

# Thiele Kaolin Company

## ***Tailoring Kaolin to Your Needs***



# *Innovations in Coating Technologies*

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## TAG HY – A New Coating Pigment for Paper and Paperboard

By

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# Objective

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Provide performance comparable to Titanium Dioxide by using a more economical hybrid pigment product.

# Pigment Products

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- Anatase  $\text{TiO}_2$  (A)
- Anatase  $\text{TiO}_2$  (B)
- Rutile  $\text{TiO}_2$
- TAG HY

# Applications

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- Coated Wood-free Offset Paper
- LWC Rotogravure
- Recycled Paperboard

# CFS: Formulation

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- $\text{TiO}_2$  10
- HB #1 Clay 40
- $\text{CaCO}_3$  (90% < 2 microns) 50
  
- Latex 13
- Starch 3
- Lubricant 1
- Insolubilizer 0.67
- Dispersant 0.1

# CFS: Coating Parameters

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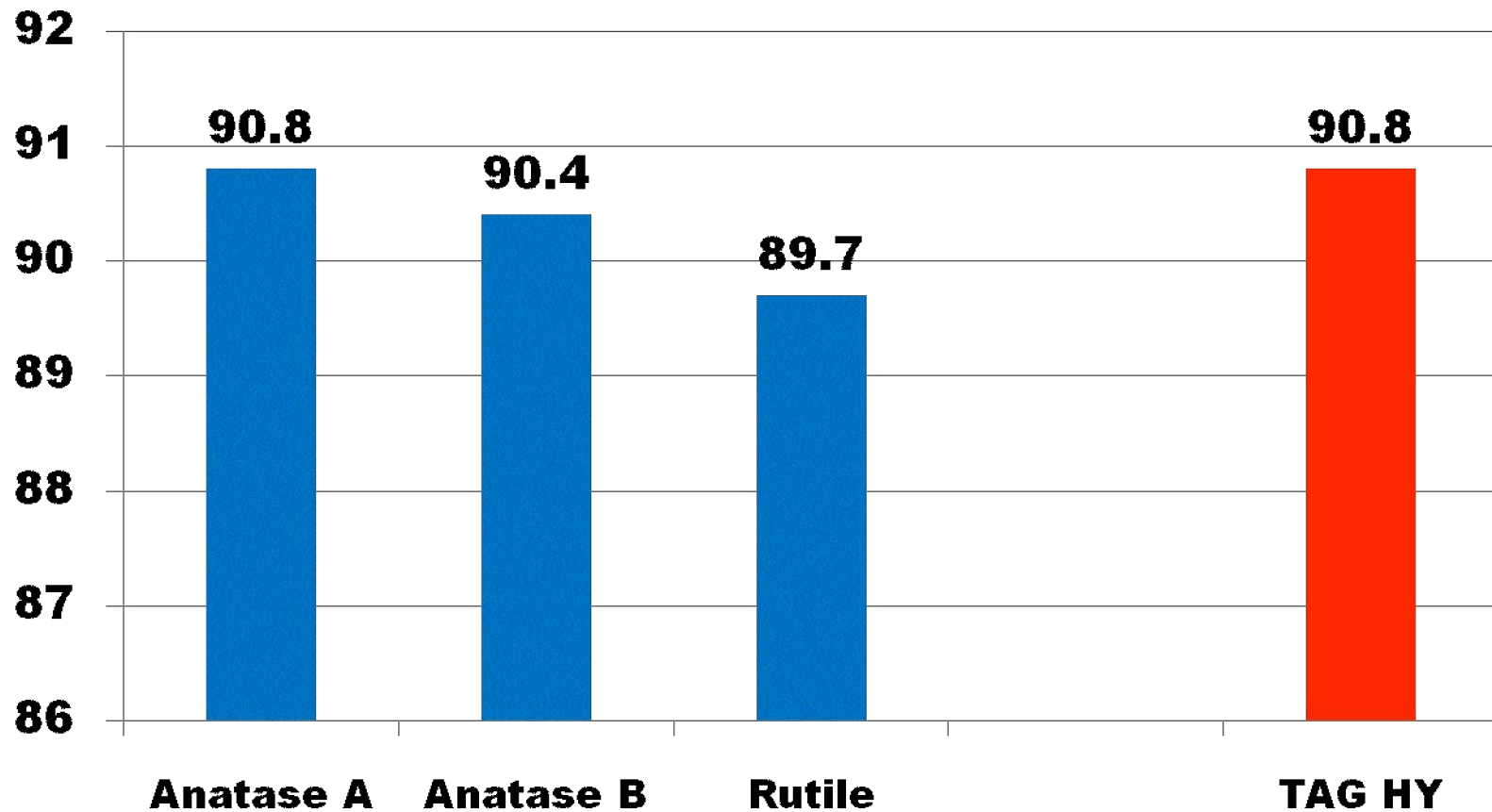
- Coater: CLC at 2500 fpm
- Base stock: 90 GEB; 50#/3300 ft<sup>2</sup>
- Coat weight: 8#/3300 ft<sup>2</sup> (C1S)
- Gloss target: 65-70

# CFS: Results

	Anatase	Anatase	Rutile	TAG HY
B'field @ 20	4220	3340	3260	3200
Hercules, cps @ 4400 rpm	53	41	42	46
GE Brightness	90.8	90.4	89.7	90.8
Opacity	91.0	91.0	91.2	90.5
Sheet gloss	68	70	69	67
PPS@1000kPa	0.82	0.79	0.79	0.85
Print gloss	98	99	98	98

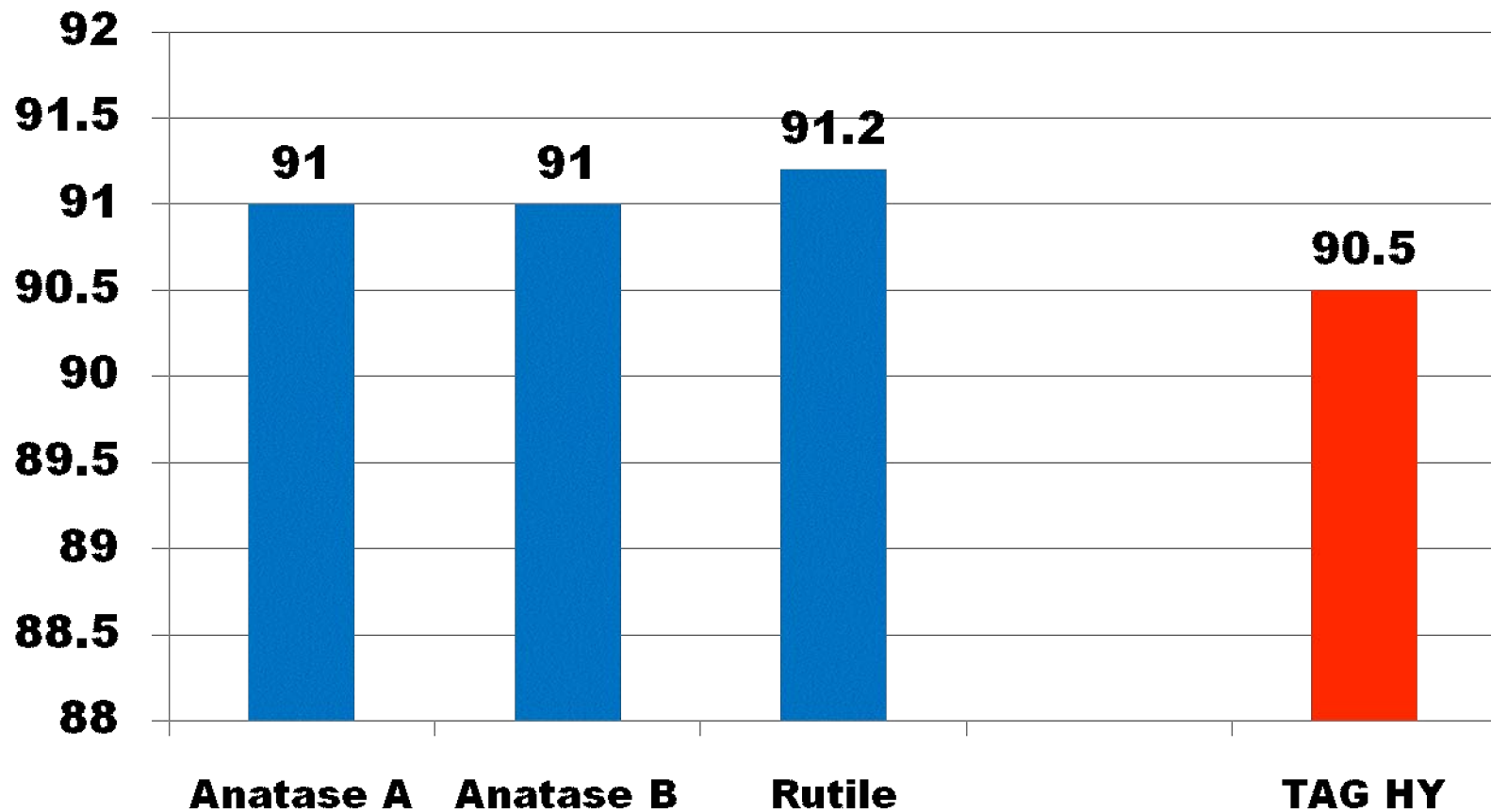
# CFS: GE Brightness

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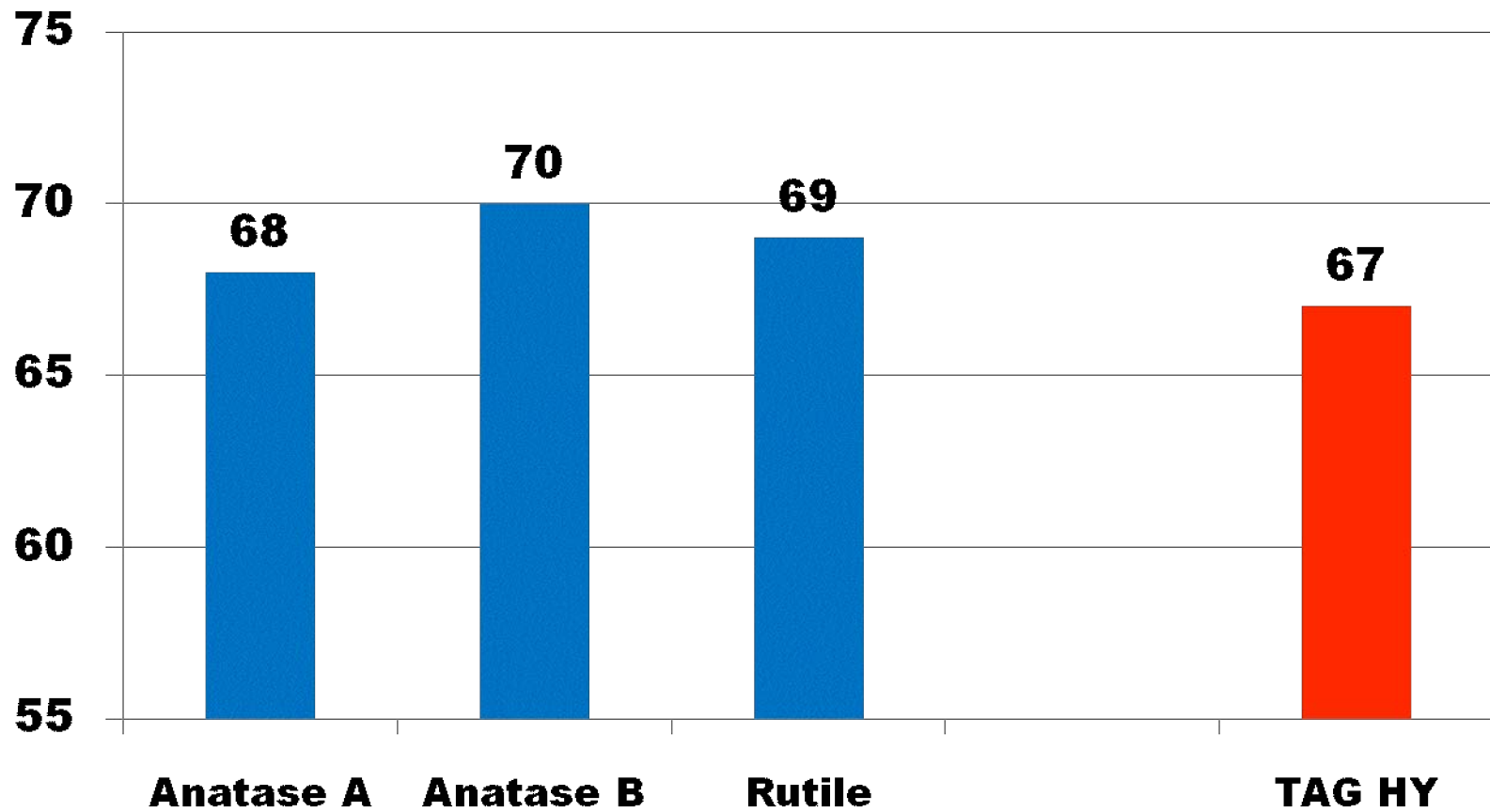
# CFS: Opacity

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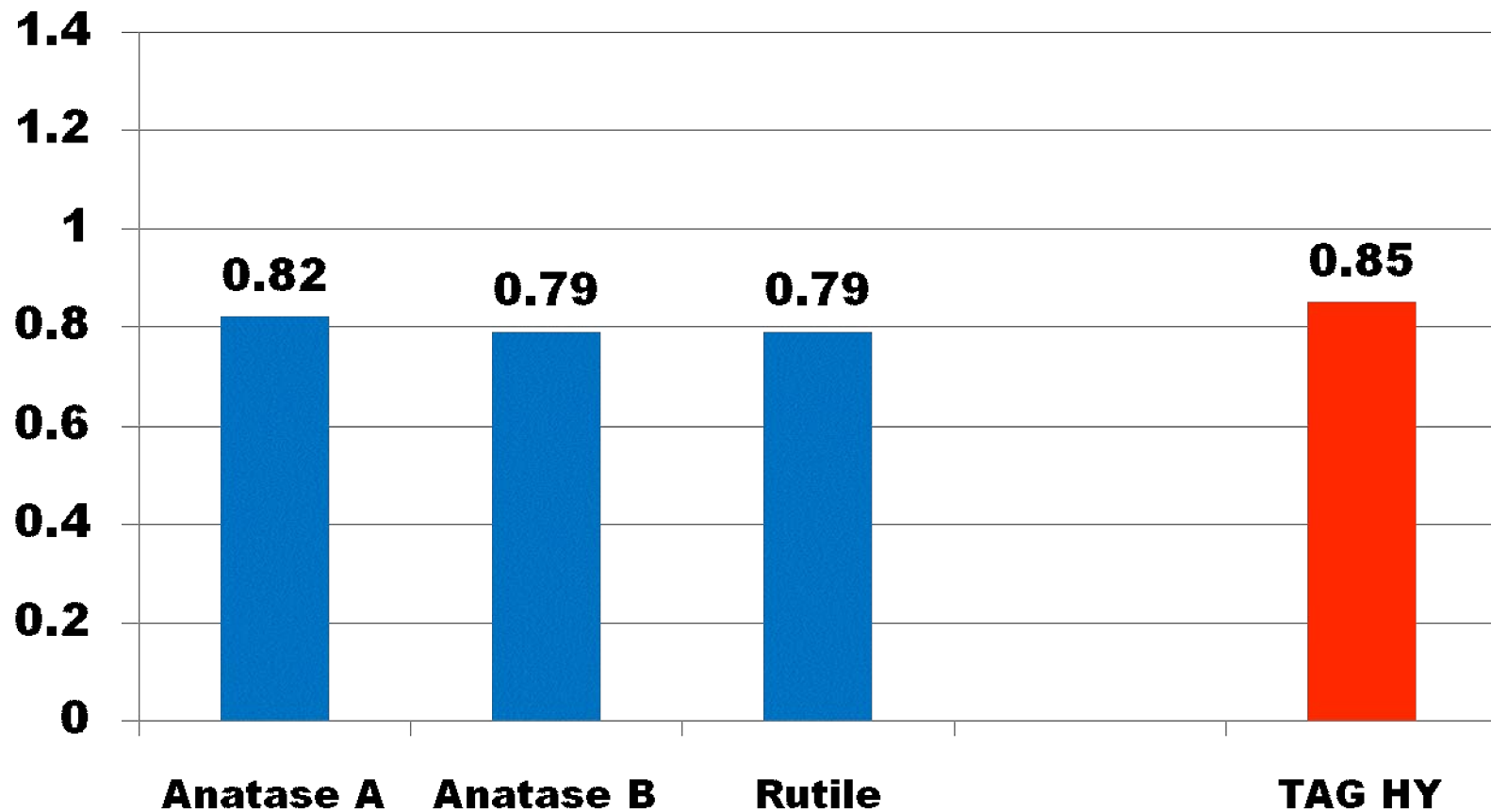
# CFS: Gloss

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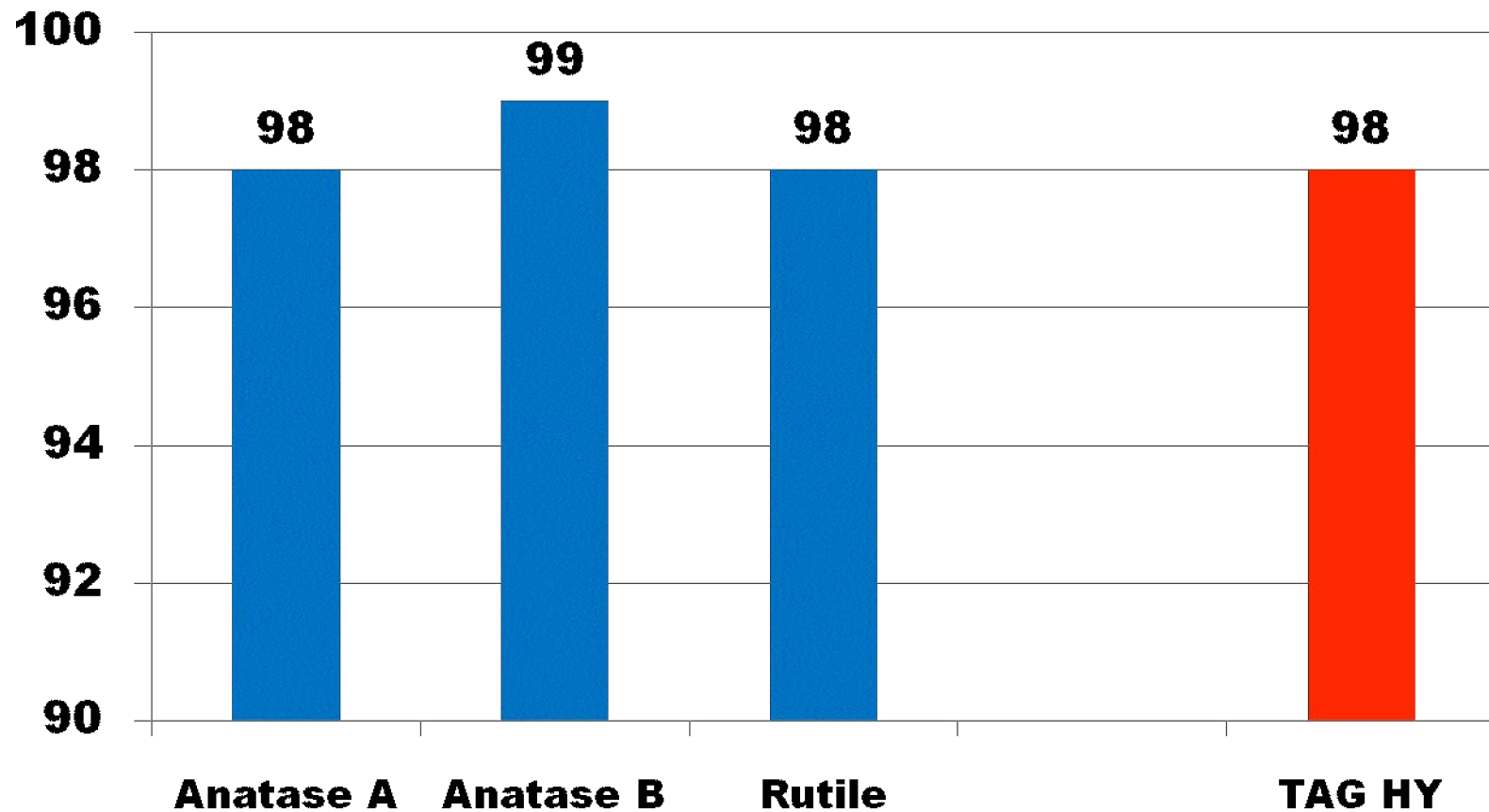
# CFS: PPS Smoothness

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# CFS: Print Gloss

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# Applications

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- Coated Woodfree Paper
- LWC Roto
- Recycled Paperboard

# LWC Roto: Formulation

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• TiO <sub>2</sub>	6
• Delaminated Clay	79
• Calcined Clay	15
• Latex	6
• Lubricant	1
• Thickener	0.2
• Dispersant	0.1
• Solids	100%

## LWC Roto: Coating Parameters

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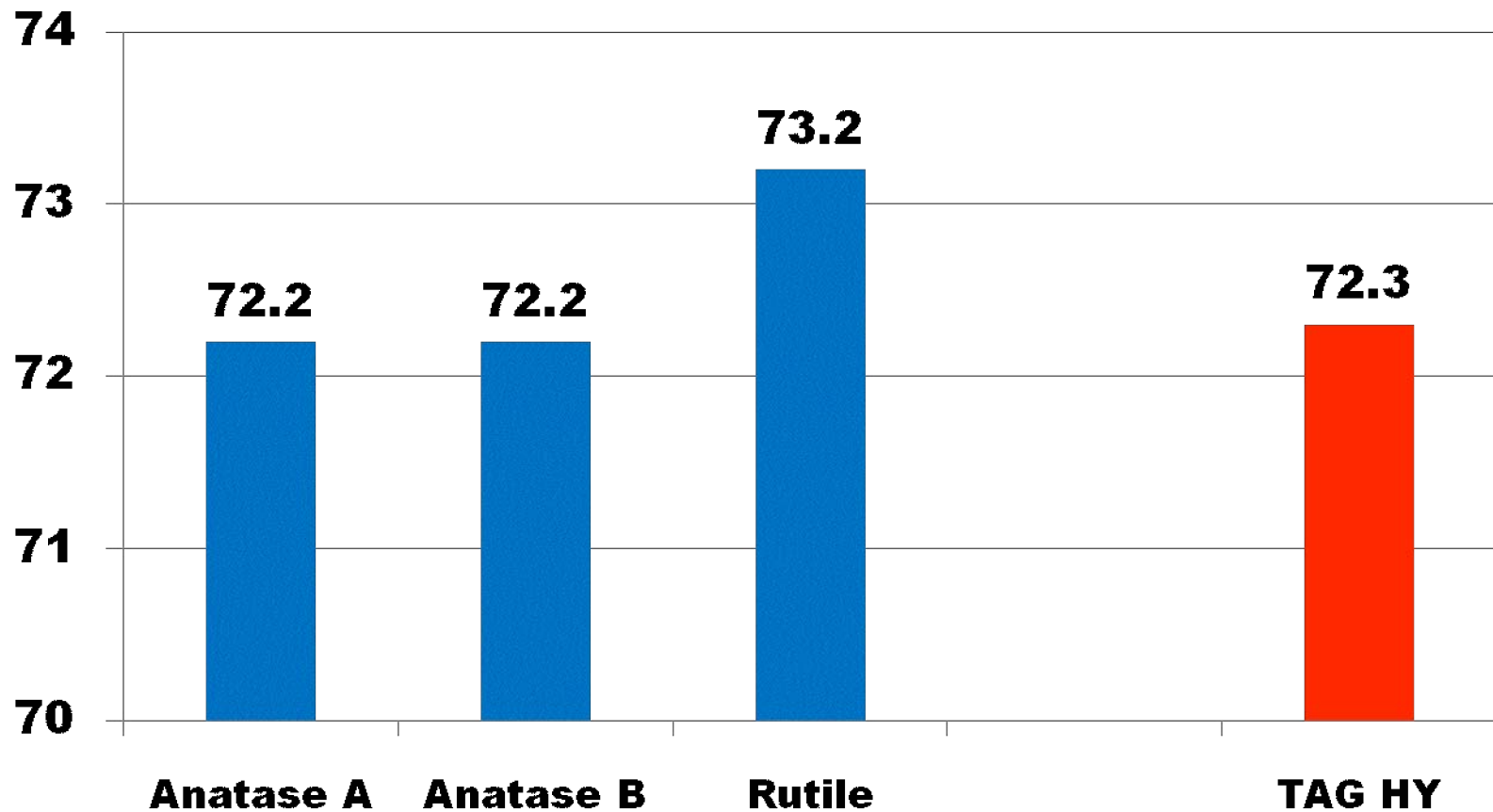
- Coater: CLC at 2500 fpm
- Base stock: 58 GEB; 26#/3300 ft<sup>2</sup>
- Coat weight: 5#/3300 ft<sup>2</sup> (C1S)
- Gloss target: 50-55

# LWC Roto: Results

	Anatase	Anatase	Rutile	TAG HY
B'field @ 20	3080	3270	3170	3350
Hercules, cps @ 4400 rpm	85	80	63	83
GE Brightness	72.2	72.2	73.2	72.3
Opacity	87.5	87.6	88.5	87.8
Sheet gloss	51	51	54	52
PPS@500kPa	1.13	1.10	1.02	1.08
Heliotest, mm	59	65	69	65

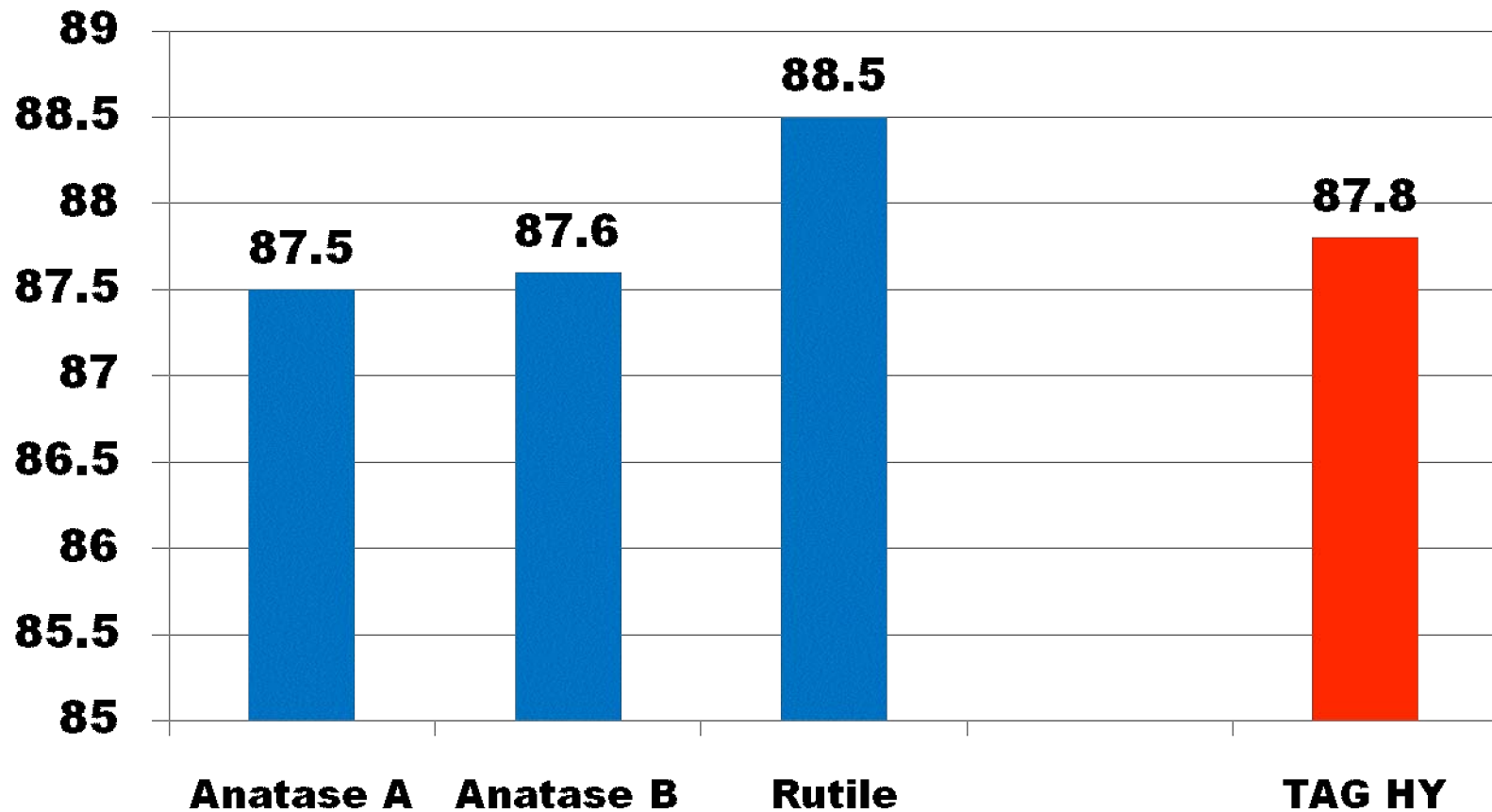
# LWC Roto: GE Brightness

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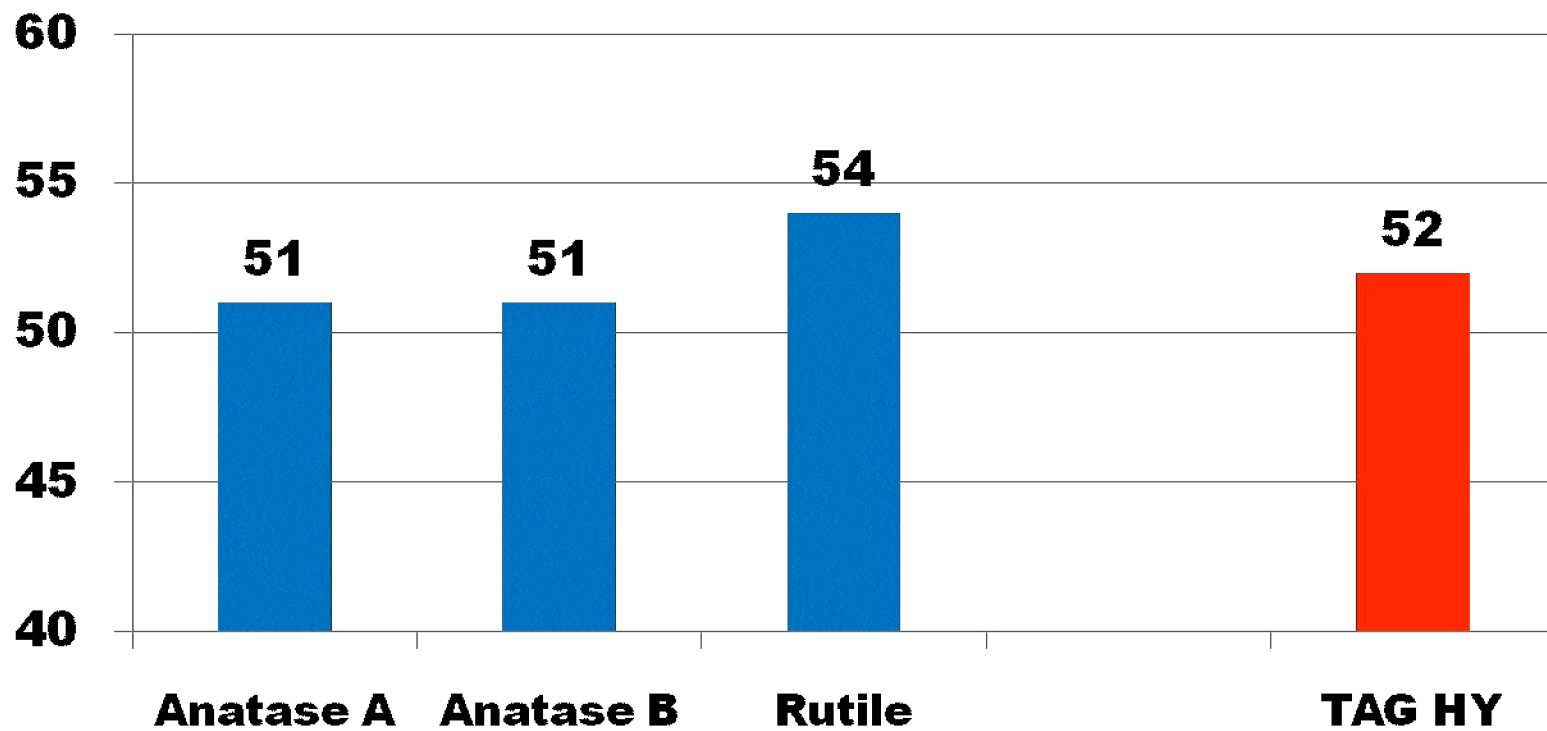
# LWC Roto: Opacity

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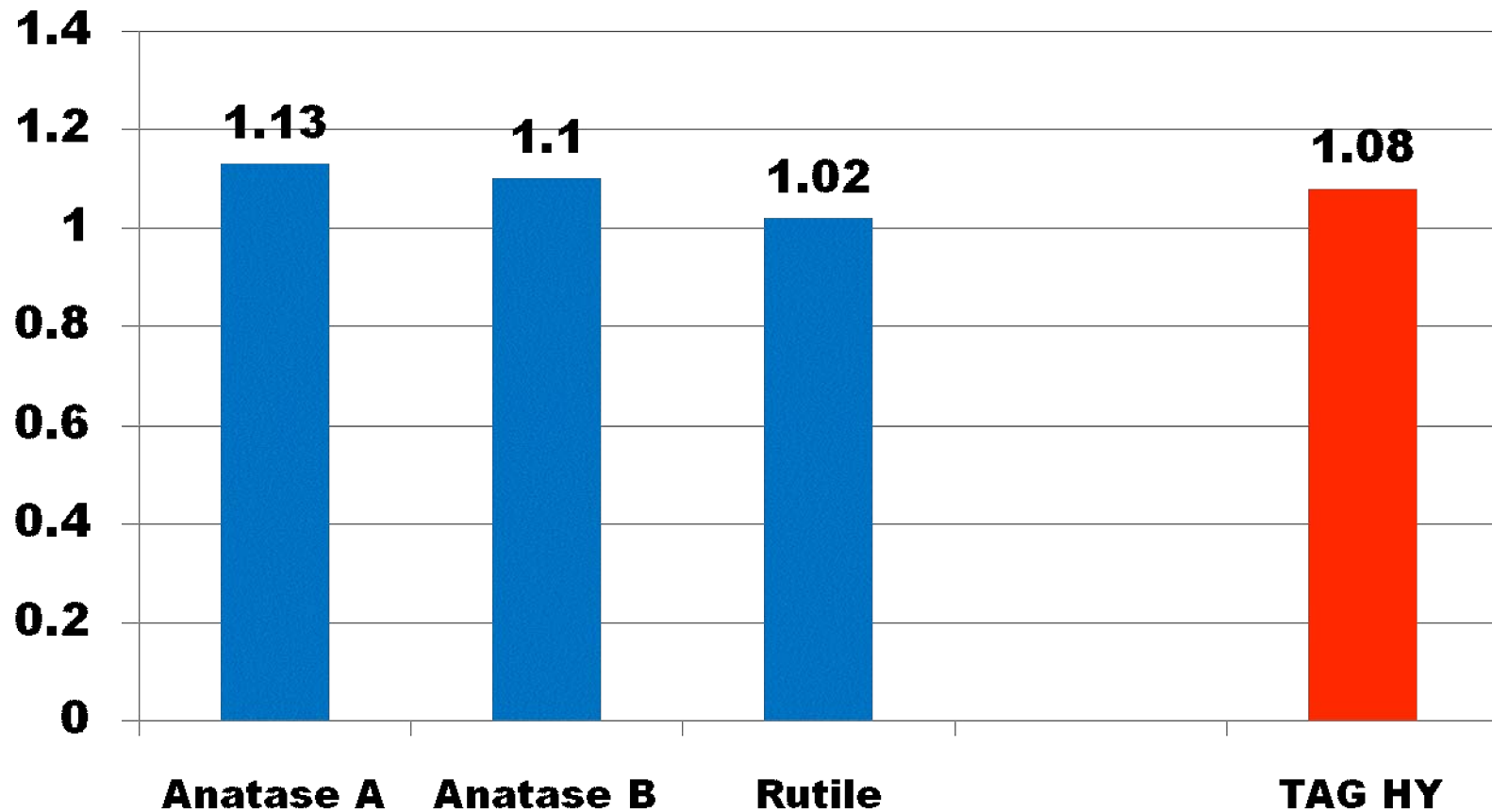
# LWC Roto: Gloss

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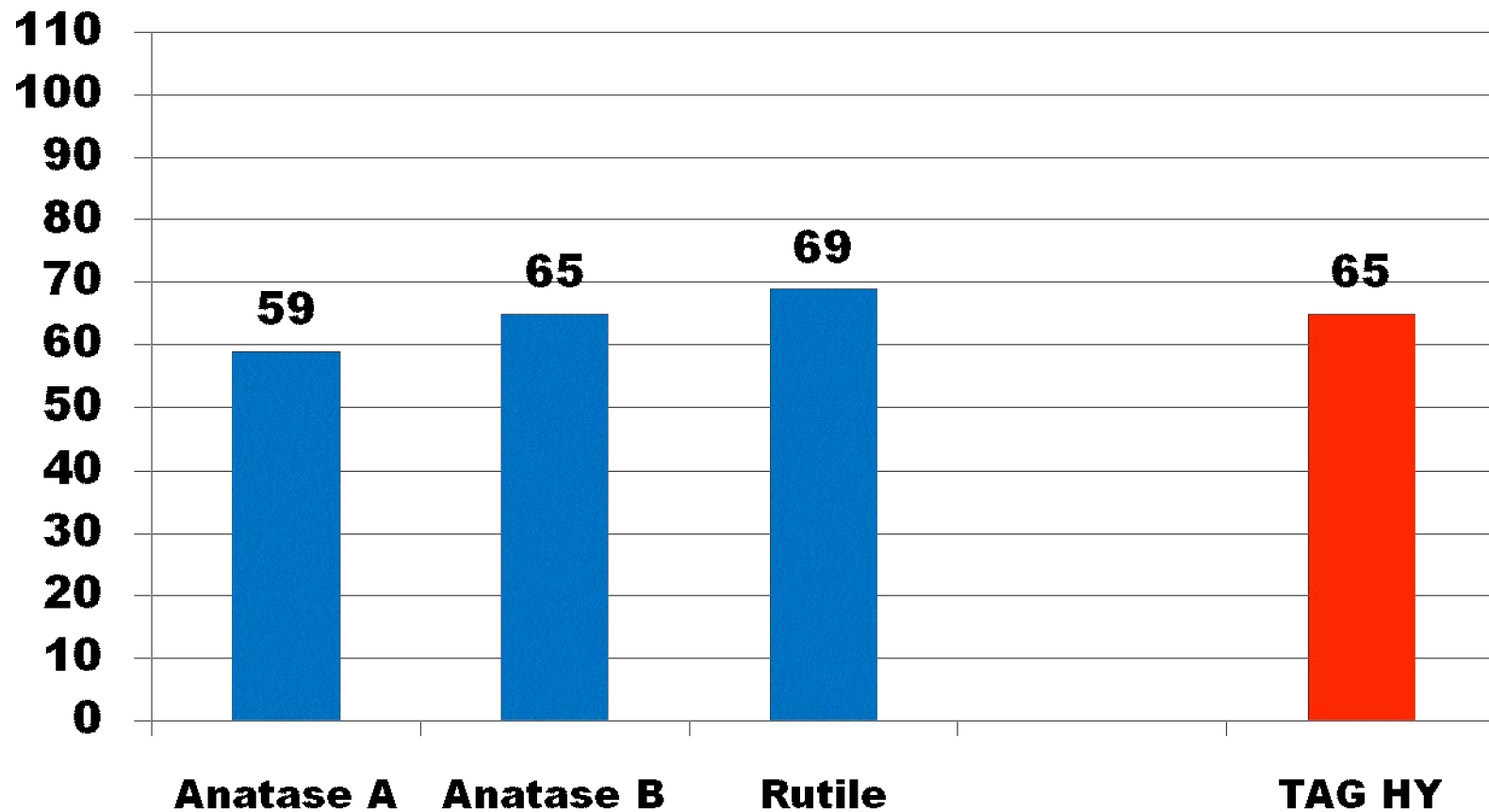
# LWC Roto: PPS Smoothness

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# LWC Roto: Heliotest

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# Applications

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- Coated Wood-free Paper
- LWC Rotogravure
- Recycled Paperboard

# Board: Top Coat Formulation

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• TiO <sub>2</sub>	16
• HB#1 Clay	67
• Calcined Clay	17
• Latex	18
• Protein	2
• Lubricant	1
• Insolubilizer	0.3
• Solids	54.0%

## Board: Coating Parameters

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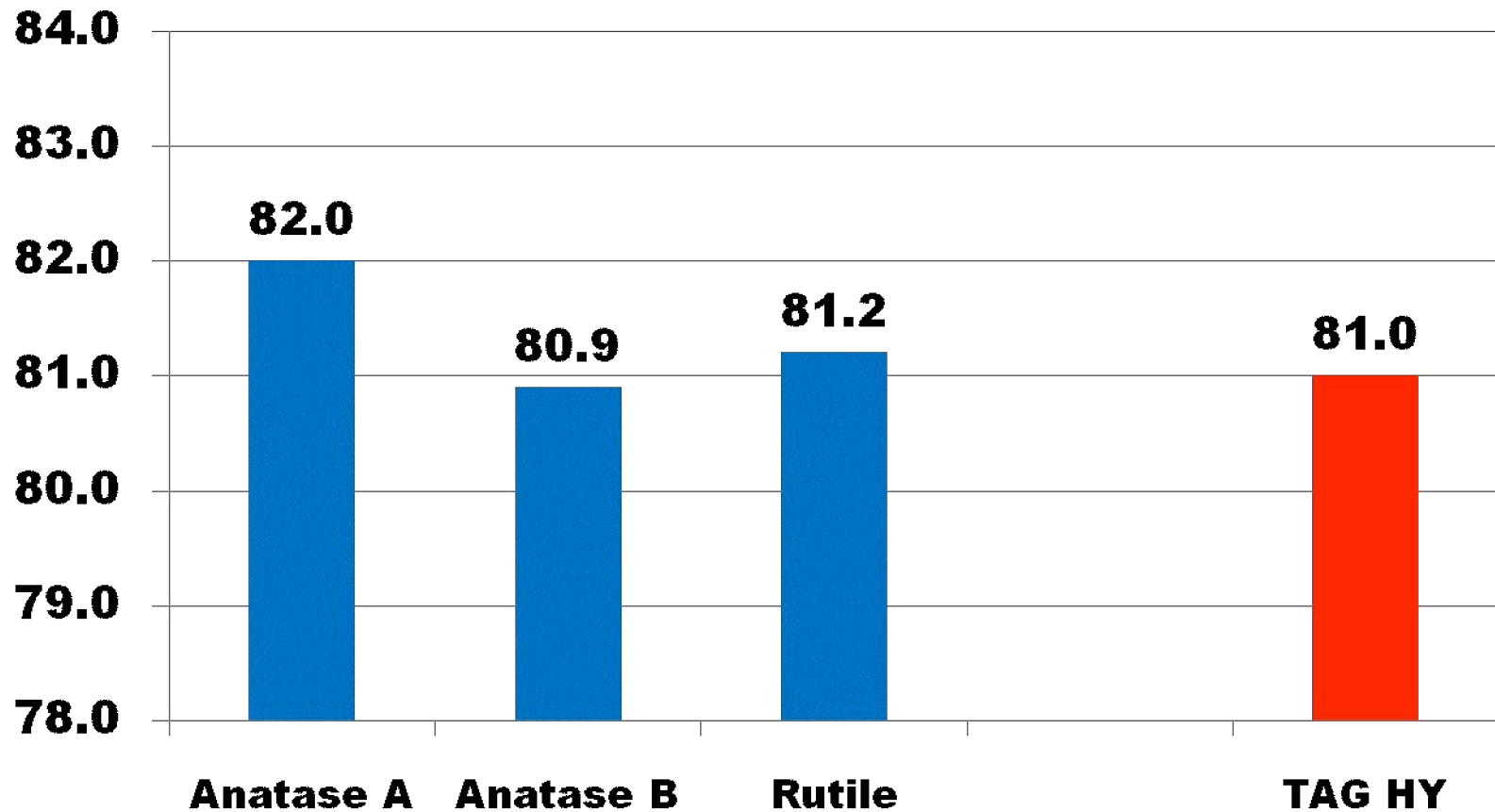
- Coater: Dow / rod
- Base stock: 62 GEB (precoated)
- Coat weight: 3#/1000 ft<sup>2</sup>
- Gloss target: 45-50 (machine stack)

# Recycled Board: Results

	Anatase	Anatase	Rutile	TAG HY
B'field @ 20	1830	1120	950	1450
Hercules, cps @ 4400 rpm	31	18	18	22
GE Brightness	82.0	80.9	81.2	81.0
Visual Appearance	2	2	1.5	1
Sheet gloss	48	46	45	45
PPS@1000kPa	1.91	1.92	1.98	2.02
Print gloss	80	82	82	81

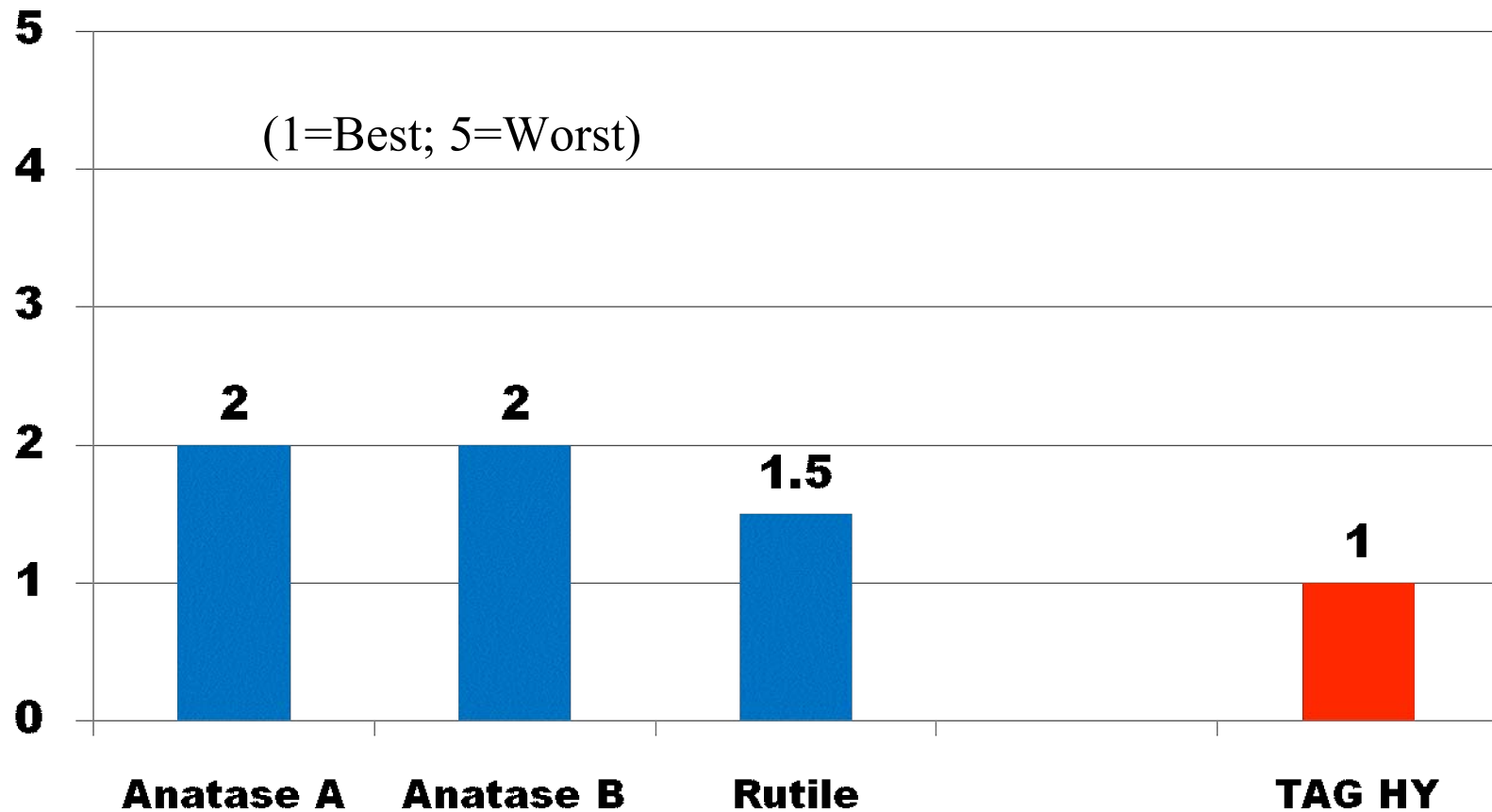
# Board: GE Brightness

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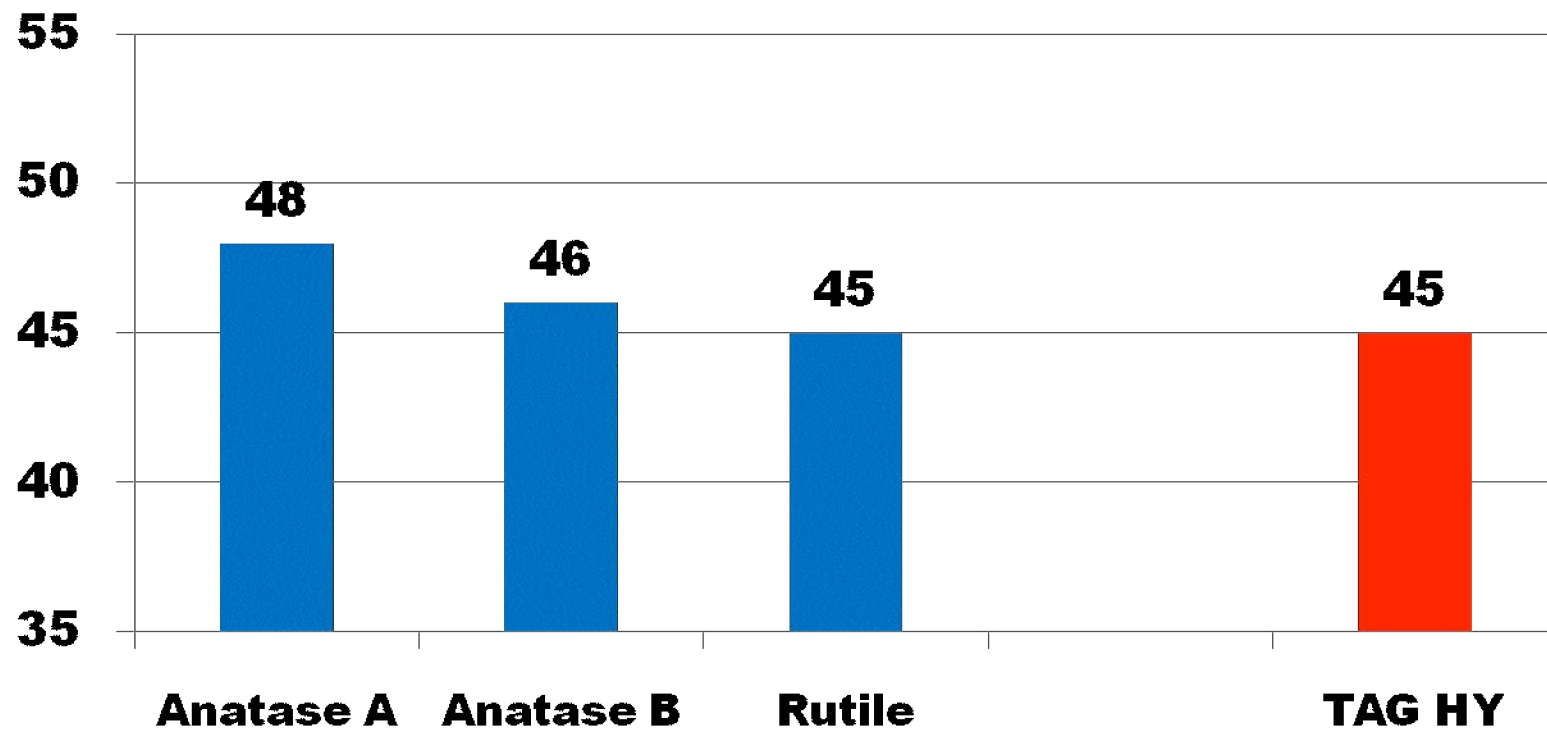
# Board: Visual Appearance

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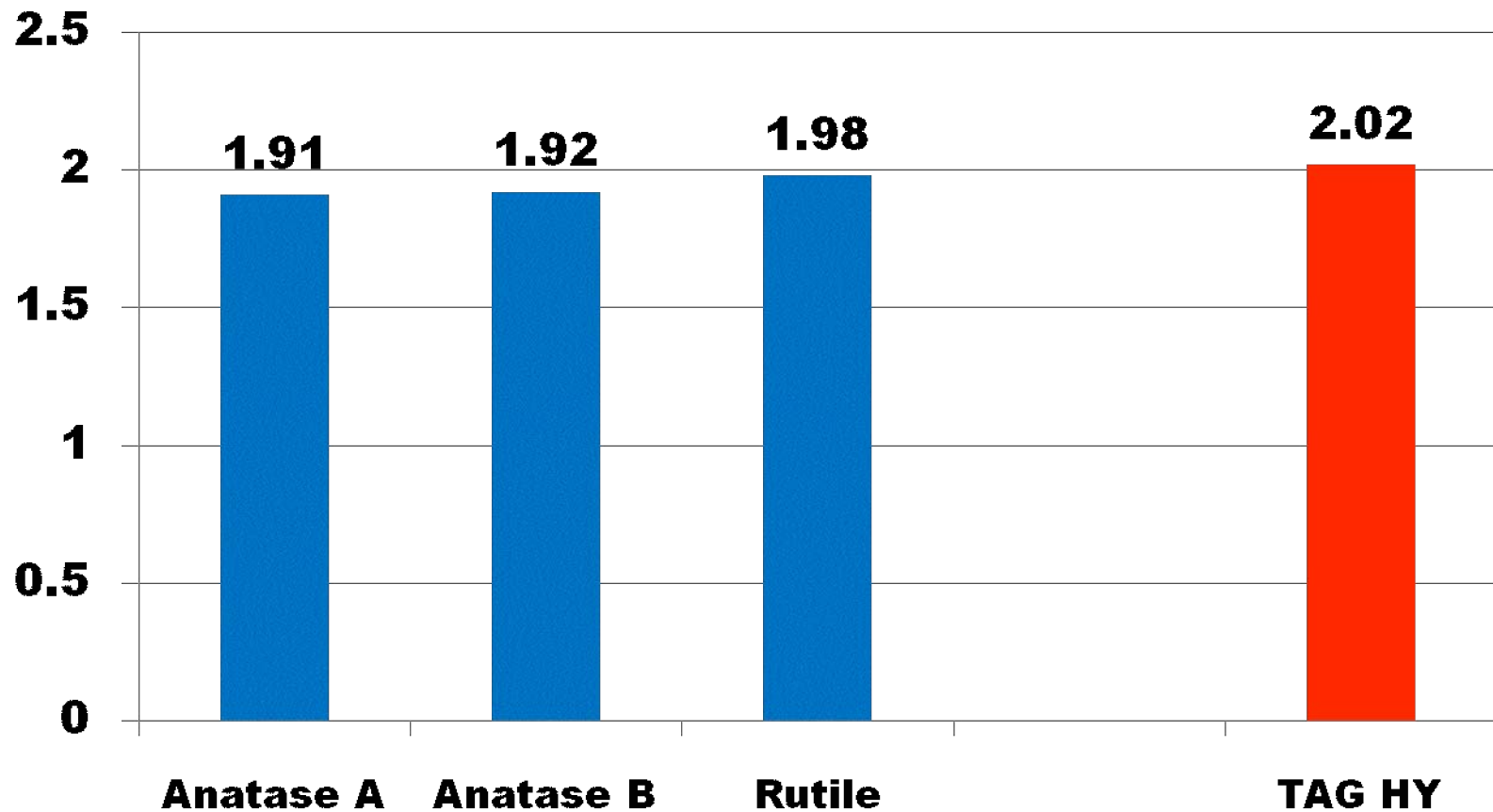
# Recycled Board: Gloss

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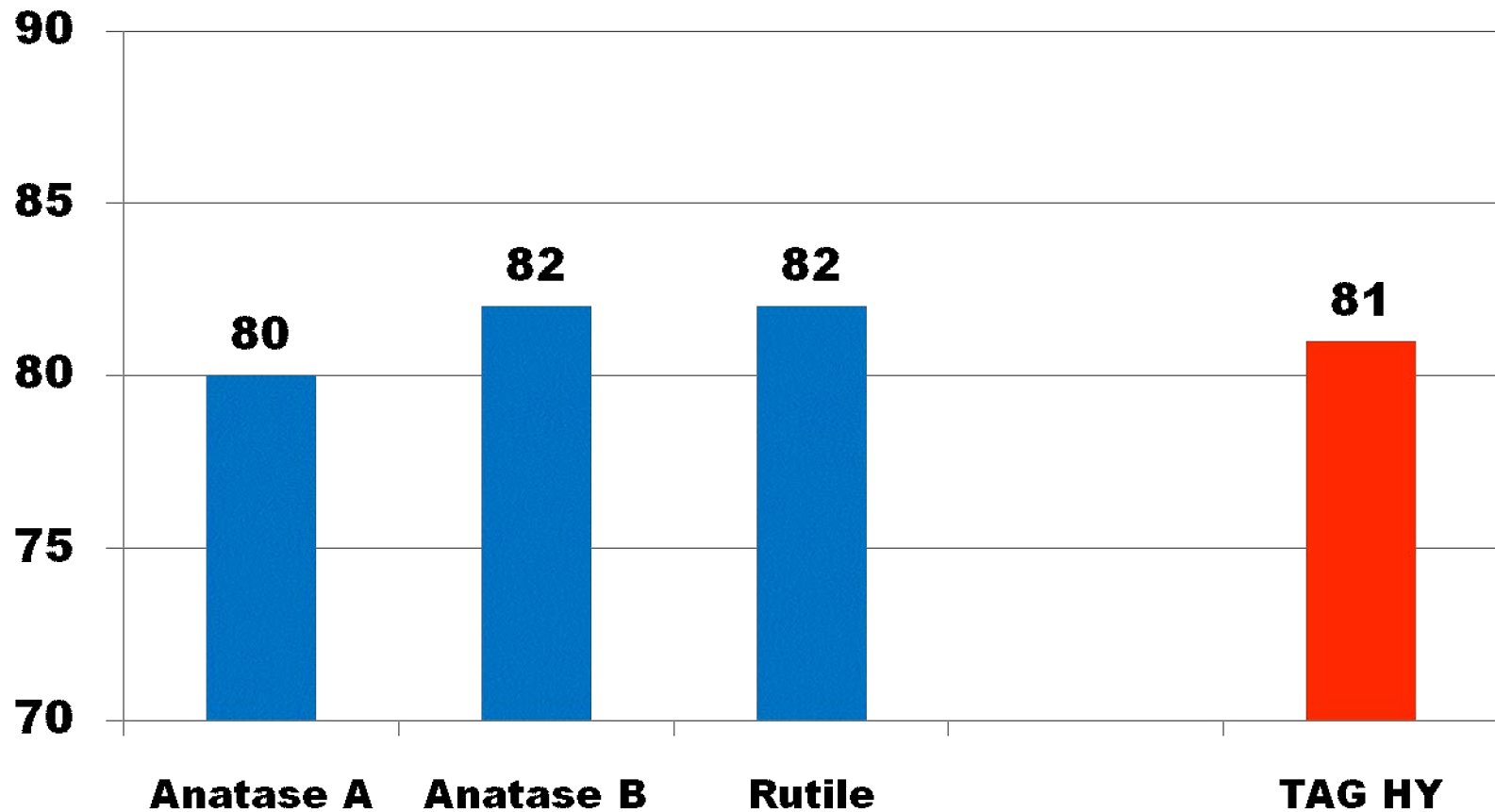
# Board: PPS Smoothness

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# Recycled Board: Print Gloss

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# Conclusion

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TAG HY provided performance that was comparable to several commercially available TiO<sub>2</sub> products in coated free sheet, LWC roto, and recycled board applications.

# TAG HY

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## TYPICAL PROPERTIES

GE Brightness	96.4
Brookfield	400 @ 20 rpm
Mean particle size	0.35 micron
pH	7.6
Solids	65%

# Thiele Kaolin Company

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