



ALBERDINGK BOLEY

Super hydrophobic, multiphase polymer dispersion with improved barrier properties for food packaging paper

Innovative barrier solutions against water, moisture and fat

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22.10.2024



Agenda

Polymerdesign

Product details

Test results

Effect of mechanical stress on the barrier

MVTR comparison to PVDC

Hot tack measurement with HotJack 5000

Summary



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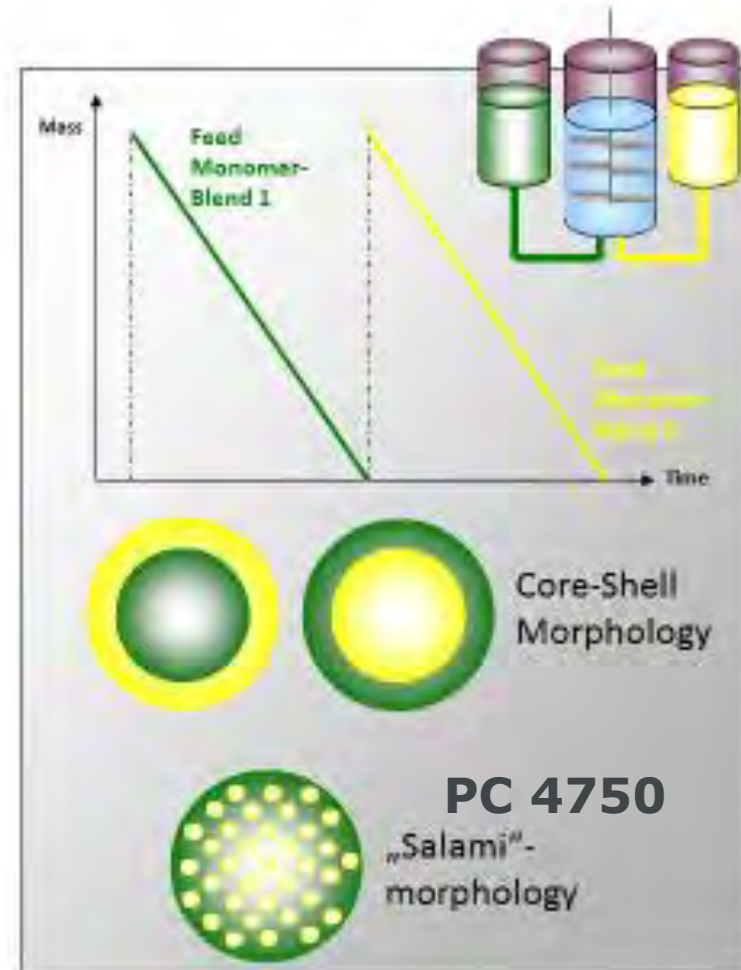
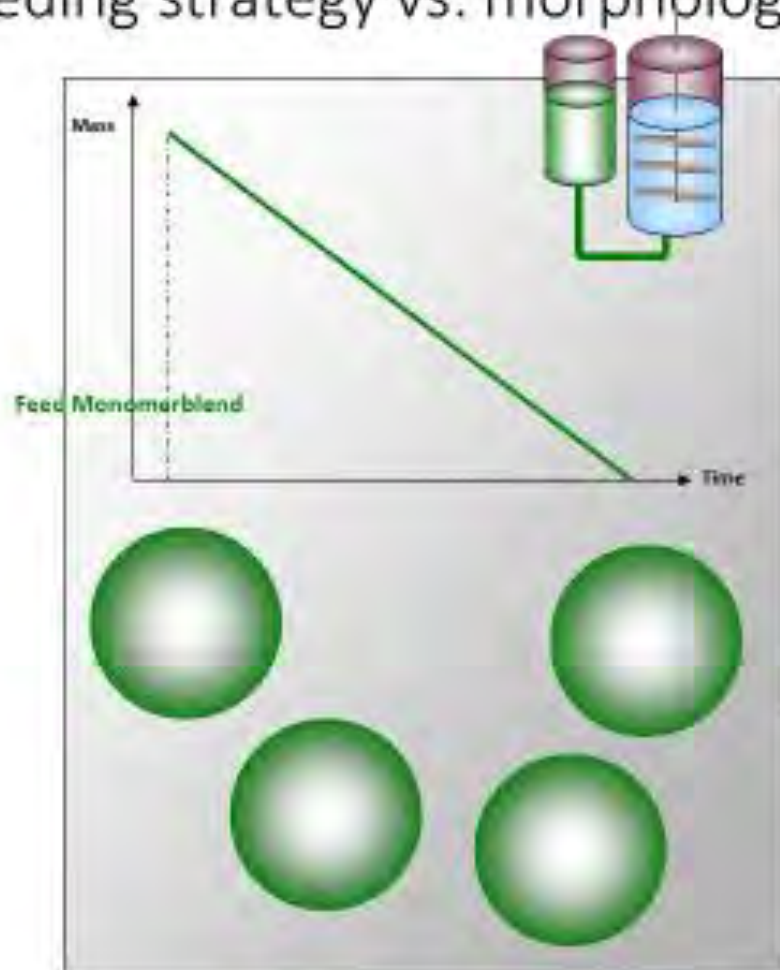
Summary





Super hydrophobic barriers with „salami“ morphology

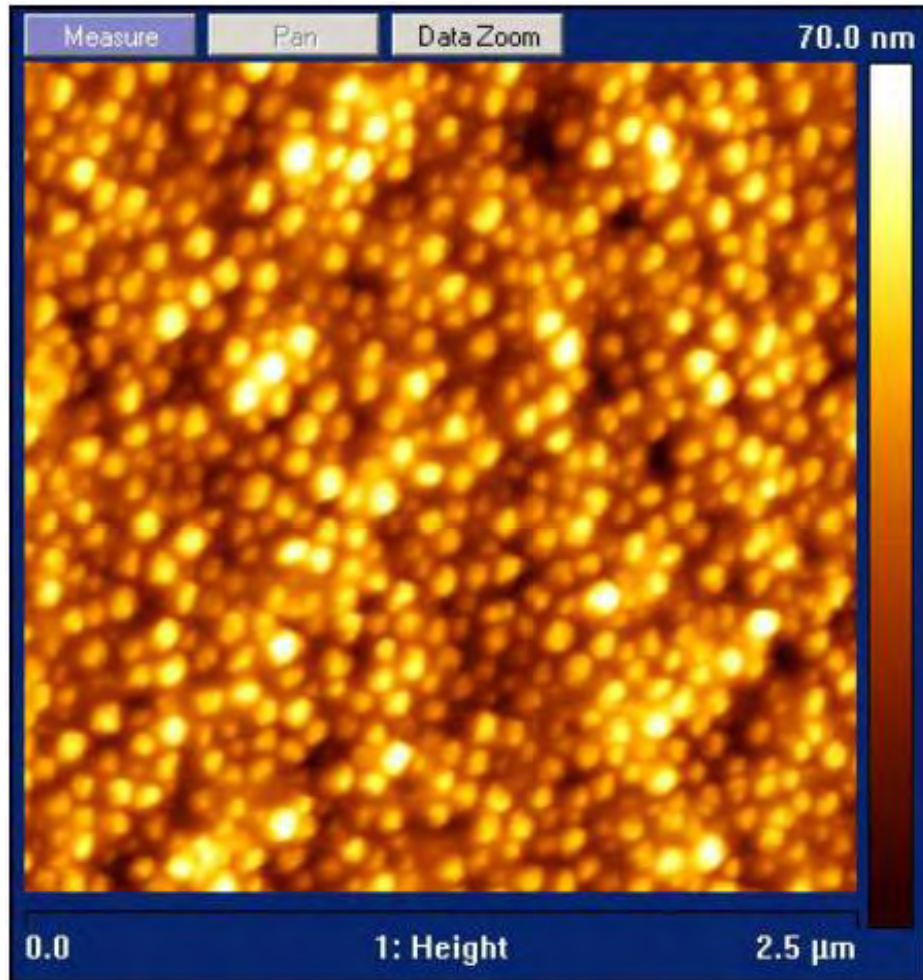
Comparison on single phase vs. multiphase polymer design
Feeding strategy vs. morphology



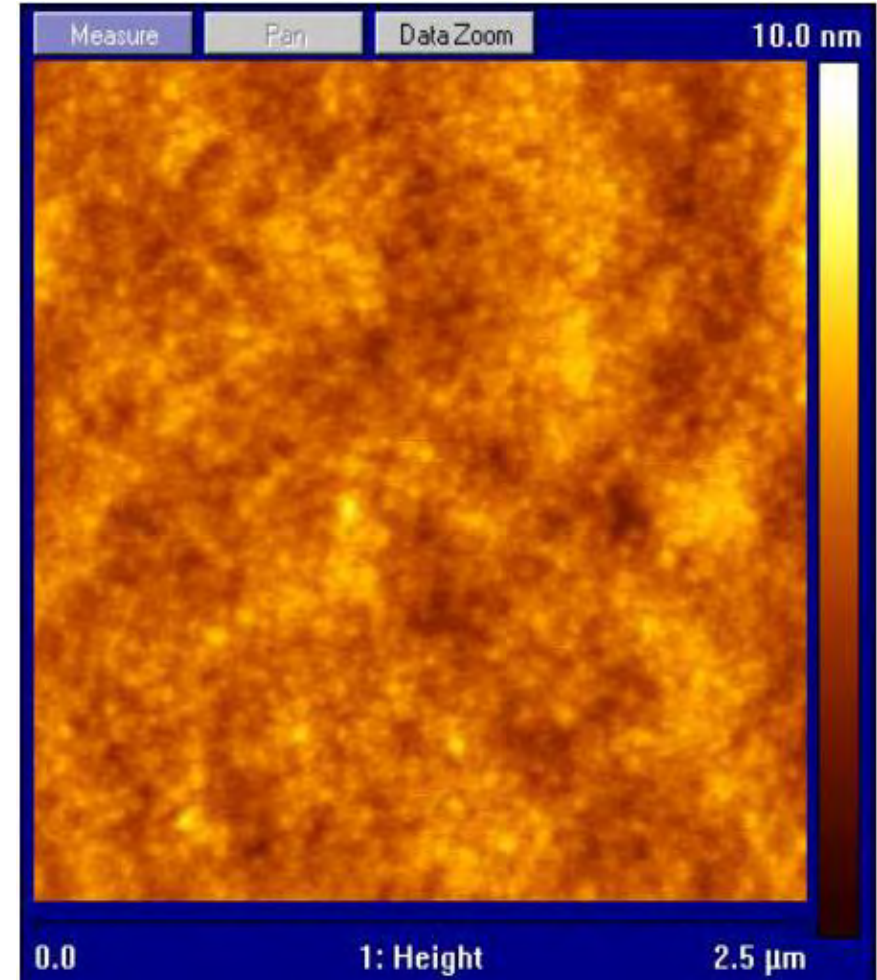


Comparison Film-Morphology; AFM

Conventional Core-shell acrylic



New, hydrophobic controlled morphology barrier



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Alberdingk[®] PC 4750 VP

- Ready to use, for topcoats or single layer coats with excellent MVTR
- Used for food packaging with superior hydrophobicity (instead of PVDC coatings)
- Solids-content: 43 - 45%
- pH-value: 7.5 - 8.5
- Viscosity: 10 - 500 mPas

Alberdingk[®] PC 4750 VP

The product is in compliance with:

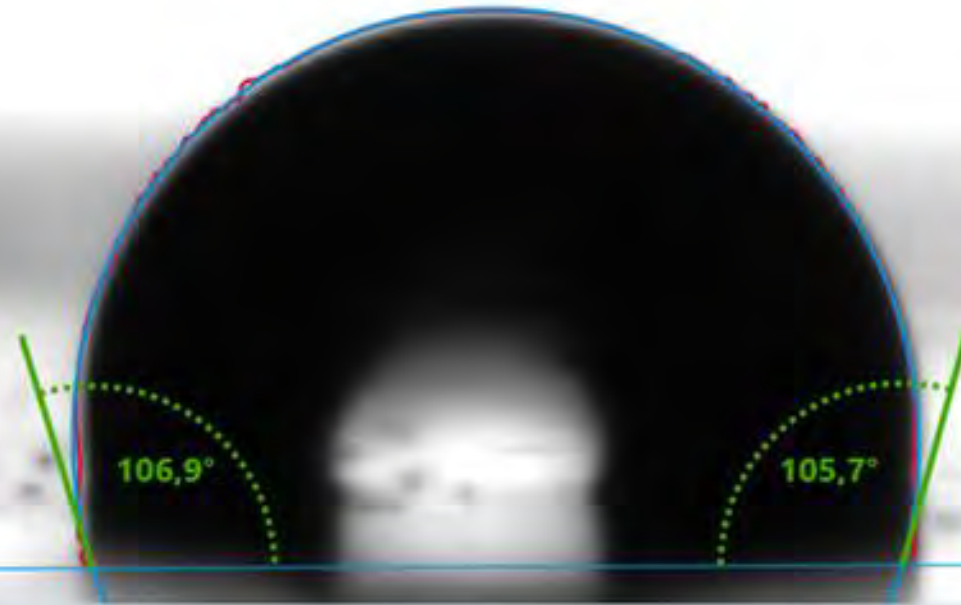
- BfR XIV; BfR XXXVI with restrictions; (EU) 10/2011 with restrictions; 21 CFR 176.170, 176.180 & 175.105; SWISS Ordinance 817.023.021 Annex X, Mercosur
- direct fatty food contact (3rd party tested by EUROFINS with 6µm thickness of ALBERDINGK PC 4750 on UPM Solide Lucent paper with 78g/m²)

Tested for:

- Capi recyclability laboratory test method, Version 2 (October 2022) and Assessment acc. to 4Evergreen recyclability evaluation protocol
- **Score 77/100**



Contact angle of PC 4750



Messreihe:
PC 4750 110°C Trocknung

Schritt: 16
Temperatur: 20,0 °C

Substanz:
water (Air)

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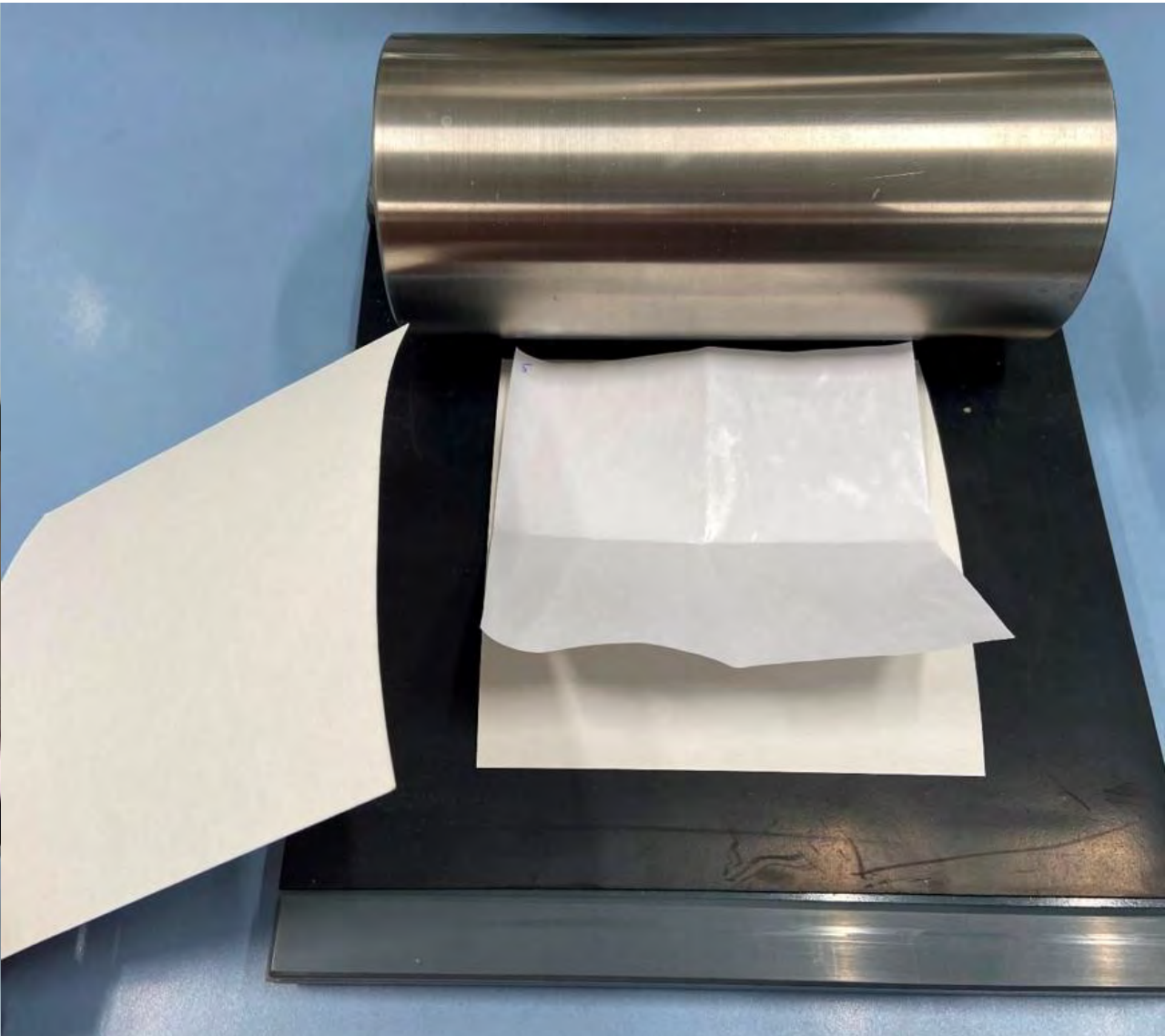
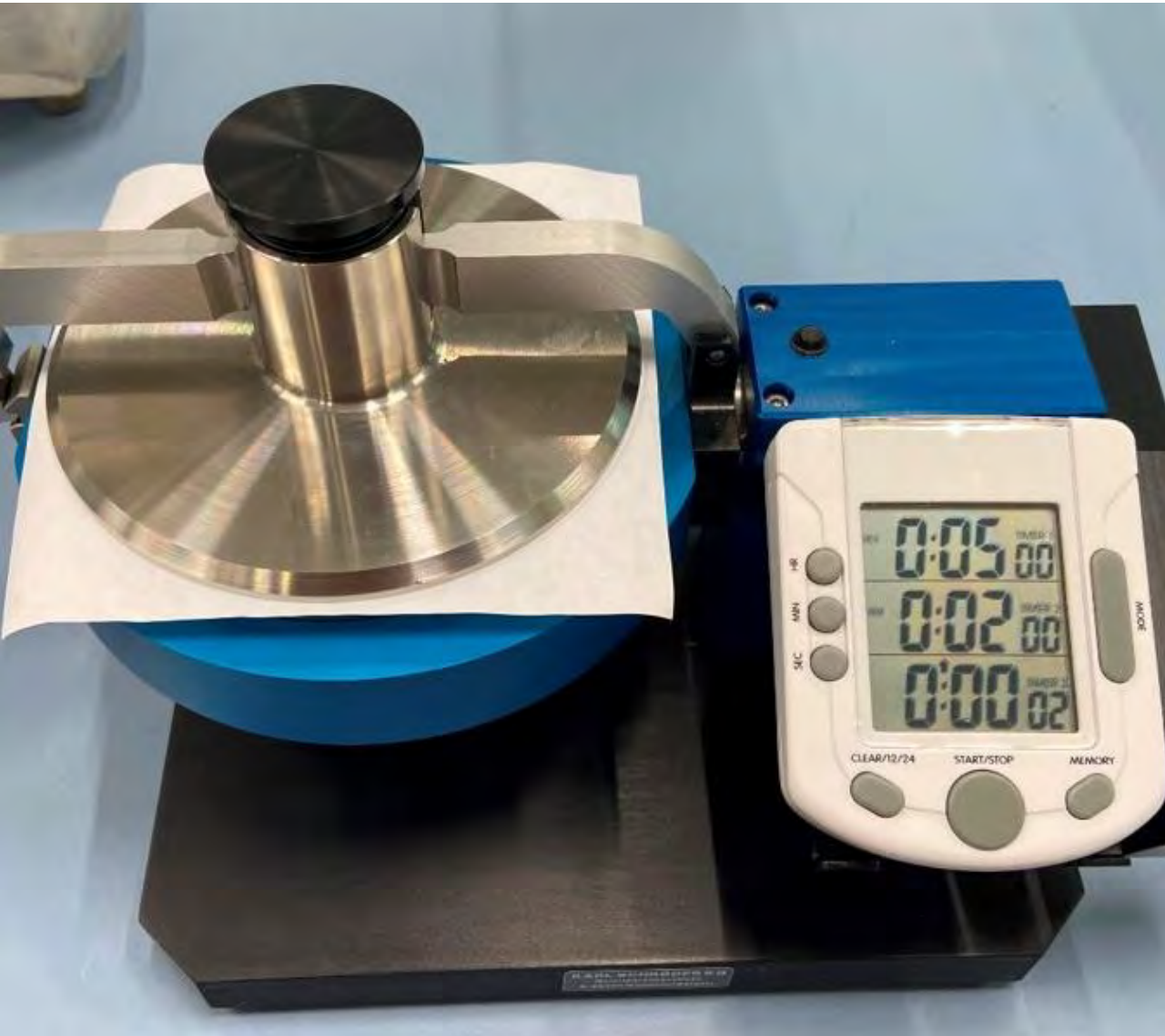
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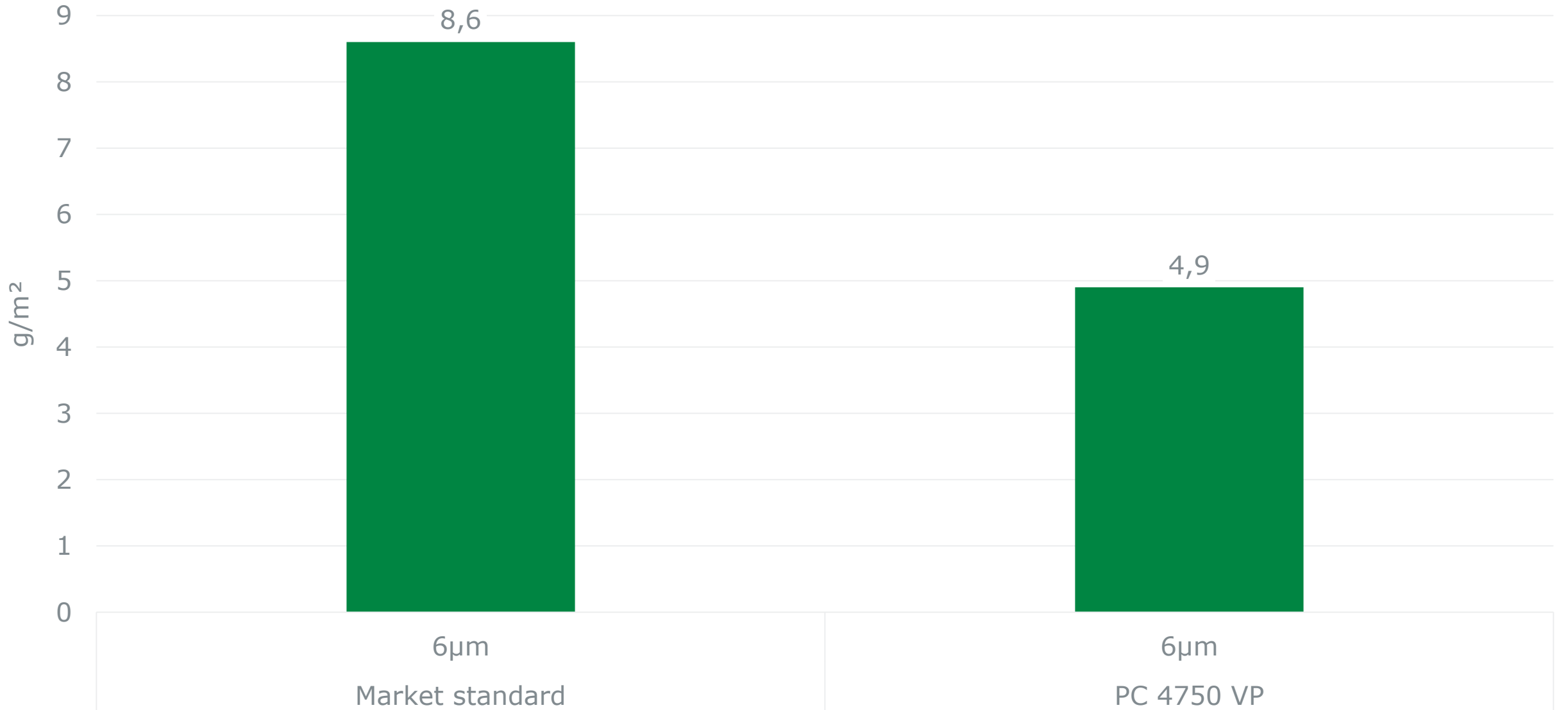


 **Cobb 1800 (Tappi T441)**





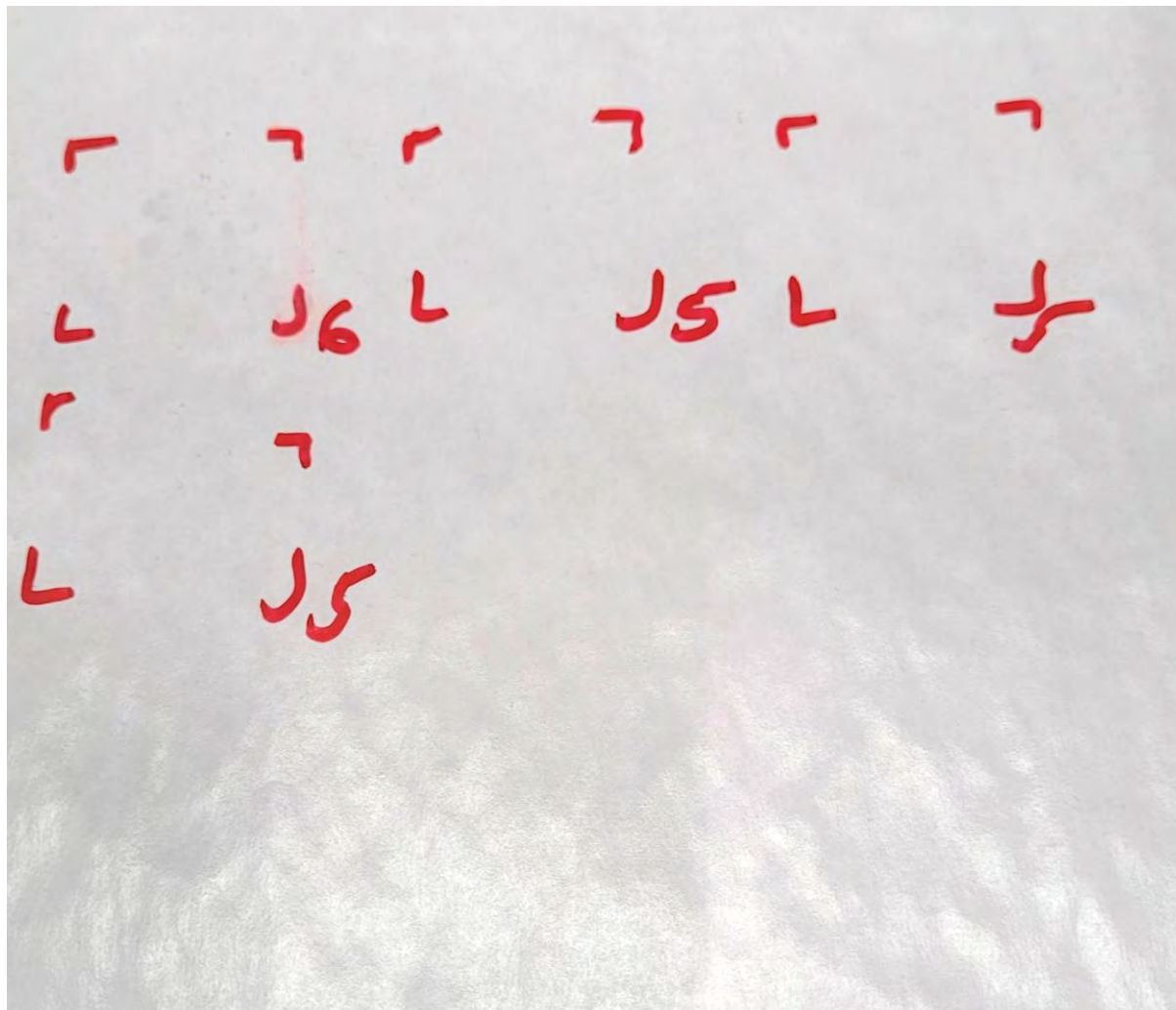
Cobb 1800 (Tappi T441) - Tests on copy paper (60g/m²)



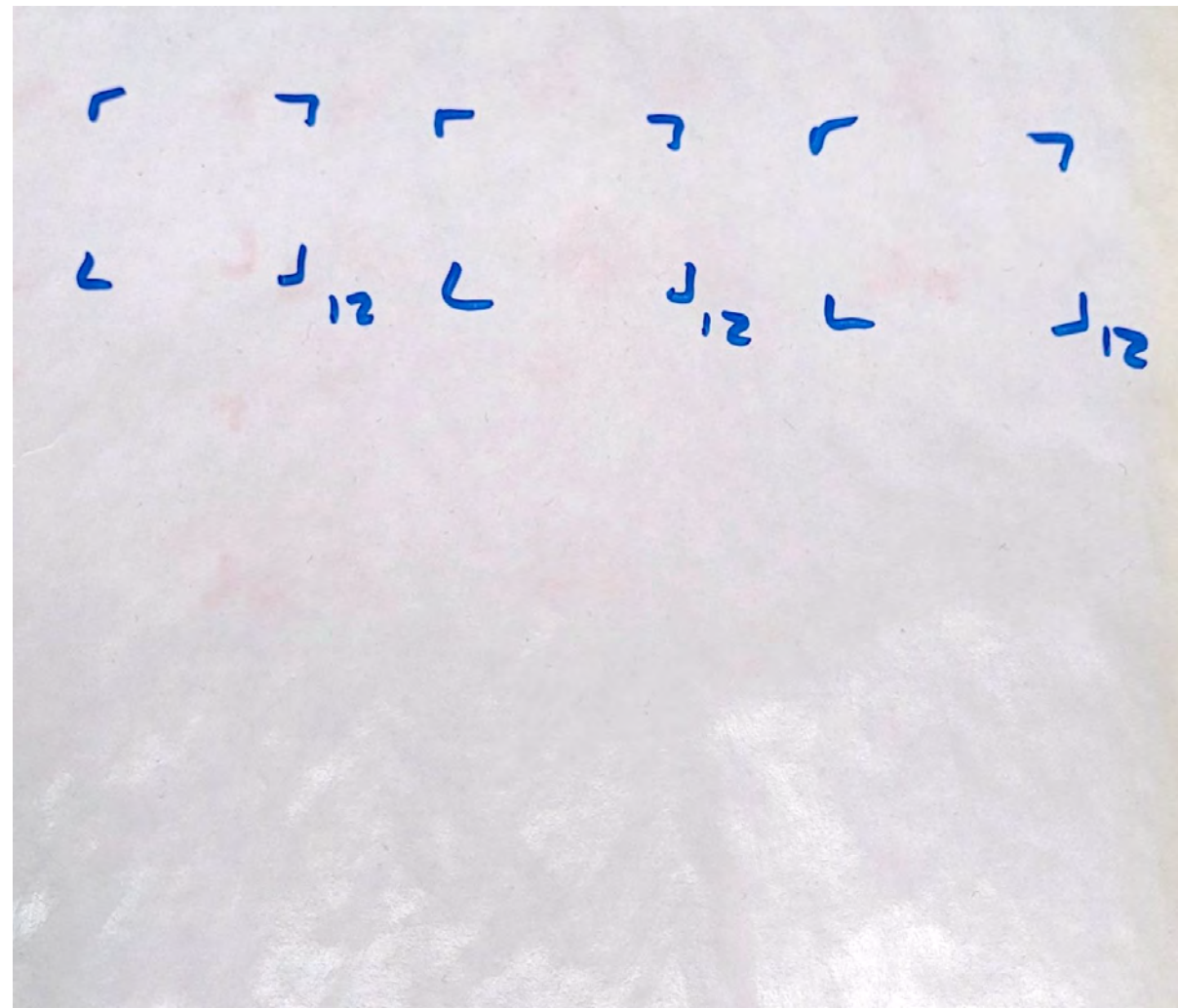


KIT (Tappi T559) - Tests on copy paper (60g/m²)

Example for KIT 5

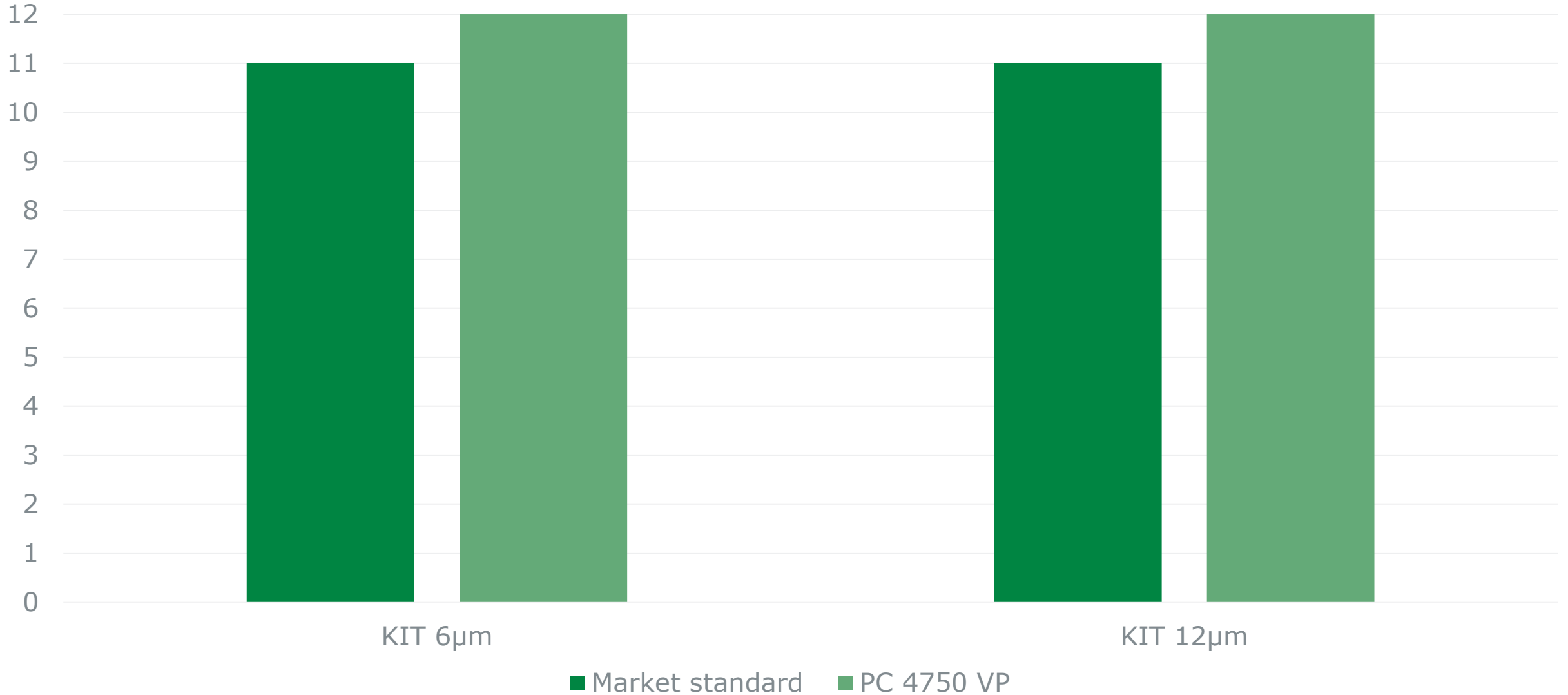


Example for KIT 12

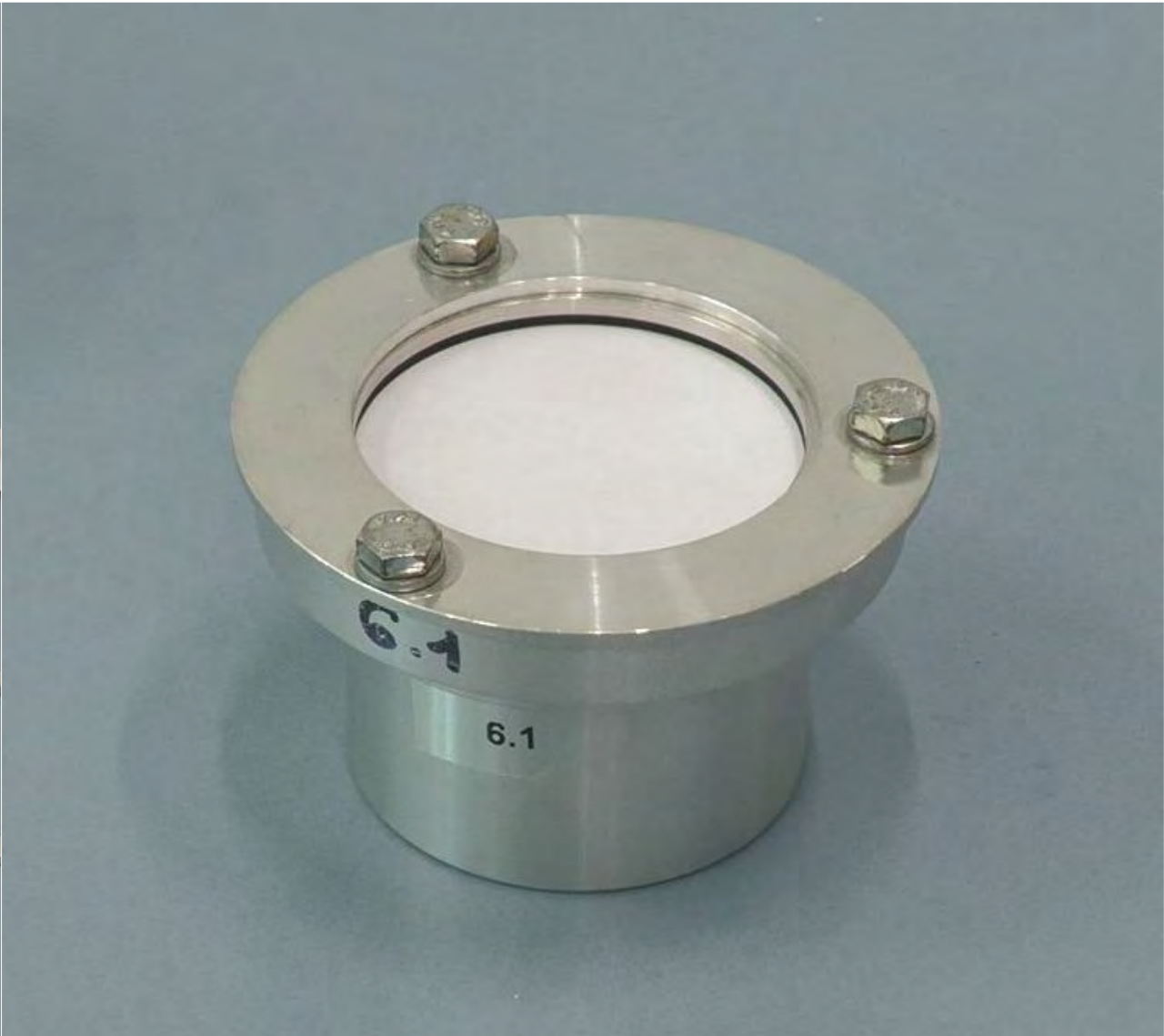
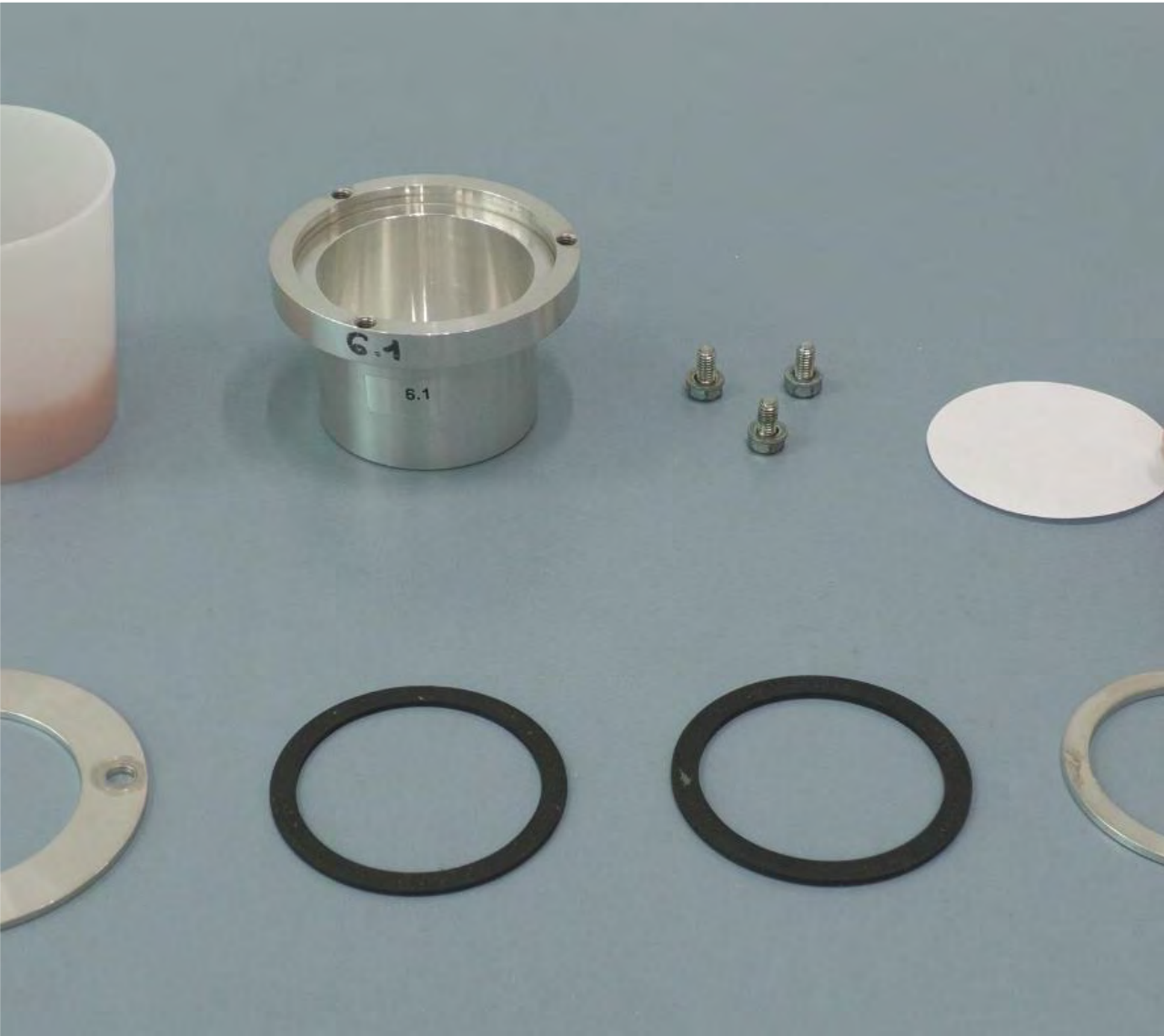




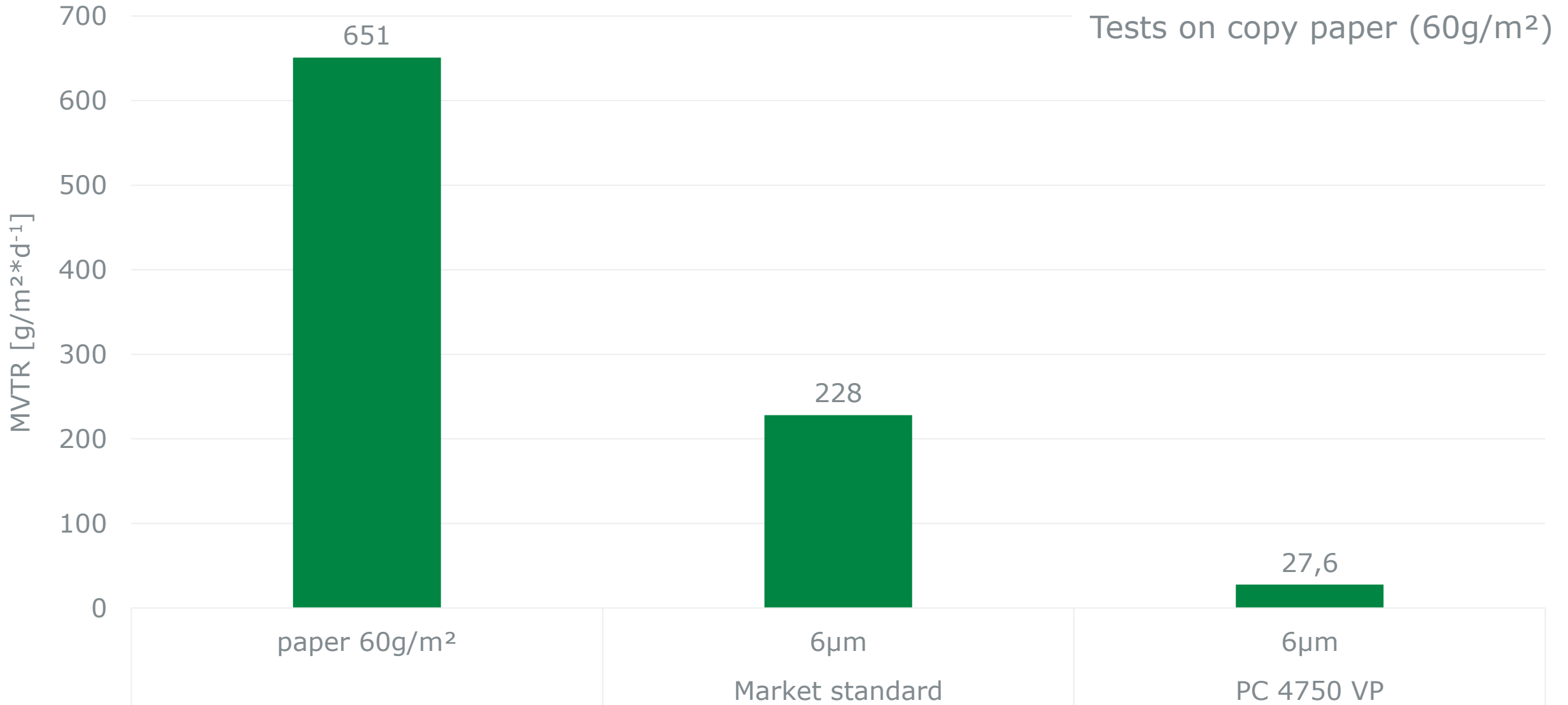
KIT (Tappi T559) - Tests on copy paper (60g/m²)



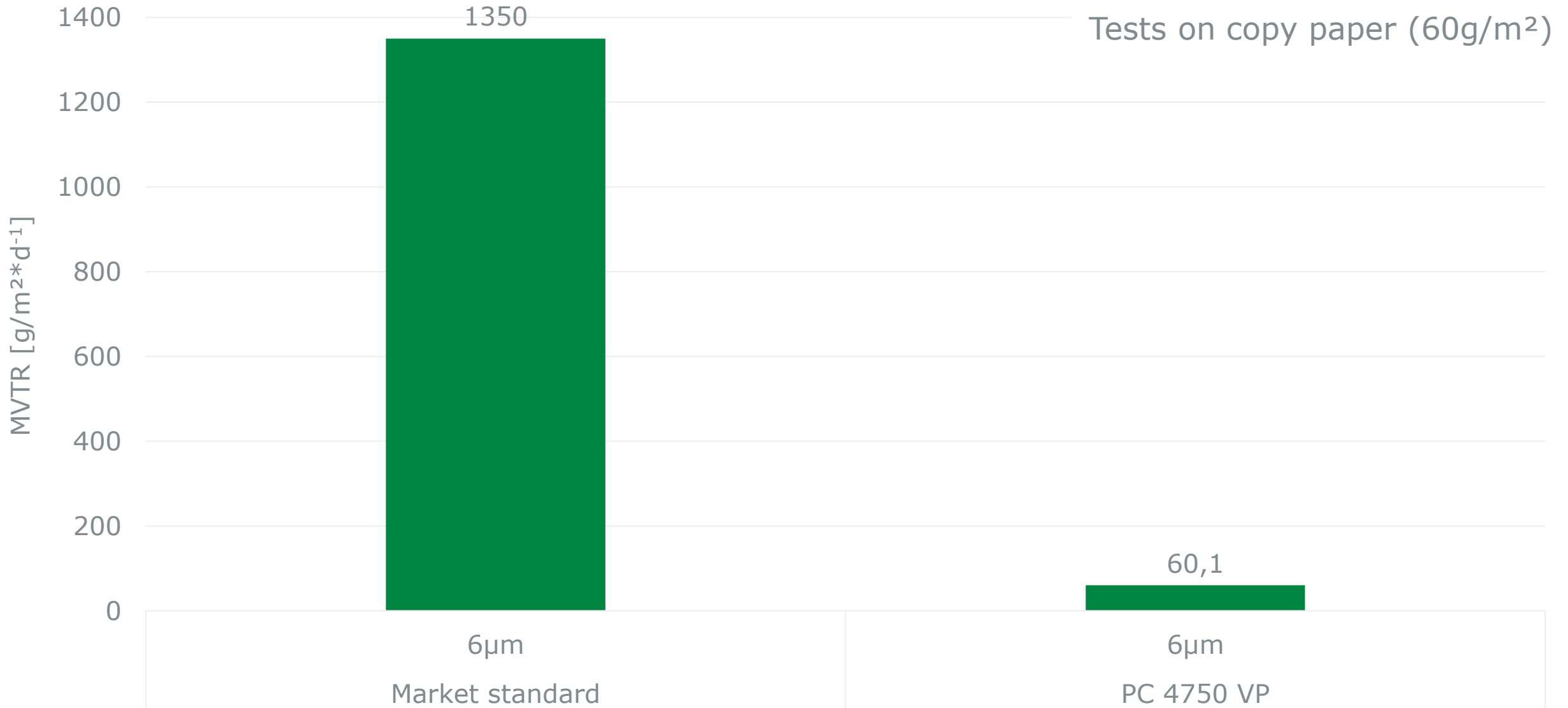
 MVTR (DIN 53122-1)



MVTR at 23°C and 85% rel. hum. after 1d

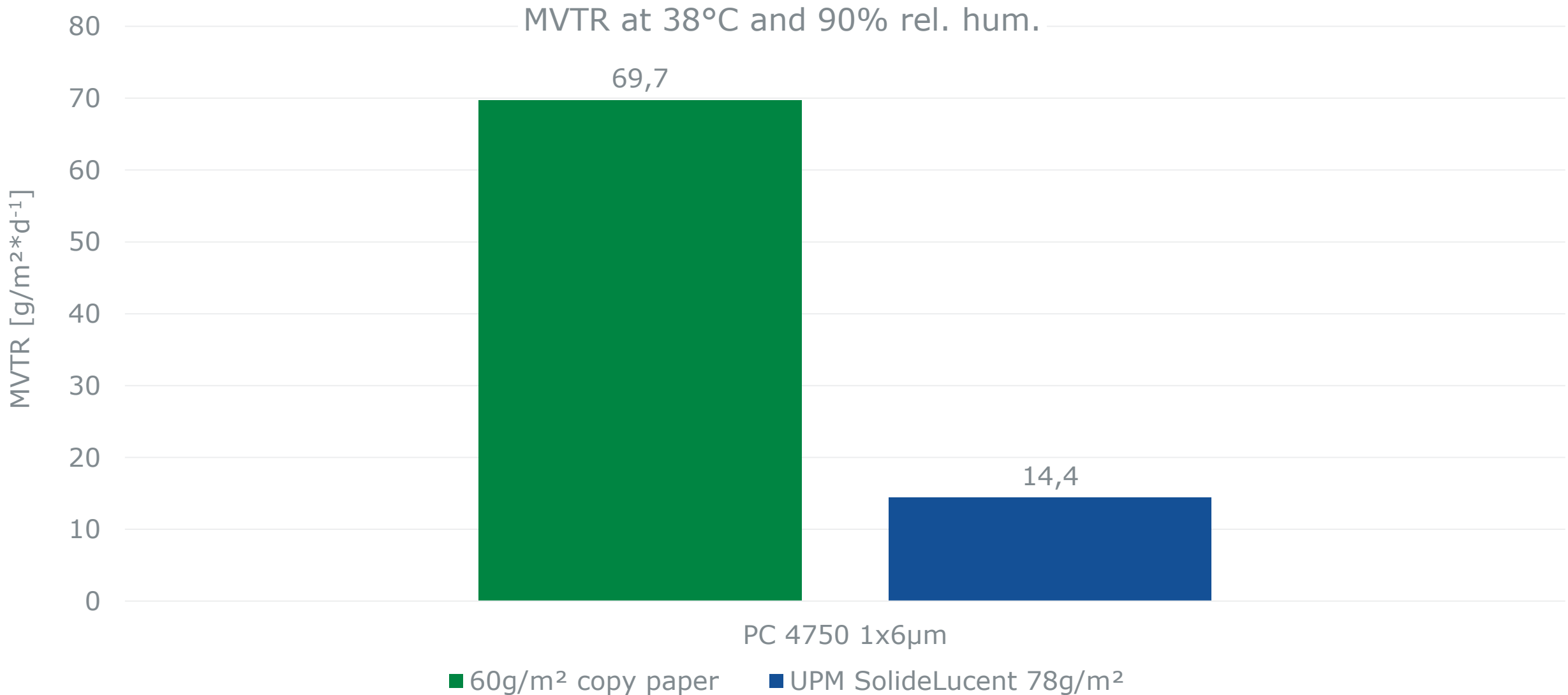


MVTR at 38°C and 90% rel. hum. after 1d





Substrate comparison copy paper vs. Solide™ Lucent



Oil Cobb (castor oil)

Castor Oil

Tests on copy paper (60g/m²)

Binder	Layer thickness	Time	Cobb
Market standard	1 x 8 µm	2h	5.3
Alberdingk [®] PC 4750 VP	1 x 8 µm	24h	4.2

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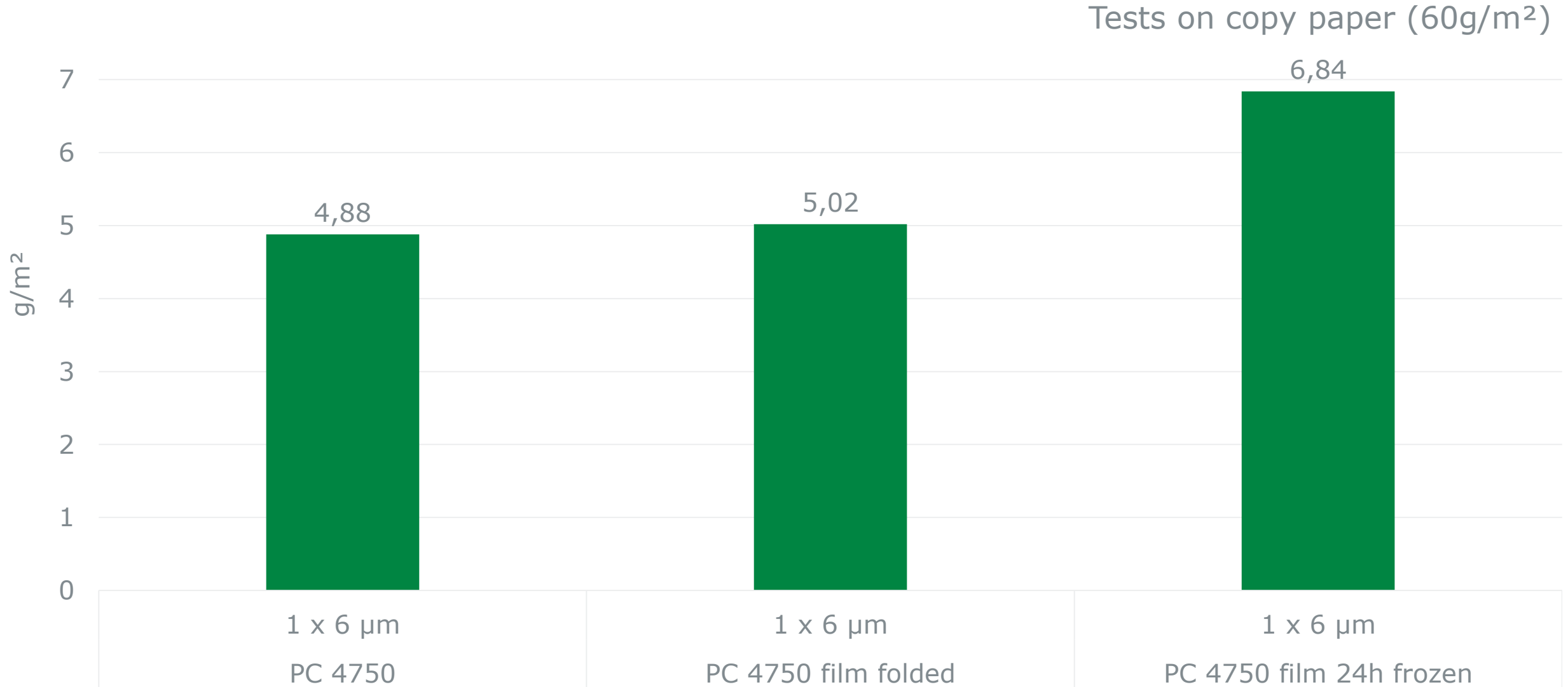
Hot tack measurement with HotJack 5000

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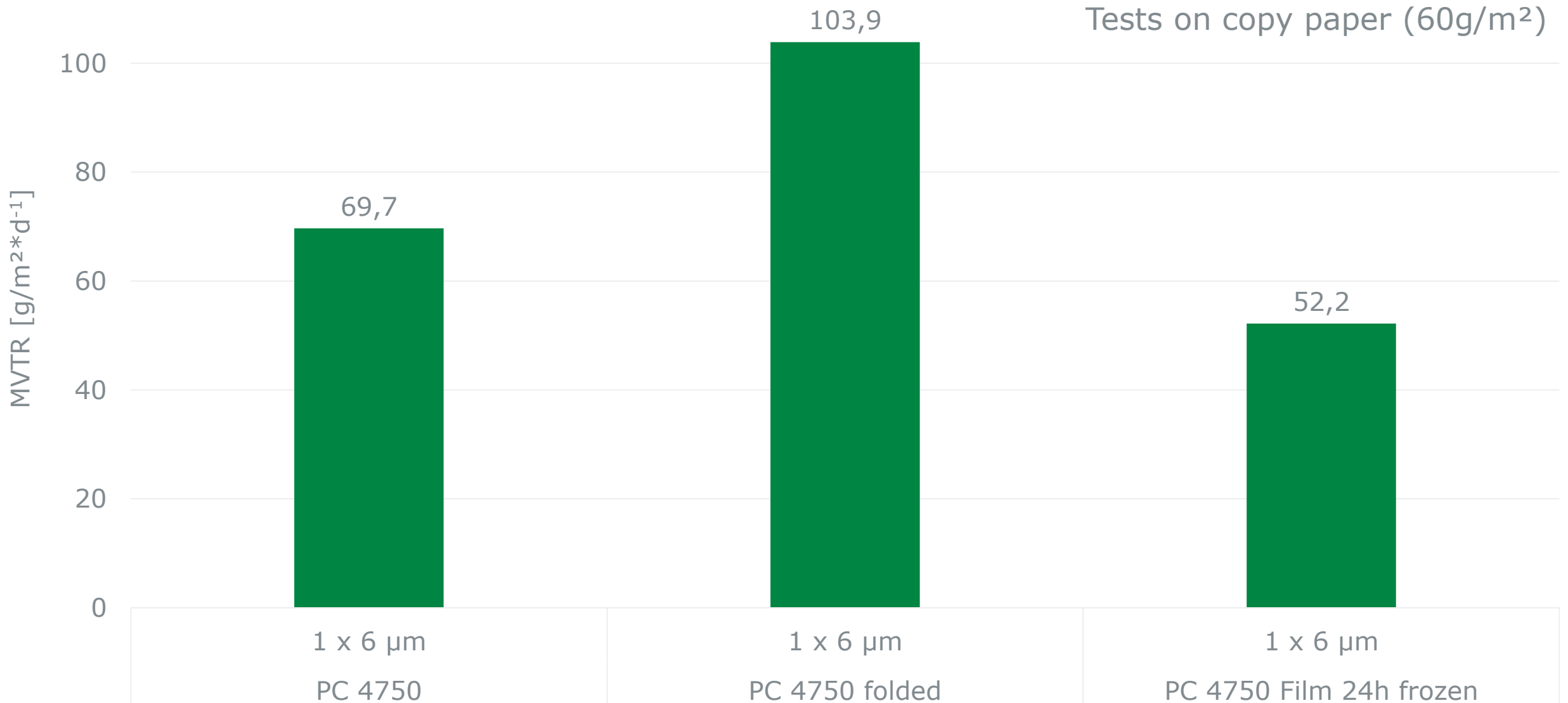


Cobb 1800



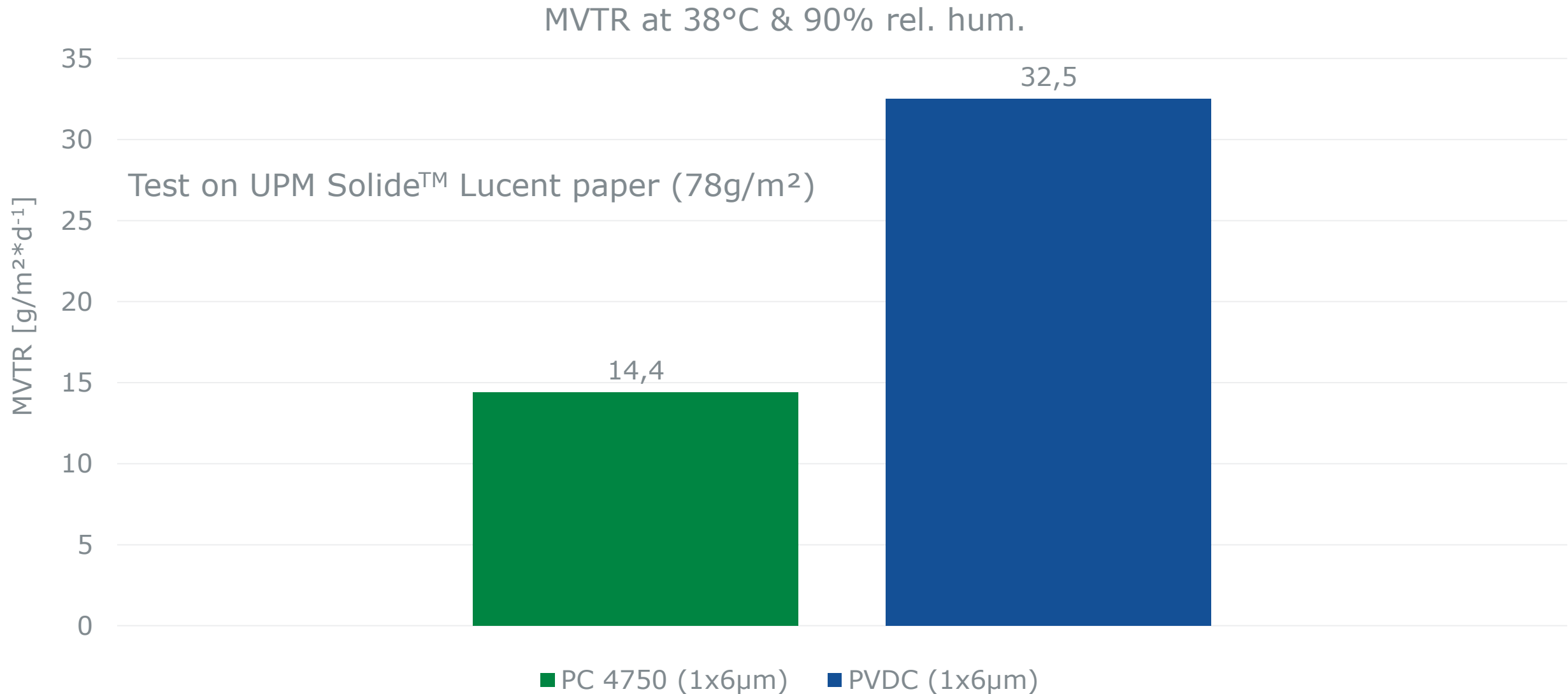


MVTR at 38°C and 90% rel. hum. after 1d





Comparison of ALBERDINGK® PC 4750 vs. PVDC



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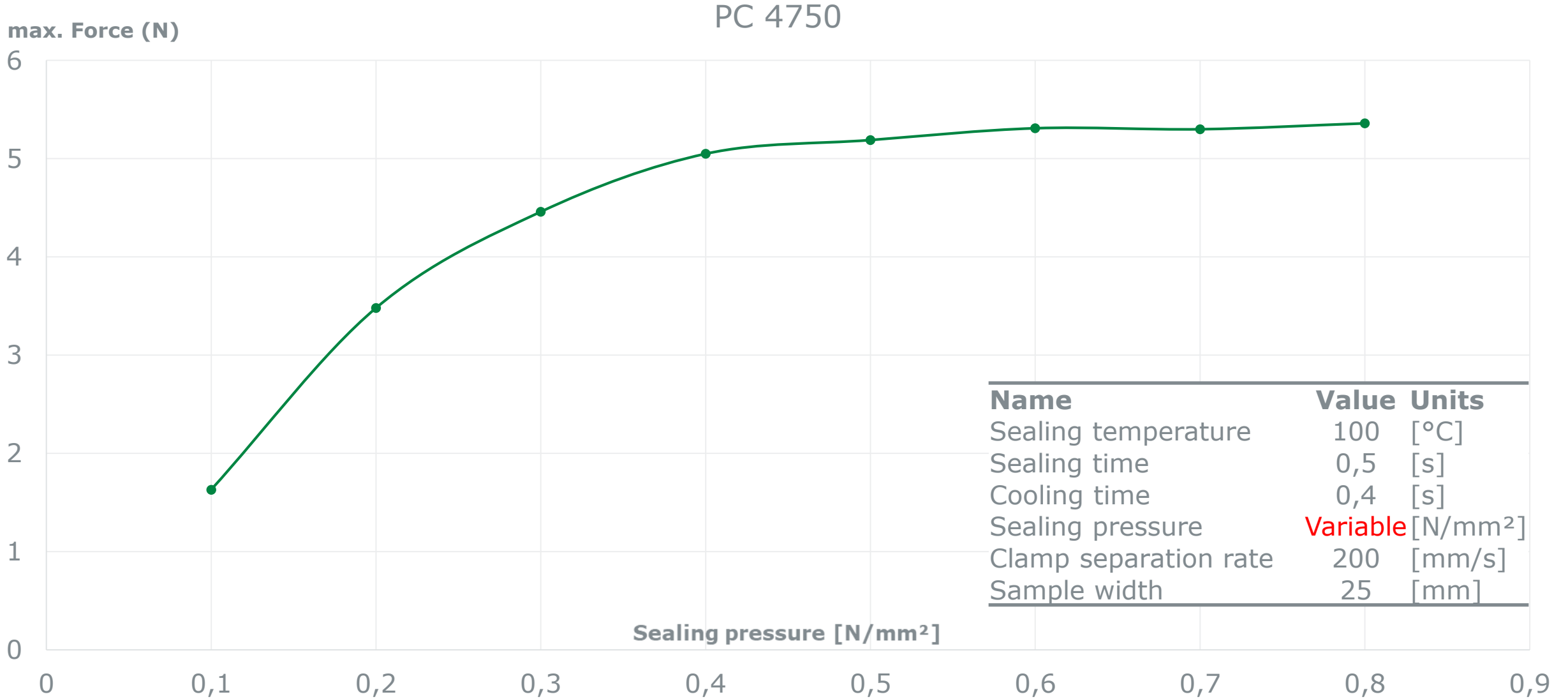
Summary



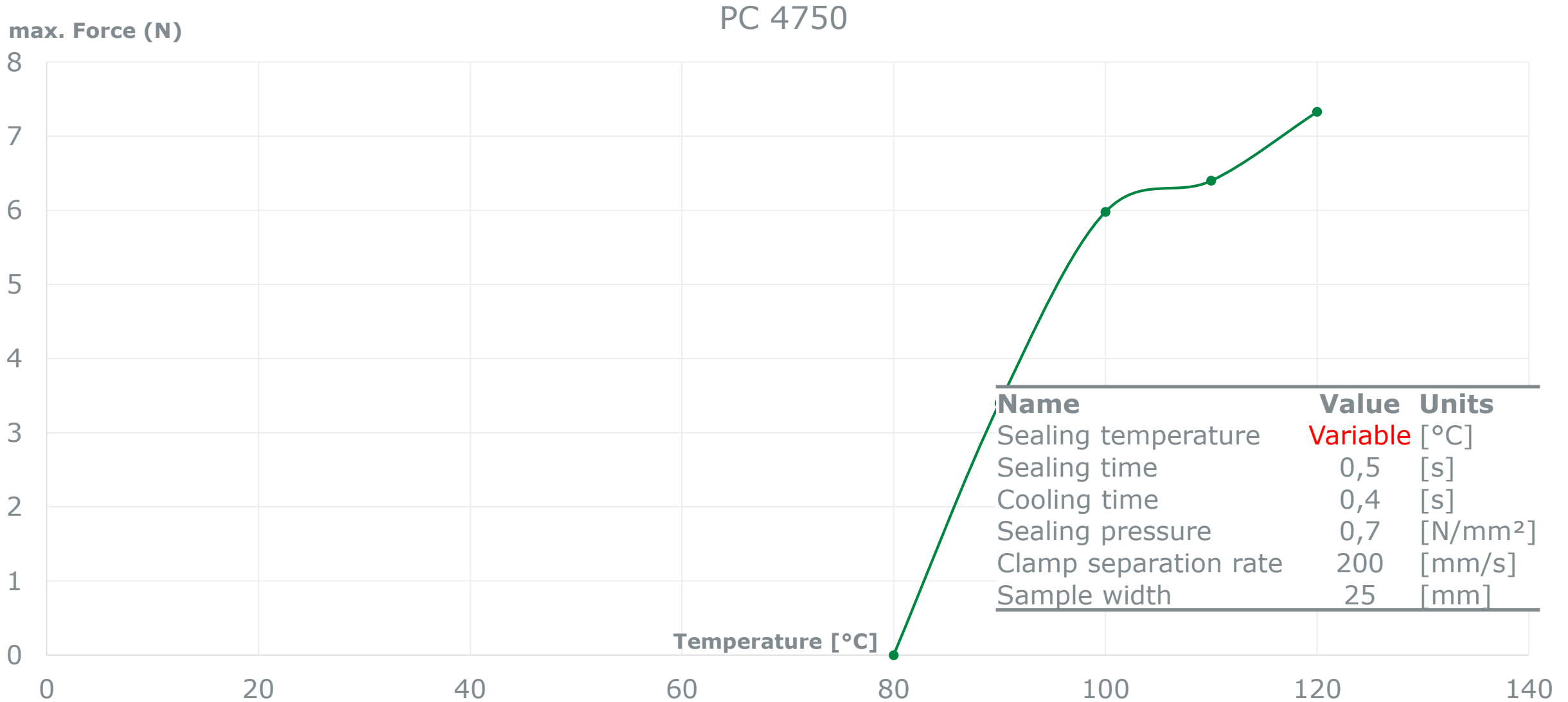
Hot tack measurement with HotJack 5000



1) Determination of optimum pressure

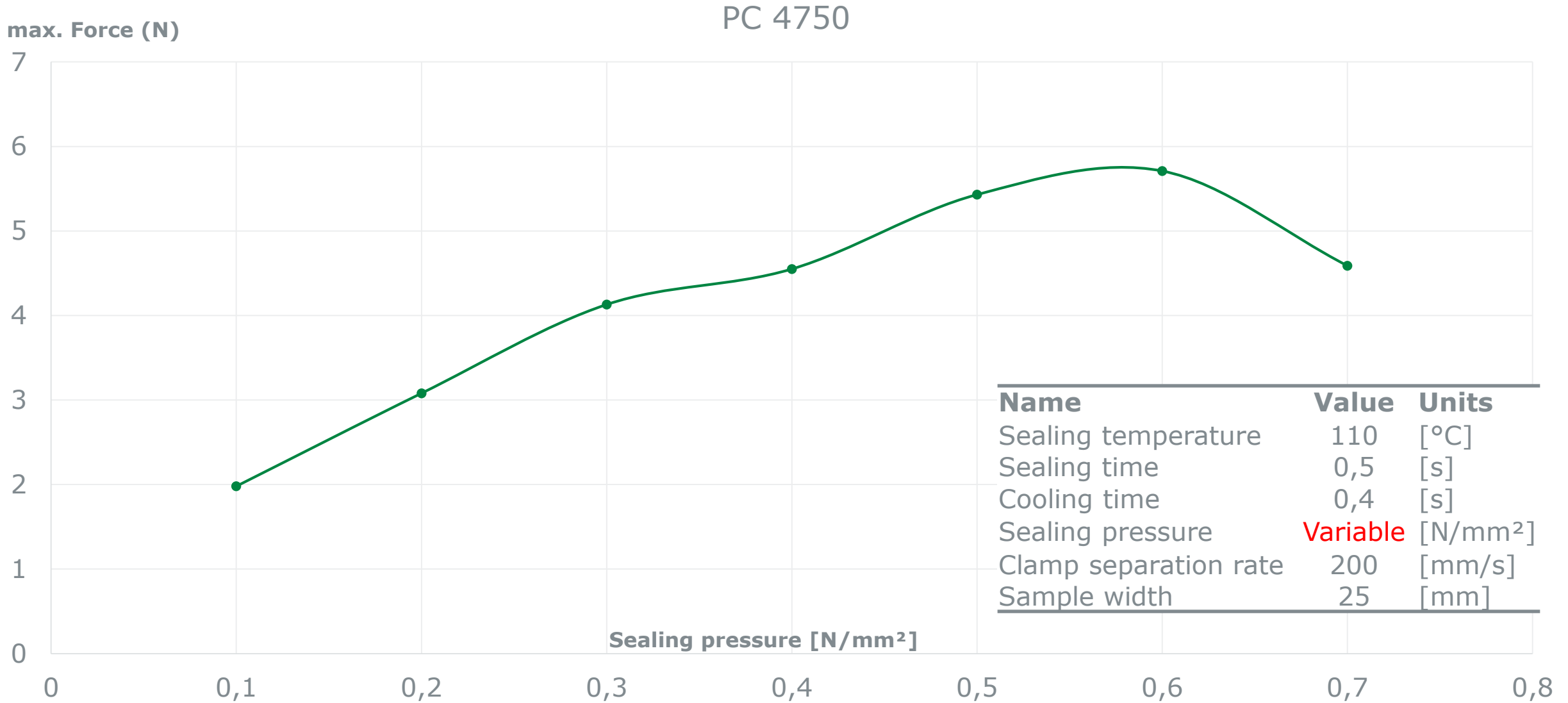


2) Determination of optimum temperature





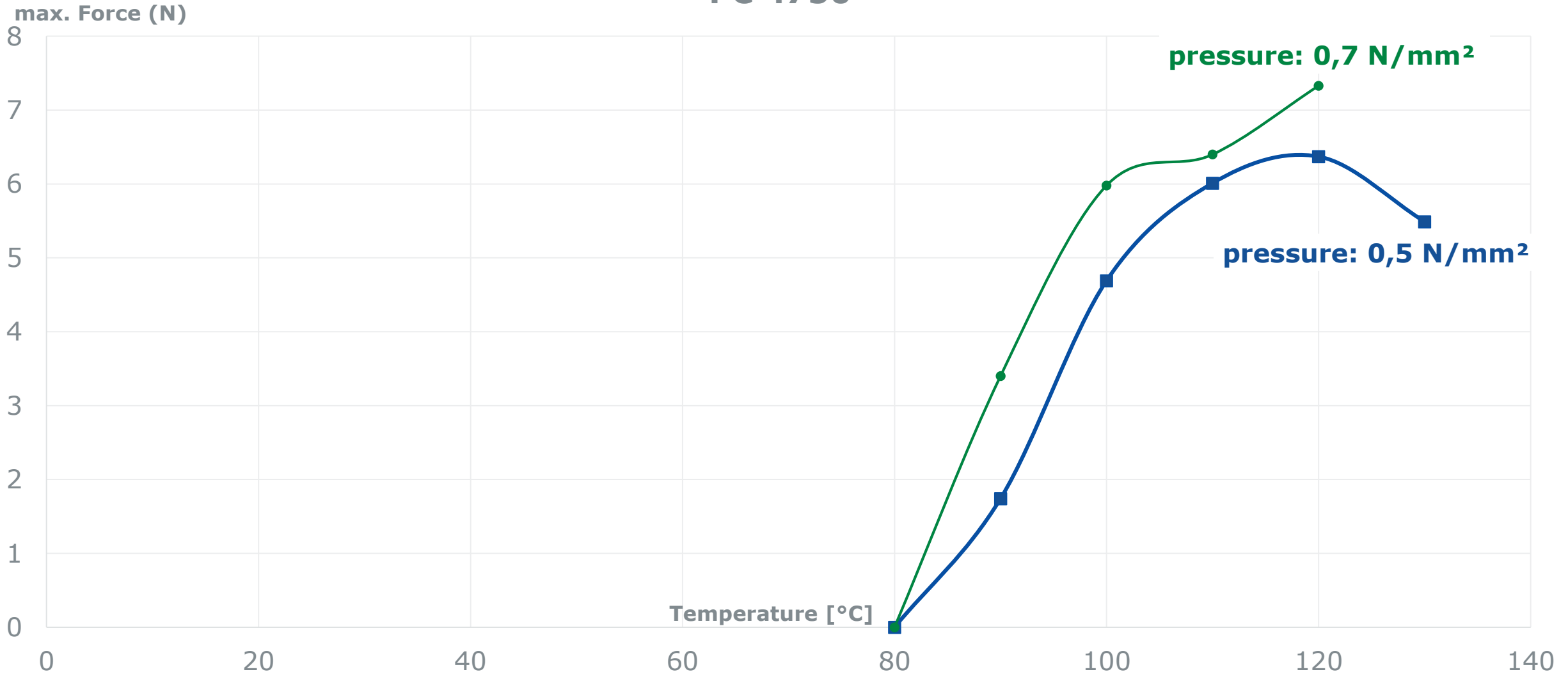
3) Final pressure determ. @ optimum temperature





Comparison of seal strength @ diff. pressure

PC 4750



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- High MVTR barrier possible, without losing good water- and fat-resistance
- PC 4750 as potential replacement for PVDC polymers
 - Halogene free barrier solutions!
- Extremely broad food contact listing with direct fatty food contact possible!
- Excellent sealing properties at rel. low temperatures
- Recycling score 77/100 according to 4evergreen protocol
- Biobased version possible using ISCC+ mass balance approach

Disclaimer:

The aforesaid information is based on our present state of knowledge and shall inform about our products and their application possibilities. It is not intended to assure certain characteristics of the products and their suitability for precise application fields. Products including "VP" in their label are trial products during test stage. For these products Alberdingk Boley is only able to provide preliminary characteristics without obligation. Please consider possible industrial property rights. Subject to change without prior notice. ALBERDINGK® and ALBODUR® are registered trademarks of ALBERDINGK BOLEY GmbH or an affiliate thereof in one or more, but not all, countries. Possible trademark rights of third-party products mentioned have to be observed.



Certified according to ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ILO-OSH 2001