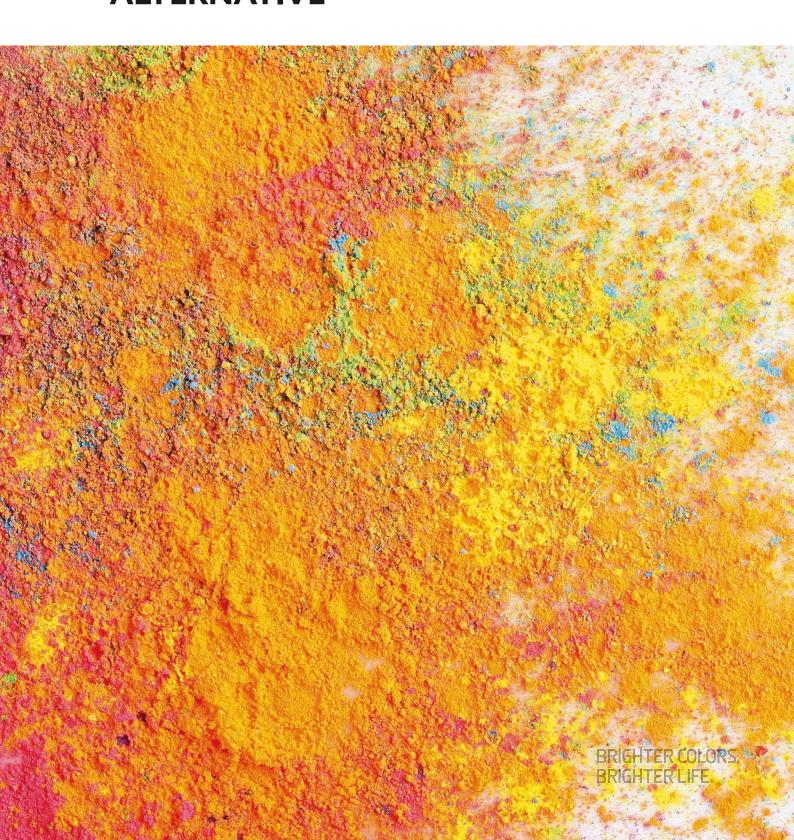


# TICO® HIGH-PERFORMANCE LEAD-FREE ALTERNATIVE









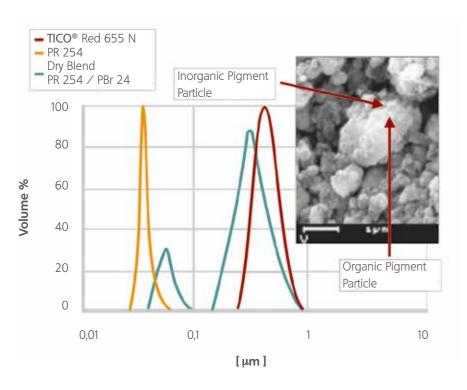
# The idea behind TICO®

tions.

These titanium based colorants exhibit ma- carrier pigments. ximum gloss, opacity, strength and durability, which cannot be achieved with today's well As a result TICO®s develop full color saturamance Pigments and white/yellow titanium and are easy to disperse. or bismuth vanadate pigments.

TICO®s are a new class of high-performance TICO® stands for Titanium Color made by a yellow, orange and red pigment prepara- proprietary co-finishing process to attach the organic colorants to the surface of titanium

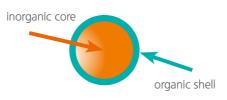
established blends of organic High-Perfortion and high gloss, low dusting properties



Monomodal particle size distribution of TICO® Red 655 N

# Pigment morphology

TICO<sup>®</sup> hybrid pigments are a combination of a specially micronized complex inorganic color pigmentary core particle and a predispersed organic colorant attached to the surface of the core particle.



# Regulations

The regulatory affairs sheet with detailed informations on complient regulations of TICO® hybrid pigments is available on request.

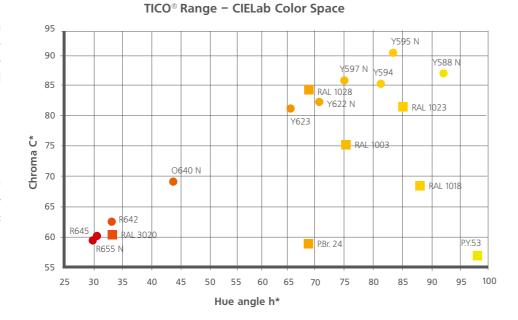
# TICO<sup>®</sup> Color Space

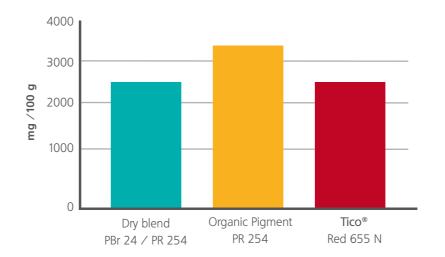
The enhancement of chromaticity is an inherent characteristic of the TICO® pigment technology. The TICO® color space comprises the yellow, orange and red pigment preparations.

# **Application areas**

TICO® hybrid pigments can be used with the majority of the commonly used binder types. The main application areas are:

- Automotive Coatings
- > General Industrial Coatings
- > Plastics





**Dusting according to DIN 55992-1** 

# **Outstanding processing** characteristics

High-performance organics and inorganic Due to the pre-dispersed state of its compopigments differ significantly with respect to weights.

by its hybrid morphology. TICO® preparations exhibit a significantly reduced dusting during its handling which is the best basis for pastes. a perfect manufacturing hygiene.

nents the TICO® technology also allows sigtheir surface characteristics and their specific nificantly shorter grinding times more comparable to that of pure inorganic pigments and less risk for overgrinding and color shift. The new technology resolves this problem In comparsion to straight blends also the oil absorption can be greatly decreased allowing for high pigment loading in colorant





▶ Technical Information



# Chroma enhancement

The enhancement of chromaticity is an inherent characteristic of the TICO® pigment technology. TICO® achieves e.g. identical color saturation at only 38% organic pigment loading as compared to 67% P.Y. 151 for a titanium dioxide blend.

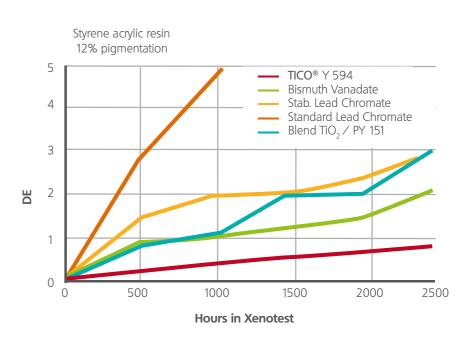
Besides several technical advantages e.g. increased opacity of the paint film the reduction of the organic content is a great potential cost saver.



# Improved fastness properties

In TICO®s the valuable organic pigments are protected by the specially designed titanium carrier pigments, which leads to outstanding light and weather fastness.

As opposed to titanium dioxide, which exhibits photocatalytic activity accounting for weather induced degradation mechanisms, the new titanium carrier pigments of TICO® act like UV-absorbers and protect the sensitive organic pigment from UV-attacks.



Accelerated weathering results in accordance with DIN EN ISO 11341-1-A

RAL 3000 [Flame Red]	Lead	TICO®	Vanadate	Organic
Molybdate Red	75.9%			
Pigment Red 52:2	8.2%			
Pigment Orange 36				51.9%
Pigment Red 254			44.6%	
Pigment Red 178				15.7%
Bismuth Vanadate			29.4%	
TICO® Red 655 N		50.2%		
HEUCODUR® 6R		39.7%		
Iron Oxide Red	4.5%	10.1%	17.4%	7.1%
Titanium Dioxide	11.4%		8.6%	25.3%
Cost Ratio	1	3	4	6
			Formulations are ad	justed in onacity

### Value-in-use

TICO®s are highly opaque and sufficiently saturated to cover important full shade industry colors like e.g. defined in the RAL register, but also branded shades.

Formulation costs with TICO®s are lower if compared to alternative high-performance color solutions.

90 TICO® NiTi/PY 151 80 70 TiO<sub>2</sub>+ PY 151 60 PY 151 67 % 50 20 40 60 80 100% PY 151 100 80 60 0% TiO, or NiTi

100

Chroma enhancement of the TICO® technology

Benefits

### Guide Formulation

				_	Ф			53	6 <sub>3</sub>	5.4)	, SSS <sup>5)</sup>		rial	
			Density [g/cm³]	Oil Absorption [g/100g]	Specific Surface [m²/g]	Acid¹)	Alkali	Overpainting	Heat Resistance³) [*C]	Light Fastness <sup>4)</sup> [ull shade]	Weather Fastness <sup>5</sup>	Automotive Coatings	General Industrial Coatings	Plastics
Technical Data				7 IIO	Spec			Ove	Heat	Light	Weath	Au	Gener	
Product	Full Shade	Reduction [1:3 TiO <sub>2</sub> ]	Pł	nysical D	)ata			- astness F	Propertie	?S		A	pplicatio	ns
		, 113 110 <sub>2</sub> 1												
TICO® Yellow 588 N			3.5	14	6.1	5	4	5	170	8	5	••	••	•
TICO® Yellow 594 <sup>6)</sup>			2.8	18	6.0	5	5	5	200	8	5	• •	• •	
TICO® Yellow 595 N			2.0	26	6.3	5	5	2	140	8	5	•	••	
TICO® Yellow 597 N <sup>6)</sup>			2.9	21	6.0	5	5	4 - 5	170	8	5	••	••	
TICO® Yellow 622 N <sup>6)</sup>			3.1	19	6.6	5	5	4 - 5	200	8	5	•	••	
TICO®			3.2	21	5.1	5	5	5	170	8	5	• •	••	•
Yellow 623														
TICO® Orange 640 N			2.6	18	2.7	5	5	4 - 5	220	8	5	••	••	•
TICO®			2.3	19	8.7	5	5	5	230	0	5		••	
Red 642 <sup>6)</sup>			2.5	19	0.7	5	5	0	230	8	5			
TICO® Red 645 N			3.0	18	6.4	5	5	5	220	8	5	••	••	•
TICO®			2.7	20	9.0	5	5	5	220	8	5	• •	• •	•
Red 655 N			2.,	20	3.0	3	J	J	220	Ü	J			
									•• 0	ur Recor	nmendat	tion	<ul><li>Poter</li></ul>	ntial Use
1) Character I marietan as Disc		- i	a ta boolaa	-1	(d d d)						· 0.01 d	100/		
Ohemical resistance: Pig Assessment is done usin Overpainting: Bleeding v Heat resistance: Pigment	ig the five step greyscal vas rated, of a white alk	e in accordance with D xyd-melamine topcoat o	IN EN ISO on a pigme	105-A02. ented 2-co	mp. acryla	te base co	at in acco	rdance with				0 10%.		
Temperature, above whice Albert Fastness: Data on 15 Weather Fastness: Data	ch, a noticeable shade or resistance to artificial xe	change can be observe no weathering (DIN EN	d. ISO 16474	-2, proced	dure B, cyc	e 2) is det	termined i	n a 2-comp	o. polyuret	hane test :	system sin	nilar to DIN	I EN ISO 1	05-B02.
time. Rating of change i	n color in accordance v	with DIN EN ISO 105-A0	2.								-			_
Due to limitation of prin														
Overpainting: Tested	id/alkali resistance: Pigment was dipped into hydrochloric acid (10%) or soda solution (10%). Rating with gray scale:1=poor, 5=excellent. erpainting: Tested in alkyd/melamine system with 30 minutes baking time at 160°C. Rating with gray scale:1=poor, 5=excelleent. at resistance: Tested in alkyd/melamine system.													
	th Fastness: Tested in water based automotive system. Rating with 8-step wool scale: 1=poor, 8=excellent. eather fastness: Tested in water based automotive system. Rating with gray scale after 2000 h accelerated weathering: 1=poor, 5=excellent.													



# **Our Service**

and pigment preparation solutions we suptions. port our customers anywhere where pigments are in use.

regionally we provide our customers with the technical support essential for the implementation of customer-specific requirements your application, plastic compounds or even and solutions.

Fully equipped technical laboratories and centers enable us to carry out tests for all relevant applications, such as printing inks, paints and coatings, including corrosion protection, coil and powder coatings and plastics.

At Heubach, customer satisfaction comes Custom color adjustments play a significant first. As a supplier of high-quality pigment role both in coatings and plastics applica-

We have extensive expertise in the development of colors for a variety of plastics, paint With active service centers both globally and and coating systems. Depending on fastness properties, application or processing requia specific paint system.







### **HEUBACH GROUP**

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