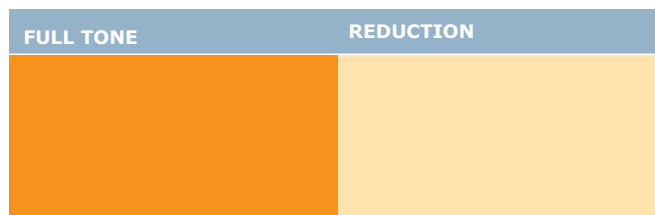


PRODUCT DESCRIPTION	
The TICO® product line represents a novel approach to pigment preparations made by a proprietary co-finishing process to attach the organic high performance pigments to the surface of the inorganic titanium yellows. TICO® Yellow 591 is a medium shade yellow with high opacity and heat resistance. It has excellent fastness properties. Due to its brilliant and clean color shade it can be used as a direct replacement of lead chrome pigments. Care should be taken if alkalis are involved.	
Chemical Type	hybrid pigment
Color Index	-
Hue Angle at Full Shade <sup>1)</sup>	87,8
1/3 ISD Reduction Ratio <sup>2)</sup>	1:1,8

APPLICATION PROFILE	
Water-borne Paints	-
Air-drying Alkyds	potential use
Baking Enamels	potential use
Acid curing Systems	potential use
Amine curing Epoxies	potential use
Isocyanate cured Systems	potential use
Powder coatings	recommended

REGULATIONS	
This product is not approved for food contact use in Europe.	
USA (FDA) 21 CFR § 178.3297	not listed
Toys Europe EN 71-3	compliant
Toys USA ASTM F 963-03	compliant
CONEG, EC 94/62	compliant
ROHS, 2002/95/E, 2005/618/EC	compliant
End of Life Vehicles, 2000/53/EC, 2002/525/EC	compliant

CHEMICAL INVENTORY LISTING STATUS	
All ingredients of TICO® Yellow 591 are listed in the following national chemical inventories: EINECS [Europe], TSCA [USA], MITI [Japan], IECSC [China].	



FASTNESS PROPERTIES	
Acid <sup>7)</sup>	5
Alkali <sup>7)</sup>	3 - 4
Overpainting [AM (160°C/30 min)] <sup>6)</sup>	5
Water <sup>5)</sup>	5
Butanol <sup>5)</sup>	4 - 5
Butylacetate <sup>5)</sup>	4 - 5
Xylene <sup>5)</sup>	4 - 5
MEK <sup>5)</sup>	4 - 5
White Spirits <sup>5)</sup>	5
DOP <sup>5)</sup>	4 - 5
Heat Resistance [°C] <sup>8)</sup>	250
Light Fastness [Full Shade] <sup>3)</sup>	8
Weather Fastness [Full Shade] <sup>4)</sup>	5
Weather Fastness [1:3 Reduction] <sup>4)</sup>	4

PHYSICAL DATA	
Appearance	yellow powder
Density [g/cm <sup>3</sup> ]	2,5
Bulk Volume [cm <sup>3</sup> /g]	3,2
Oil Absorption [g/100g]	24
Specific Surface [m <sup>2</sup> /g]	5,3
pH	6 - 8

STANDARD PACKAGING	
- 15 kg Paper Bags - Different types of packaging are available on request	

1) Hue angle at full shade according to German Standard 6174.

2) Ratio of pigment to titanium dioxide in order to achieve 1/3 ISD according to German Standard 53235.

3) Light fastness was tested in an alkyd/melamine system. Assessment with Blue Wool Scale according to DIN 54003. Rating: 1=very poor, 8=outstanding.

4) Weathering fastness was tested in a waterborne acrylic resin system. Assessment with Grey Scale according to DIN 54001 after 2000h accelerated weathering (Arc Xenontest acc. to DIN EN ISO 11341-1-A, 1998). Rating: 1=poor, 5=very good.

5) Pigments were dipped into solvent. Assessment with Grey Scale according to DIN 54002. Rating: 1=severe, 5=none.

6) Assessment of bleeding of a white NC-topcoat using the Grey Scale according to DIN 54002. Rating: 1=severe, 5=none.

7) Pigments were dipped into hydrochloric acid or sodium carbonate solutions of varying concentrations. Rating: 1=poor, 5=excellent.

8) Pigments were tested in an alkyd / melamine system with 30 minutes baking time. Temperature range 140°C to 200°C.

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