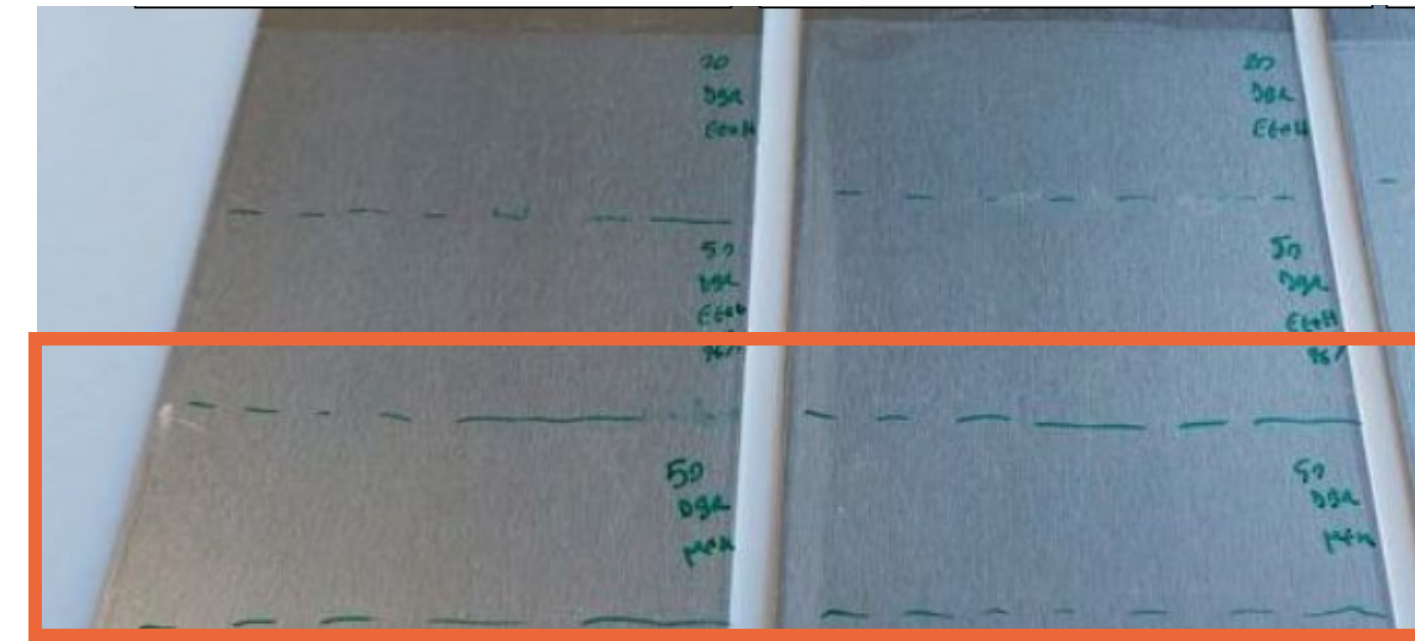
Reference 1K

ESACOTE UA 7023 1K



Reference 2K

ESACOTE UA 7023 2K



SAMPLES	EtOH DR
Reference	20 DR – Coating still OK
Reference + 17% BK	50 DR – Coating still OK
ESACOTE UA 7023 + 8% BDG	20 DR – Coating still OK
ESACOTE UA 7023 + 8% BDG + 17% BK	50 DR – Coating still OK

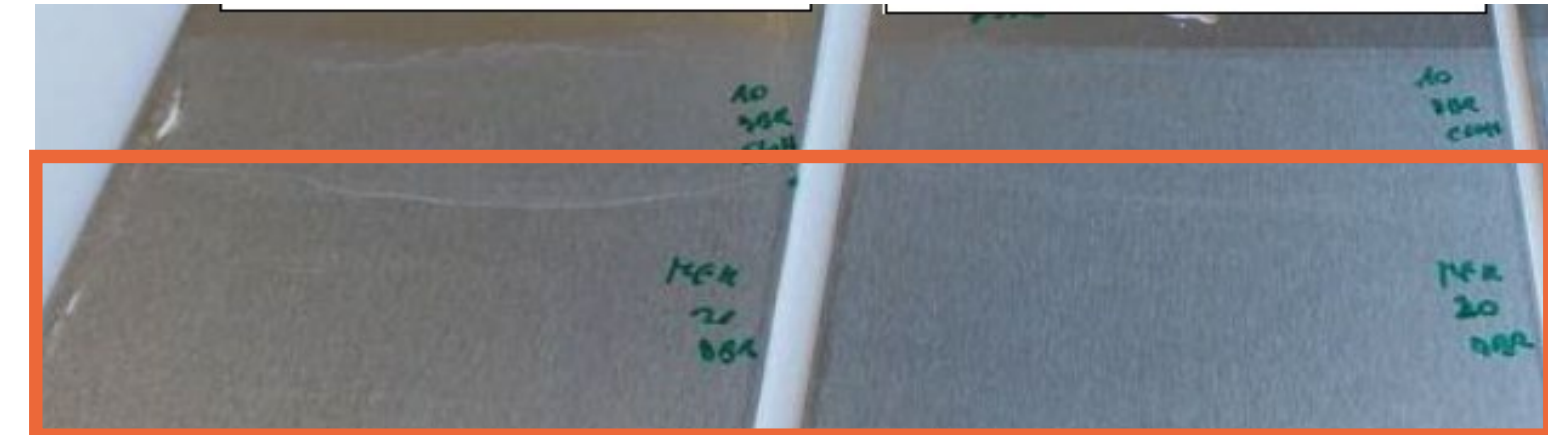
BK = blocked
NCO crosslinker

EtOH double rubs

- 4 μm dry film thickness
- **130 °C peak metal temperature**

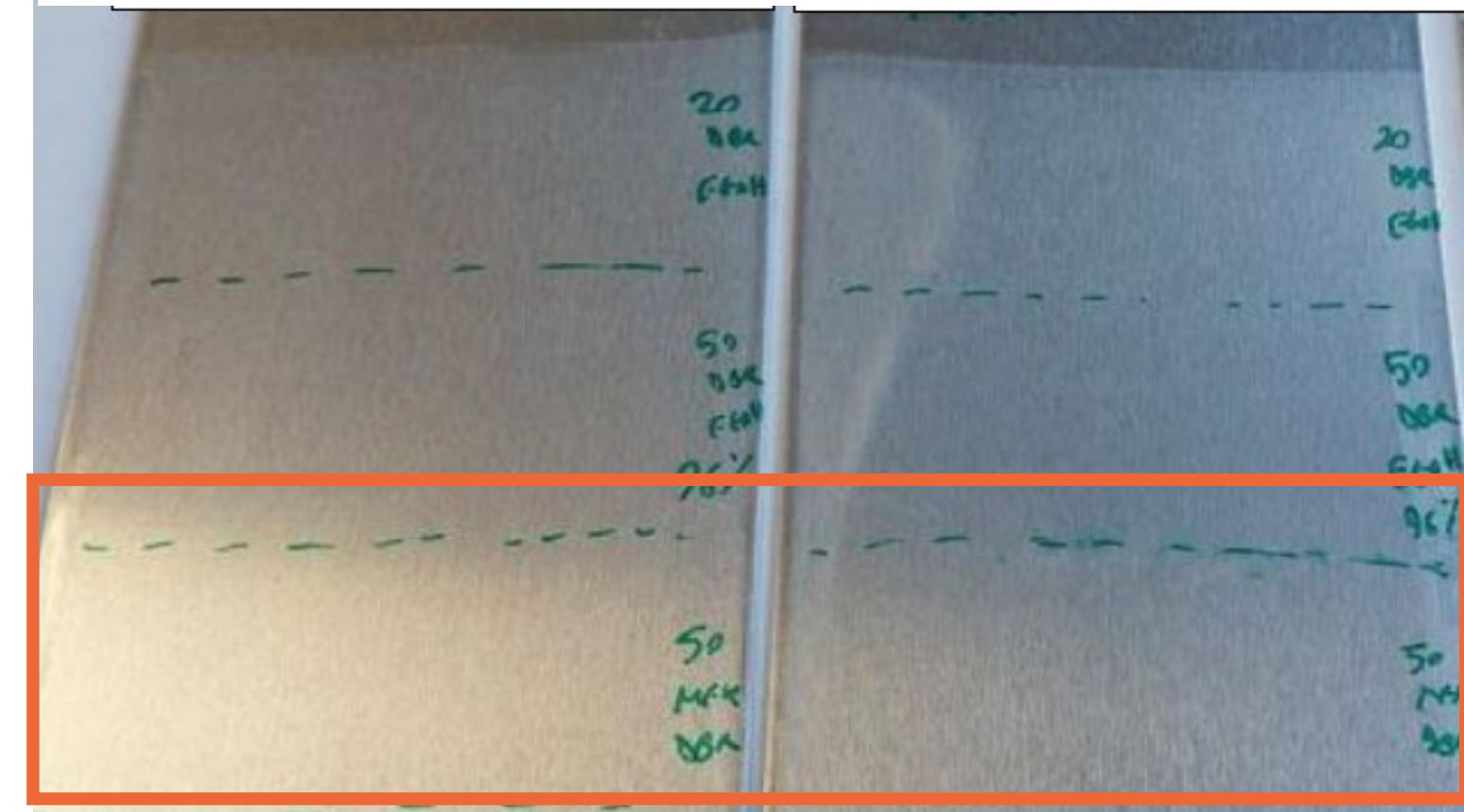
Reference 1K

ESACOTE UA 7023 1K



Reference 2K

ESACOTE UA 7023 2K



SAMPLES	EtOH DR
Reference	10 DR – A little bit of whitening
Reference + 17% BK	50 DR – Coating still OK
ESACOTE UA 7023 + 8% BDG	10 DR – A little bit of whitening
ESACOTE UA 7023 + 8% BDG + 17% BK	50 DR – Coating still OK

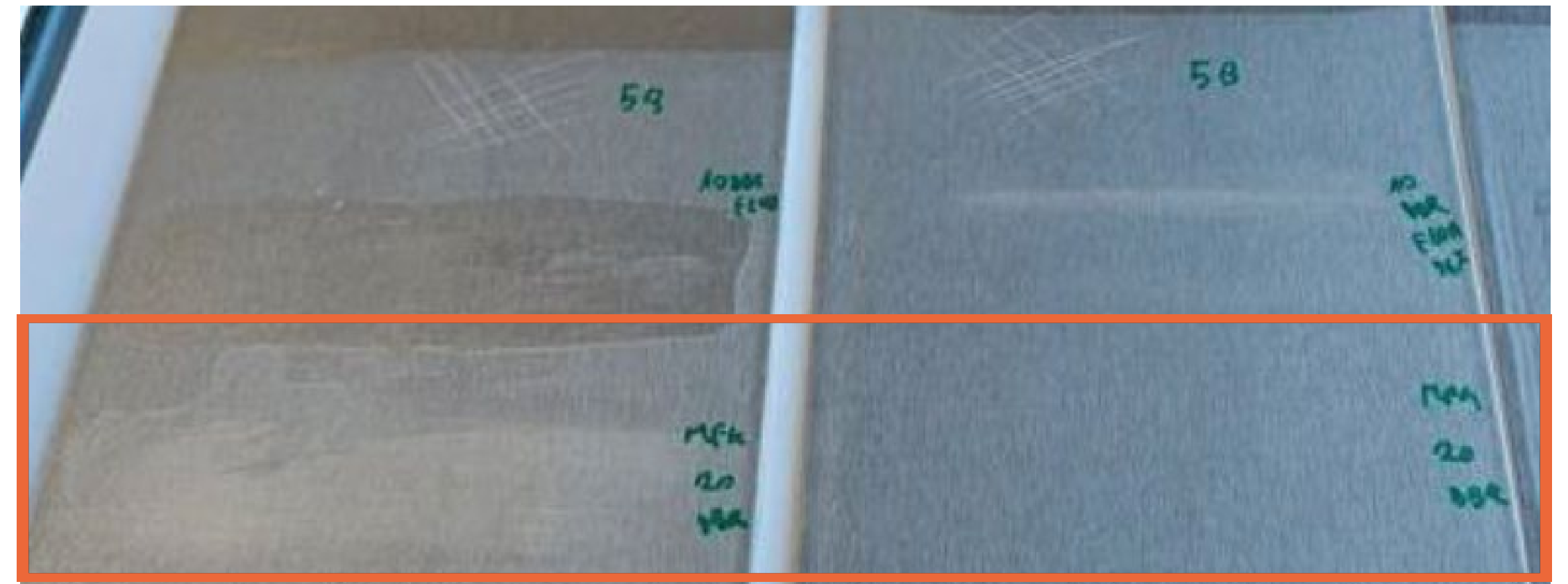
BK = blocked
NCO crosslinker

EtOH double rubs

- 4 μm dry film thickness
- **Dried at room temperature**

Reference 1K

ESACOTE UA 7023 1K



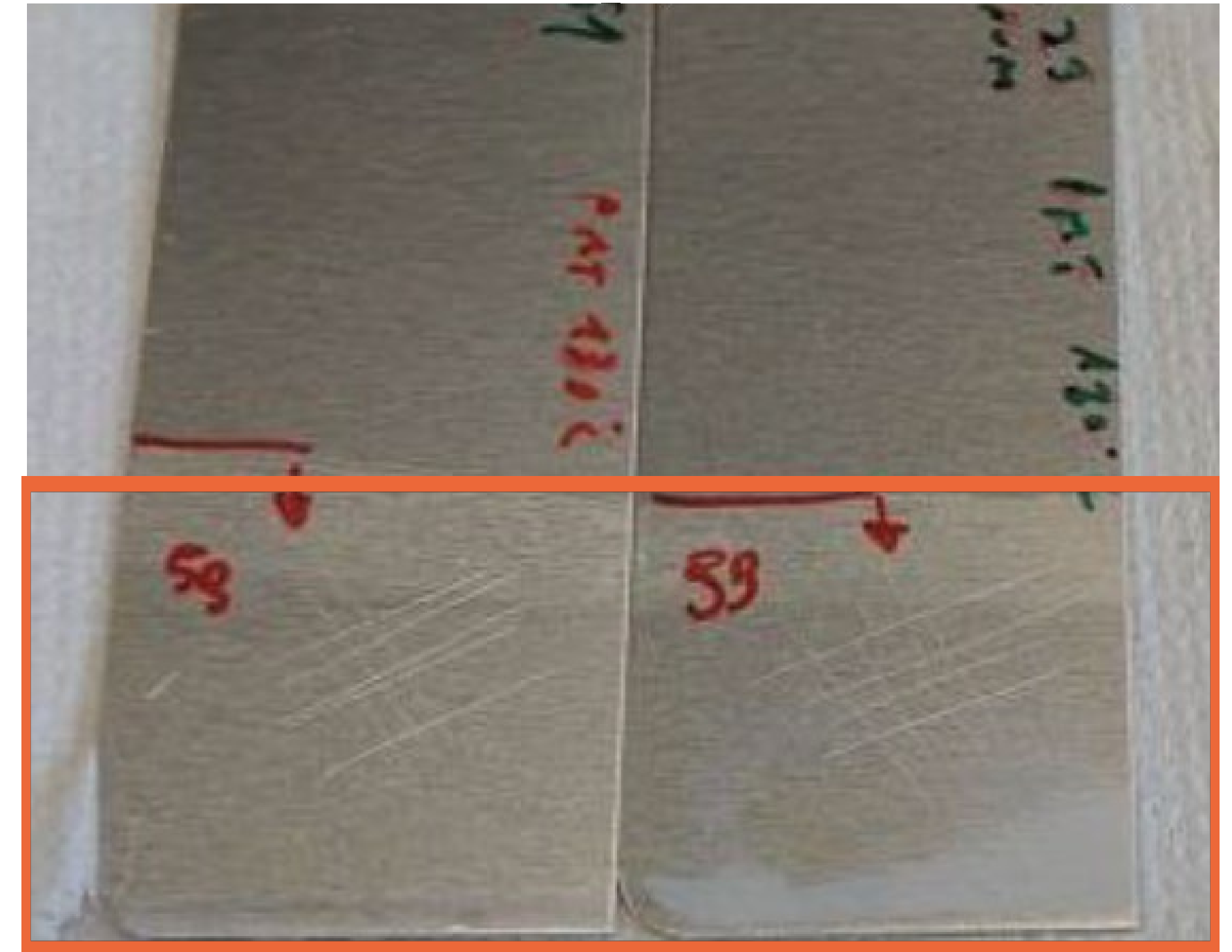
SAMPLES	EtOH DR
Reference	10 DR – Coating removal
ESACOTE UA 7023 + 8% BDG	10 DR – A little bit of whitening

Boiling resistance

- 4 μm dry film thickness
- **130 °C peak metal temperature**

Reference 1K

ESACOTE UA 7023 1K



SAMPLES	Boiling resistance – 2 hours
Reference	Transparent with good adhesion
ESACOTE UA 7023 + 8% BDG	Transparent with good adhesion

Boiling resistance

- 4 µm dry film thickness
- **Dried at room temperature**

Reference 1K

ESACOTE UA 7023 1K



SAMPLES	Boiling resistance – 2 hours
Reference	Whitening with poor adhesion areas
ESACOTE UA 7023 + 8% BDG	Transparent with good adhesion



Conclusions

- ESACOTE UA 7023 has shown good performance on aluminium
- At high PMT it performs the same way as market benchmark and dried at RT is even better
- ESACOTE UA 7023 is low VOC and allows higher formulation flexibility



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