

# Aktualności w zakresie analizy ICUMSA

*Maciej Wojtczak*

## Agenda

- ICUMSA Ltd.
- GS2
- GS3
- GS4
- GS6
- GS8

## ICUMSA Ltd.

### General Secretary



**Mr. Dr. Dierk Martin**

**Company:**

Südzucker AG  
CRDS

**Address:**

Wormser Straße 11  
67283 Obrigheim  
Germany

### President



**Mr. Dr. Martijn Leijdekkers**

**Company:**

IRS – Institute of  
Sugar Beet  
Research

### Treasurer



**Ms. Karen Pardoe**



## GS 2 — ICUMSA® Method GS2-33

### GS2

- Dokładność
- Liniowość
- Odzysk



Maciej Wojtczak

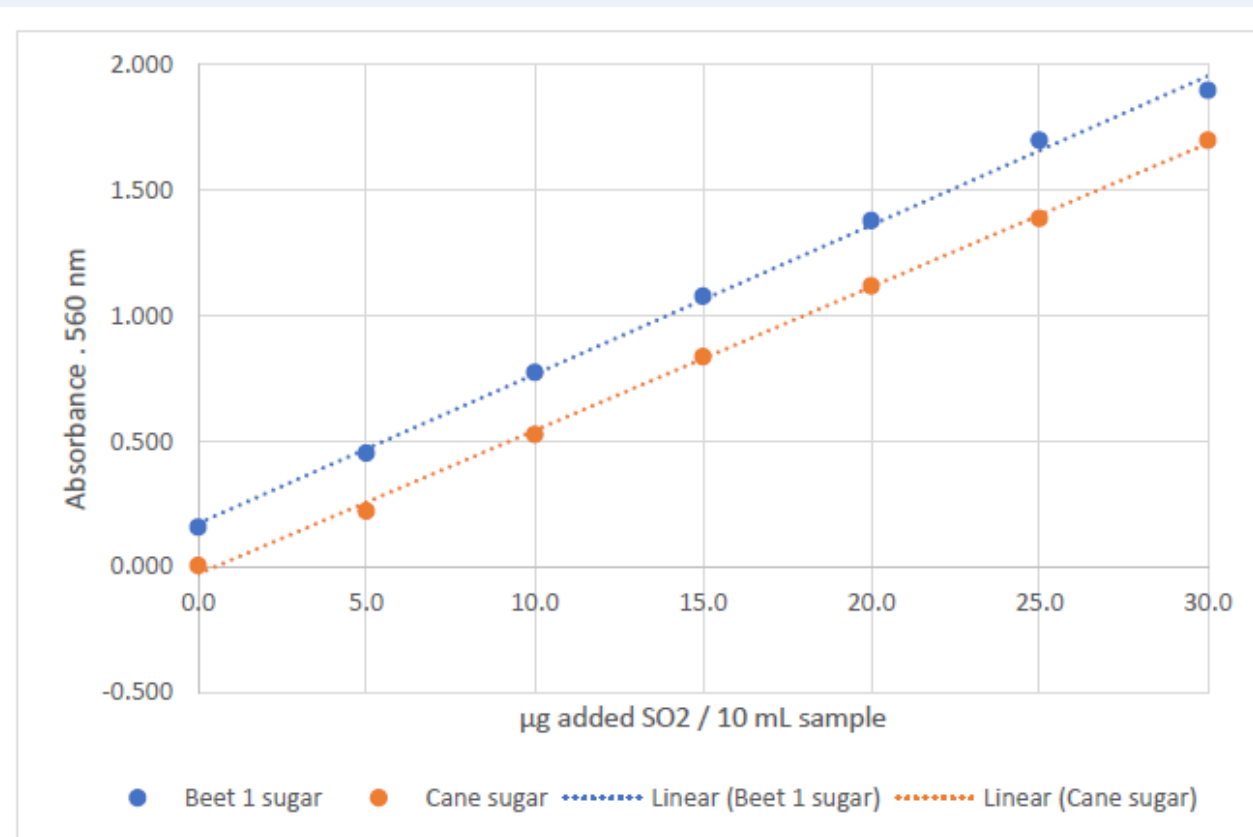


Figure 1: Standard Addition Results – Colorimetric Testing

## GS 2 — ICUMSA® Method GS2-33

# GS2

- Zmiany stężenia cukru w zakresie 10-40 g/100 mL, nie powinny wpływać na wynik.



Maciej Wojtczak

Table 1: Absorbance at 560 nm for solutions of sugar (beet and cane) as prepared for GS2-33

Mass concentration of sugar (g/100 mL)	10	20	30	40
Cane sugar	0.010	0.022	0.030	0.045
Beet sugar 1	0.170	0.358	0.543	0.725

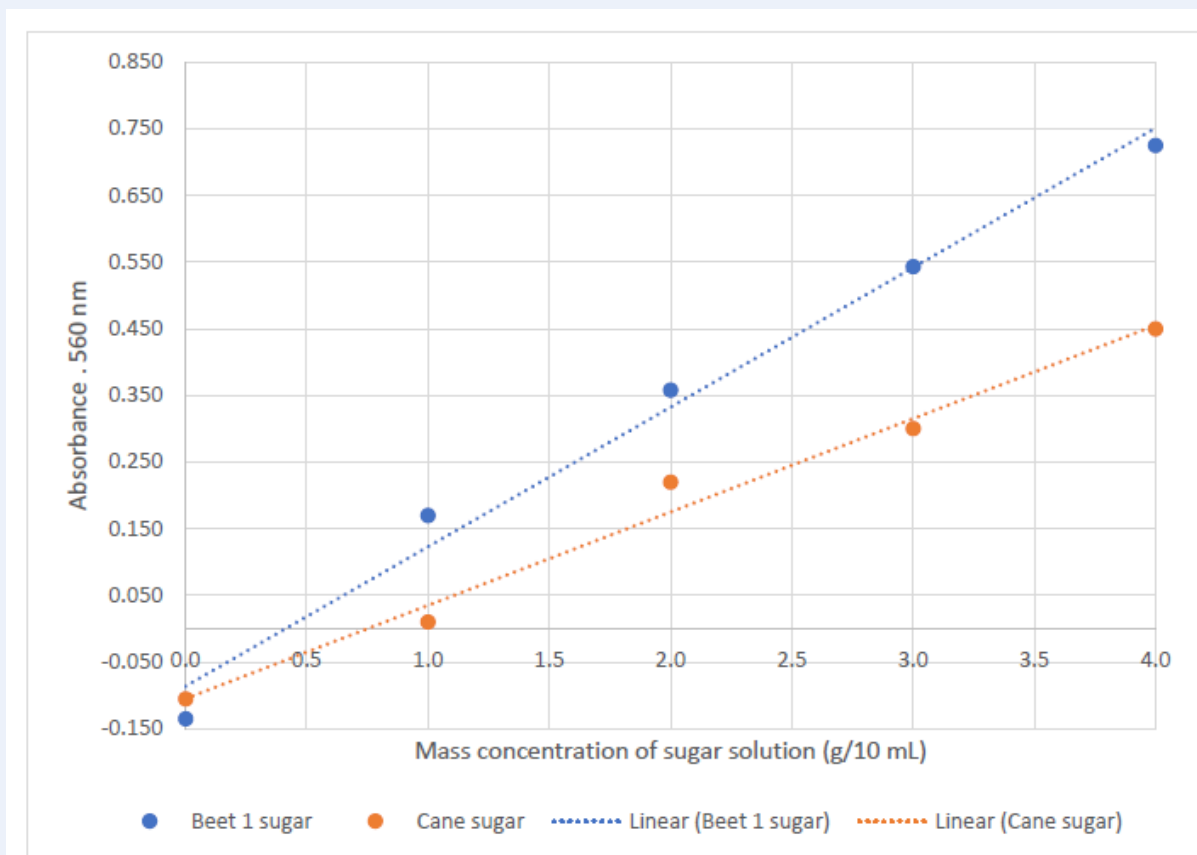


Figure 2: Absorbance at 560nm for increasing sugar concentration for test solutions (Table 1)

## GS 2 — dalsze prace ....

### GS2

- Jodometryczna metoda oznaczania zawartości dwutlenku siarki



Maciej Wojtczak

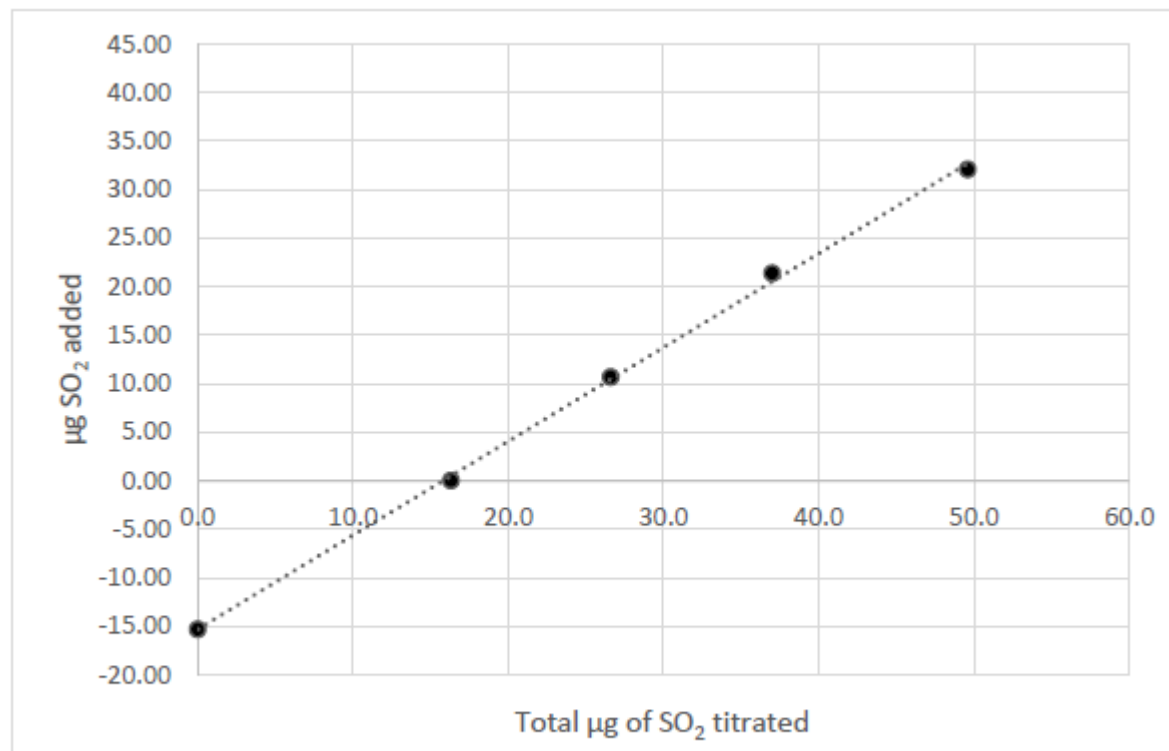
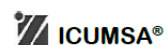


Figure 3: Standard Addition Results – Iodometric Testing

# GS 3 — Metoda GS-3-31 HMF

GS3

- Oficjalna



—Draft—

Method GS3-31 (2024)  
5-Hydroxymethylfurfural (HMF) in Sugar Syrups and Invert  
Sugar Syrups by High Performance Liquid Chromatography  
(HPLC)  
Official



Maciej Wojtczak

Table 6: Relative repeatability  $r_{rel}$  and reproducibility  $R_{rel}$  for two HMF content ranges

	HMF content	
	< 15 mg/kg	15 – 240 mg/kg
Relative Repeatability ( $r_{rel}$ )*	≥ 7 %	< 7 %
Relative Reproducibility ( $R_{rel}$ )**	≥ 19 %	< 19 %

\*  $r_{rel}$  values from Table 4 and Table 5 were recalculated variance function resulting from absolute and relative standard deviations in the collaborative study; \*\* see  $R_{rel}$  values in Table 4 and Table 5

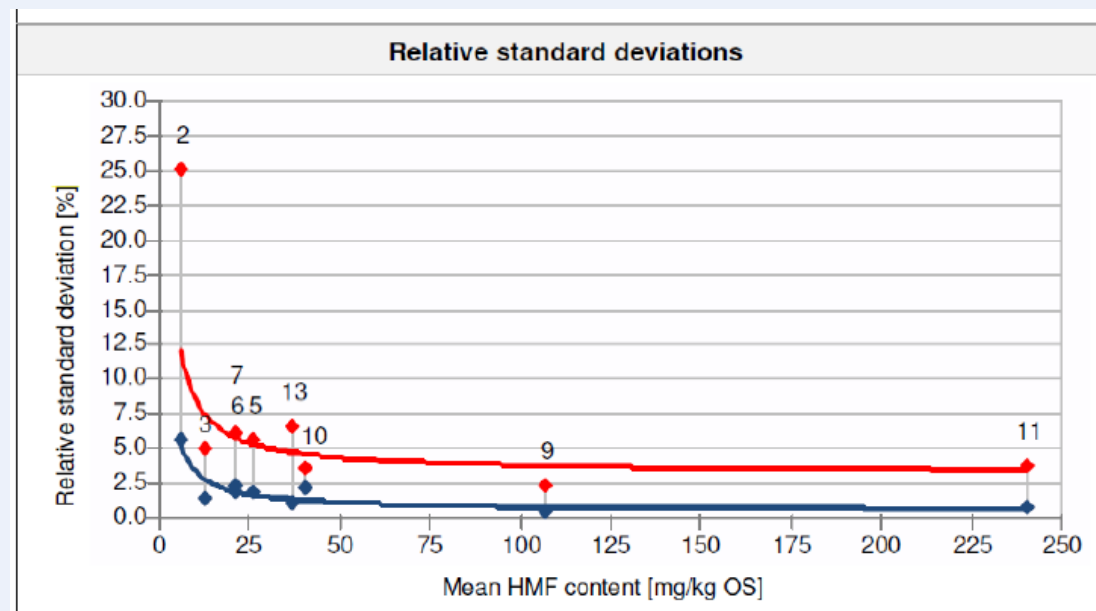


Figure 2: Absolute and relative standard deviations in the collaborative study with corresponding variance functions (blue: Repeatability standard deviation  $s_r$ , red: reproducibility standard deviation  $s_R$ )

## GS 3 — dalsze prace ....

### GS3

- Substancje nierozpuszczalne
- Zabarwienie (Demerara, Muscovado)





## GS 4 — Method GS4/7-1

### GS4

- Polarymetryczna zawartość sacharozy, bez związków ołowiu
- Badania międzylaboratoryjne:
  - Carrez and Octapol



Table 1: Amounts of clarifier used.

Clarifier	Lead acetate	Carrez I+II	Claripol	Octapol
Amount added per 100 ml sample solution	8 ml	10 ml of each	several grams	5 and 10 grams*

\* both amounts have been tested.

Table 2: Decolorising capability of each clarifier.

Clarifier	Lead acetate	Carrez I+II	Claripol	Octapol 5 g / 10 g	Non-clarified
Filtrate colour (IU)	9 000	28 000	High	23 000 / 14 000	61 000
Colour removal (%)	85	54	-	62 / 77	0



## GS 6 — Nowe wersje metod

### GS6



Maciej Wojtczak

- 1. **Method GS6-3 (1994)** *Polarisation of Sugar Beet by the Macerator or Cold Aqueous Digestion Method using Aluminium Sulphate as Clarifying Agent* – Official should be replaced in the ICUMSA® Methods Book with the revised 2023 version.
- 2. **Method GS6-5 (2007)**  *$\alpha$ -Amino Nitrogen in Sugar Beet by the Copper Method ('Blue Number') – After Defecation with Basic Lead Acetate* – Official – *After Defecation with Aluminium Sulphate* – Official should be replaced in the ICUMSA® Methods Book with the revised 2023 version.
- 3. **Method GS6-7 (2007)** *Potassium and Sodium in Sugar Beet by Flame Photometry* – Official should be replaced in the ICUMSA® Methods Book with the revised 2023 version



## GS 6 — dalsze badania ...

### GS6

- Procedury pobierania próbek buraków cukrowych i przygotowania miazgi z buraków powinny być opisane i opublikowane jako Specyfikacja ICUMSA®.



## GS 8 — Method GS 8-19 (2009)

### GS8

- Oznaczanie zawartości dekstranu:
  - Haze
  - HPAEC-PAD
  - DASA
  - Antibody



## GS 8 — dalsze badania ...

### GS8

- Antibody
- Aktywność dekstranazy



**Dziękuję za uwagę**