



VIBRANTZ
TECHNOLOGIES™



Improve energy efficiency

Infrared reflective pigments



Improve energy efficiency with infrared reflective pigments

Infrared reflective (IRR) pigments and dispersions, or "Cool Colors", can be used to significantly reduce the amount of heat absorbed by structures in comparison with other pigments in the same color space, lessening the reliance on air conditioning (AC) systems. This technology improves the durability and longevity, offering enhanced protection against thermal stress.



Global warming
mitigation



Energy
savings



Health
and safety

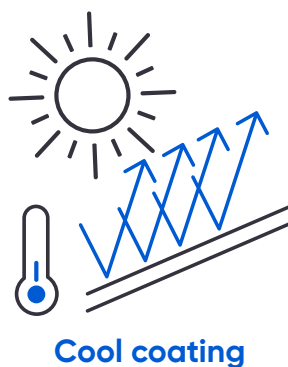
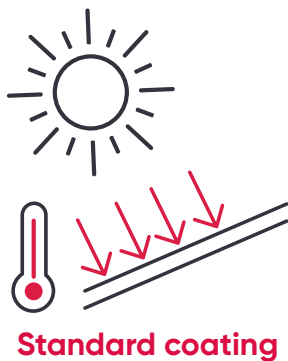


Exterior durability
improvement



Introducing the “cool” concept

Air conditioning for residential and commercial use is increasingly common, putting enormous strain on electricity. Cooling is the fastest growing use of energy in buildings, presenting significant challenges for energy sustainability and affordability.



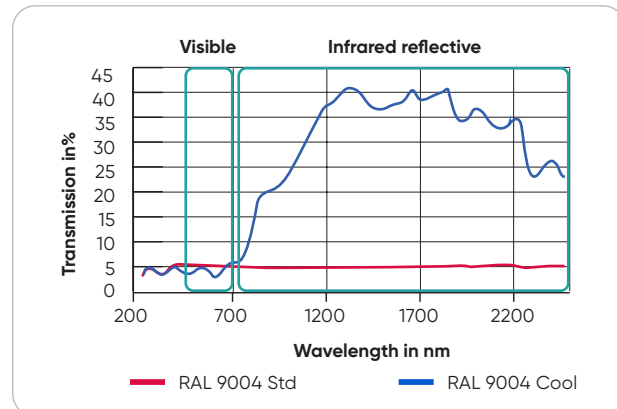
How it works

Color pigments absorb portions of the visible light spectrum, creating the colors we see. However, they also absorb infrared radiation, which raises surface temperatures. IRR pigments provide color while reflecting infrared radiation, helping to reduce surface temperatures compared to standard pigments in the same color space. By minimizing infrared absorption, these pigments lower heat retention in building exteriors, enhancing energy efficiency, reducing AC usage, improving comfort and extending the durability of exterior material.

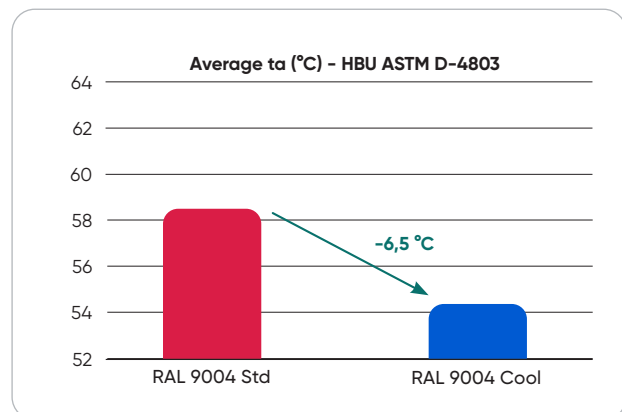
Assessing the impact of cool colors

Measuring the “cool effect” of Cool Colors is essential for ensuring optimal energy savings. Total solar reflectance (TSR) is commonly used to assess the reflective properties measuring the percentage of solar energy reflected by a surface.

Our **Innovatint** software helps customers identify TSR values and measures color, cost and reflectivity.



	L	TSR	TSR_UV	TSR_VIS	TSR_IRR1	TSR_IRR2	TSR_IRR3
RAL 9004 Std	29,3	4,80	0,21	2,25	1,12	0,71	0,52
RAL 9004 Cool	28,9	14,76	0,20	1,98	3,68	5,20	3,72



Heat build-up (HBU) tests are also used to measure how much heat a surface absorbs when exposed to an infrared lamp, simulating effects caused by sunlight infrared absorption.



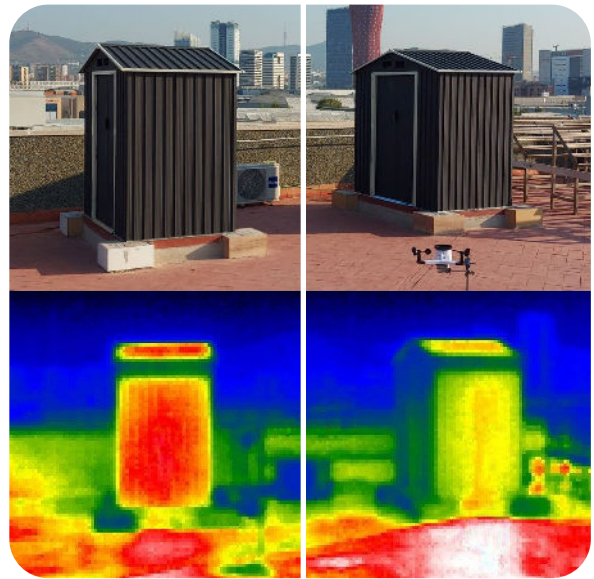
Case study: Barcelona garden houses

In 2022, Vibrantz conducted an experiment where we placed two identical garden houses on the roof of our Barcelona laboratory and with the exact same AC equipment. The garden houses were both painted with 100% acrylic paint with same color RAL 9004, but one applied a standard coating based on Carbon Black (PBk 7) (House A) while the other applied a cool coating (House B) based on Chrome Iron Brown Hematite (PBr 29).

Over the course of three months, House B coated with Cool Colors had nearly 20% AC consumption savings compared to the standard coated House A.

Effective beyond black

Further testing in a similar study, after painting two garden houses grey, showed energy savings of up to **22%**.



House A
RAL 9004 Std

House B
RAL 9004 Cool



Vibrantz cool pigments

Color index	Product name (per region)			IRR reflectance	Description
	Americas	APAC	EMEA		
PG 17/PBr 29	V-775Q/V-785Q			High	Black shade (extra bluish)
PG 17/PBr 29	24-3950			High	Black shade (bluish)
PG 17/PBr 29	24-3950 FCP			High	Black shade (bluish); FCP version (*)
PG 17/PBr 29	V-781Q			High	Black shade (reddish)
PG 17/PBr 29	V-760Q			High	Black shade (brownish)
PG 17/PBr 29	-	-	24-3900	High	Black shade
Cr Free Eclipse	Black 372	-	-	High	Black shade (bluish) with highest TSR; launched in 2024
PBk 33	Nubifer NB-903K			Moderate	Black shade (bluish)
PBk 33	Nubifer NB-803K FCP			Moderate	Black shade (bluish); excels in plastic sorting; FCP version (*)
PY 164	10550Q	10550s	10550Q	High	Dark brown shade;
PBr 24	10408Q	10408s	10408 H	High	Buff shade (redish)
PBr 24	10406Q	10406s	10406 H	High	Buff shade (yellowish)
PBr 24	10411Q	10411s	-	High	Buff shade (extra yellowish)
PY 119	Nubifer Y-905K			Moderate	Buff shade
PY 119	V-9117Q			Moderate	Buff shade (reddish)
PY 53	10401Q	10401s	10401N	High	Light yellow shade with greenish undertone; 10401N non-toxic grade (no NiTiO3 content)
PY 184	6607B/6616B			High	Bright yellow shade with high color strength
PO 85	6821B			High	Bright orange shade; encapsulated grade
PR 101	Nubifer R-5510			Moderate	Dull red shade
PG 17	Nubicrom 02			High	Olive green shade
PG 17 Eclipse	V-11640Q	-	-	High	Dark olive green shade with higher TSR
PG 26	V-12600Q	V-12600Q	21-4700	Moderate	Dark bluish green shade
PG 50	V-11633Q			Moderate	Bright green shade
PG 50	21-4301			Moderate	Bright green shade; non-toxic Ni&Cr-free
PB 28	10446Q	10446s	10446	Moderate	Reddish blue shade with high color strength
PB 36	V-9248Q	22-5070	SPP-2004	Moderate	Greenish blue shade; more opaque in VIS/UV than PB 28
PB 29	Nubicoat HWR			Transparent	Unique reddish blue shade
PV 15	Nubix V-5/V-60			Transparent	Unique violet shade (V-5 bluish; V-60 reddish)

(*) FCP version recommended for food contact applications.
Product names in the list are typical products and Vibrantz Cool pigments range includes other products in the color space of these color index.

Vibrantz cool dispersions

Product name	Americas	EMEA	Description
Infracool® CCW IRR line	✓	-	Non-phthalate plasticizer. APE free, low VOC, broad selection of IRR colorants.
Novapint D-803	-	✓	(PBr 29) Water-based colorant for facade
Monicolor C IR	-	✓	(PBk 32) Water-based universal colorant for architectural applications
Temacolor S TIR	-	✓	(PBk 32) Solvent-based universal colorant for industrial applications
Temacolor UVH IRG	-	✓	(PBk 32) Colorant for UV coatings applications
Temacolor UVH IRB	-	✓	(PBr 29) Colorant for UV coatings applications
Plasticolor CF-02894R	-	✓	(PBr 29) Styrene-free colorants for polyester applications
Plasticolor CF-02895R	-	✓	(PBk 32) Styrene-free colorants for polyester applications
Plasticolor DTP-02918R	-	✓	(PBr 29) Plasticizer based colorant for soft-PVC applications



Your partner in sustainable innovation

Our team of color scientists offer technical support through formulation development, testing capabilities and customized energy savings estimation tools. In collaboration with DEKRA (the world's largest independent, non-listed expert organization in the field of testing, inspection and certification), we have created a computer modeling system to simulate real energy savings in various building types and climate conditions, and it can be used as a tool for customized energy savings estimations.

Contact us to learn about how our expanded range of Cool Color infrared reflective pigments and dispersions can contribute to a more sustainable future.



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