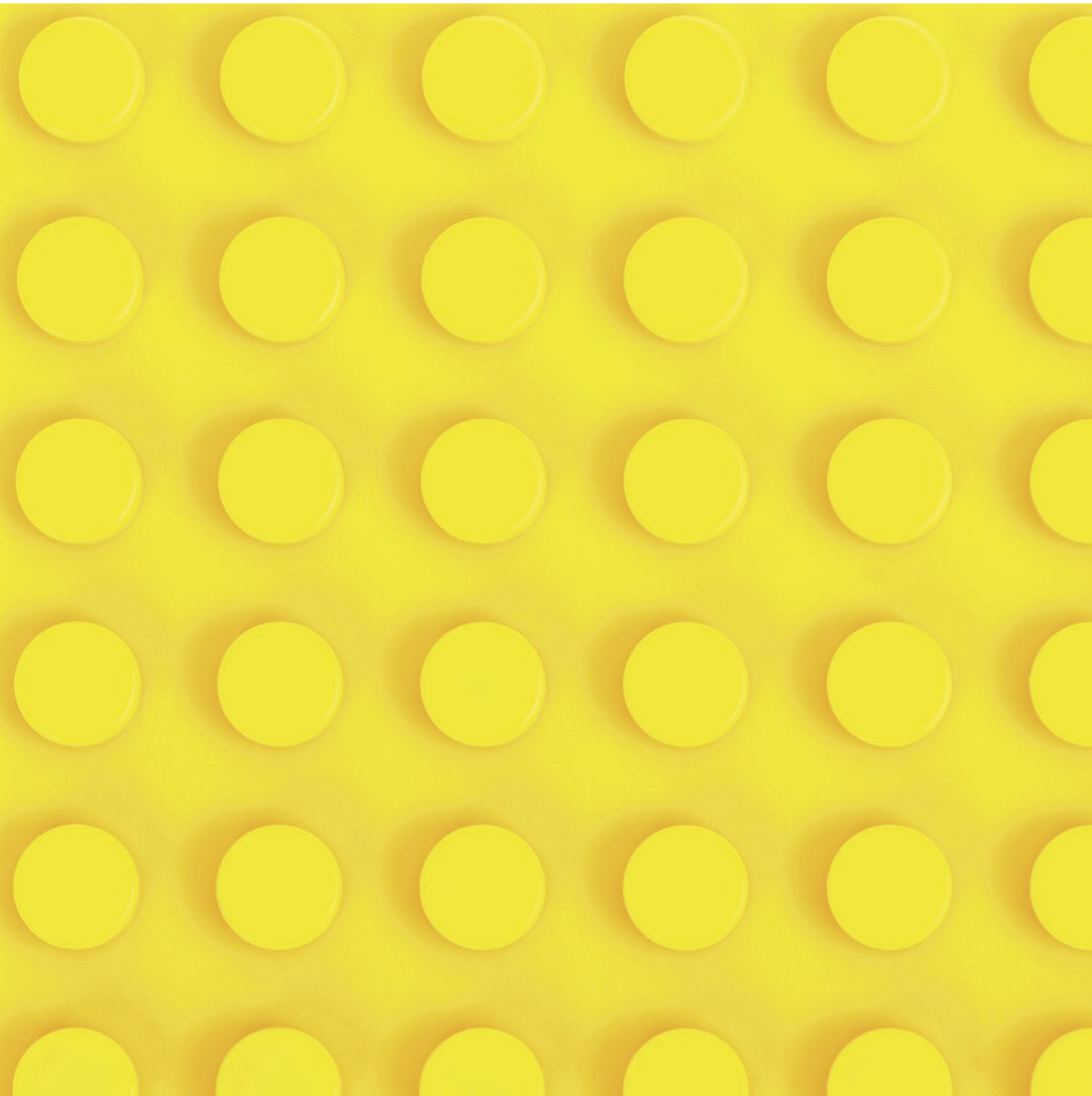
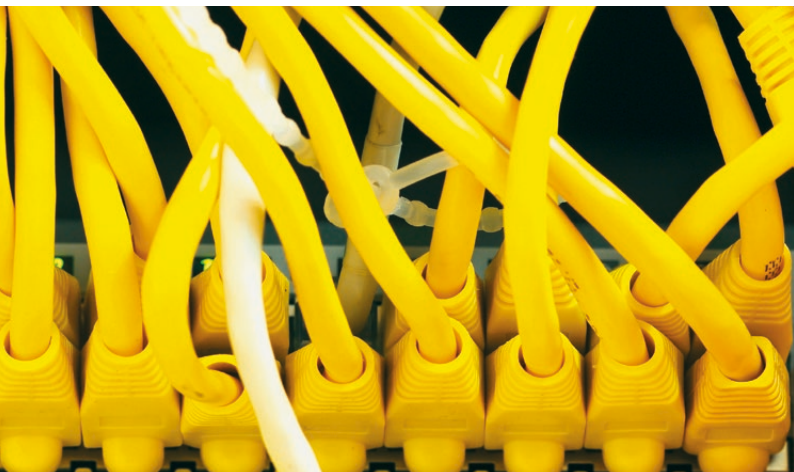


**PV FAST® YELLOW H4G AN IMPROVED
SOLUTION FOR SAFER LEMON YELLOW
LEAD CHROMATE REPLACEMENT
HAS NEVER BEEN SO EASY**



LEAD CHROMATE PIGMENTS NEED TO BE REPLACED WITH SAFE PIGMENTS



The use of lead chromate and molybdate yellow and orange pigments (P.Y.34, P.R.104) for the coloration of plastics for consumer goods has been banned in Europe since May 2015 because these substances are classified as carcinogenic and toxic to reproduction (Regulation (EU) No 125/2012 – Annex 11,12).

European plastic processors and masterbatch producers have already begun reformulating with safer colorants.

Outside of Europe, as a result of their responsible care and sustainability policies, many companies offering colored plastic consumer goods have been looking for safer alternatives.

Commission Regulation (EU) No 125/2012 of February 2012 amending Annex XIV to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Text with EEA relevance.

ANNEX XIV

ENTRY NO.	SUBSTANCE	INTRINSIC PROPERTY(IES) REFERRED TO IN ARTICLE 57	TRANSITIONAL ARRANGEMENTS		EXEMPTED (CATEGORIES OF) USE	REVIEW PERIODS
			LATEST APPLICATION DATE (*)	SUNSET DATE (**)		
11.	Lead sulfochromate yellow (C. I. Pigment Yellow 34) EC No: 215-693-7 CAS No: 1344-37-2	Carcinogenic (category 1B) Toxic for reproduction (category 1A)	November 21, 2013	May 21, 2015	-	-
12.	Lead chromate molybdate sulphate red (C. I. Pigment Red 104) EC No: 235-759-9 CAS No: 12656-85-8	Carcinogenic (category 1B) Toxic for reproduction (category 1A)	November 21, 2013	May 21, 2015	-	-

LEAD CHROMATE PIGMENTS NEED TO BE REPLACED WITH SAFE PIGMENTS



PV Fast Yellow H4G is an organic pigment that fulfils numerous product safety regulations. It complies with all of the key global regulations for food and sensitive applications:

Regulation EU No. 10/2011, BfR-Recommendations IX, Resolution AP (89) 1 (Europe), Directive 2009/48/EC on the safety of toys (New Toys Directive) / EN 71-3, GB 9685, JHOSPA, FDA, EU Directive 94/62/EC and CONEG Regulation, EU directive 2011/65/EU (RoHS = Restriction of Hazardous Substances) and EU directive 2012/19/EC (WEEE).

PV Fast Yellow H4G – Food Contact Notification (FCN) No. 1454 is unique in its US food contact approval status since it can be used up to 5% by weight in the finished polymer that may contact all food types under conditions of use A through H. PV Fast Yellow H4G is structurally halogen-free and no halogenated substances are used during the production process. It can be used at low and high dosages and still ensures halogen-free compliance according to IEC 61249-2-21 and RoHS.

... AND CONTRIBUTES TO A MORE SUSTAINABLE WORLD

- It replaces harmful colorants which will then be no longer produced
- PV Fast Yellow H4G improves work environment conditions compared to those involving lead chromate pigments
- PV Fast Yellow H4G is structurally heavy metal and halogen-free; allowing product recycling with less impact on the environment
- PV Fast Yellow H4G displays a high weather fastness, leading to a long life of the end product; reducing waste and saving resources

PV FAST YELLOW H4G IS THE RIGHT CHOICE FOR DEMANDING FORMULATIONS

PV Fast Yellow H4G is one of the best greenish organic yellow pigments with excellent bleeding fastness as well as very good light and weather fastness.

Its high opacity makes PV Fast Yellow H4G the perfect choice for the replacement of lead chromate pigments.

PV Fast Yellow H4G can be used in the most important polymers for consumer and industrial applications, such as PVC (plasticized and unplasticized), PUR, LDPE, HDPE, PP, PS, ABS, rubber and TPE.

In reduction, the color strength of PV Fast Yellow H4G in PVC and PE is 2 to 3 times higher than that of the yellow lead chromate pigments.

In full shade, the combination with inorganic pigments allows a close matching of the coloristics and opacity of lead chromate pigments.

PV Fast Yellow H4G can be selected for many different end uses; for indoor as well as outdoor applications.

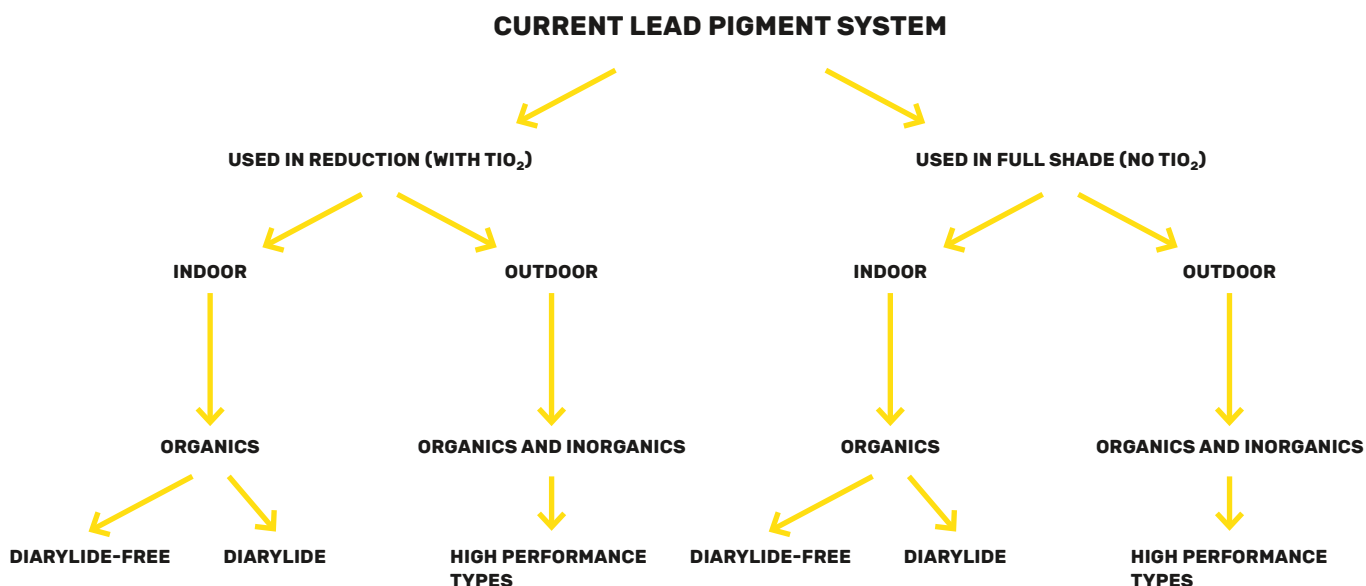
It has a very limited influence on warpage, which allows its use for the coloration of e. g. bottle crates, cases, caps and closures.

PV Fast Yellow H4G is very suitable for liquid color paste production and plastisol applications. In contrast to several other organic yellow pigments, PV Fast Yellow H4G has a low influence on viscosity, permitting higher pigment loading.



PV FAST YELLOW H4G OFFERS MANY OPPORTUNITIES

- In reduction & full shade
- In transparent & opaque resins
- In weather fast critical & non-critical applications
- For diarylide-free applications
- For low halogen applications
- On its own or in combination with inorganic pigments (e.g. P.Y.184, P.Y.53, P.Br.24) and other organic pigments (e.g. P.Y.181, P.Y.191, P.R.254)



PV Fast® Yellow H4G	Graphtol Yellow GG
Graphtol® Yellow 3GP	Graphtol Yellow GR
PV Fast Yellow HG 01	PV Fast Yellow HR 02
PV Fast Yellow HG	PV Fast Yellow HR 03
PV Fast Yellow H2GR	Graphtol Orange RL
PV Fast Yellow HGR	
Graphtol Yellow H2R	
PV Fast Yellow H3R	
PV Fast Orange H4GL 01	
PV Fast Orange H2GL	
Novoperm® Orange HL	
PV Fast Red D3G	

PV Fast Yellow H4G
PV Fast Yellow H2G
PV Fast Yellow H3R
PV Fast Orange H4GL
PV Fast Orange H2GL
PV Fast Red D3G

Above pigments on their own or in combination with e.g. P.Y.184, P.Y.53, P.Br.24

Opaque pigments

PV Fast Yellow H4G	Novoperm Yellow HR70	PV Fast Yellow H4G
Hostaperm® ¹⁾ Yellow H3G	Graphtol Orange RL	PV Fast Yellow H2G
Novoperm Yellow F2G		PV Fast Yellow H3R
PV Fast Yellow HG		PV Fast Orange H4GL 01
PV Fast Yellow HGR		PV Fast Orange H2GL
PV Fast Yellow H3R		PV Fast Red D3G
PV Fast Orange H4GL		
PV Fast Orange H2GL		
Novoperm Orange HL		
PV Fast Red D3G		

Above pigments on their own or in combination with e.g. P.Y.184, P.Y.53, P.Br.24

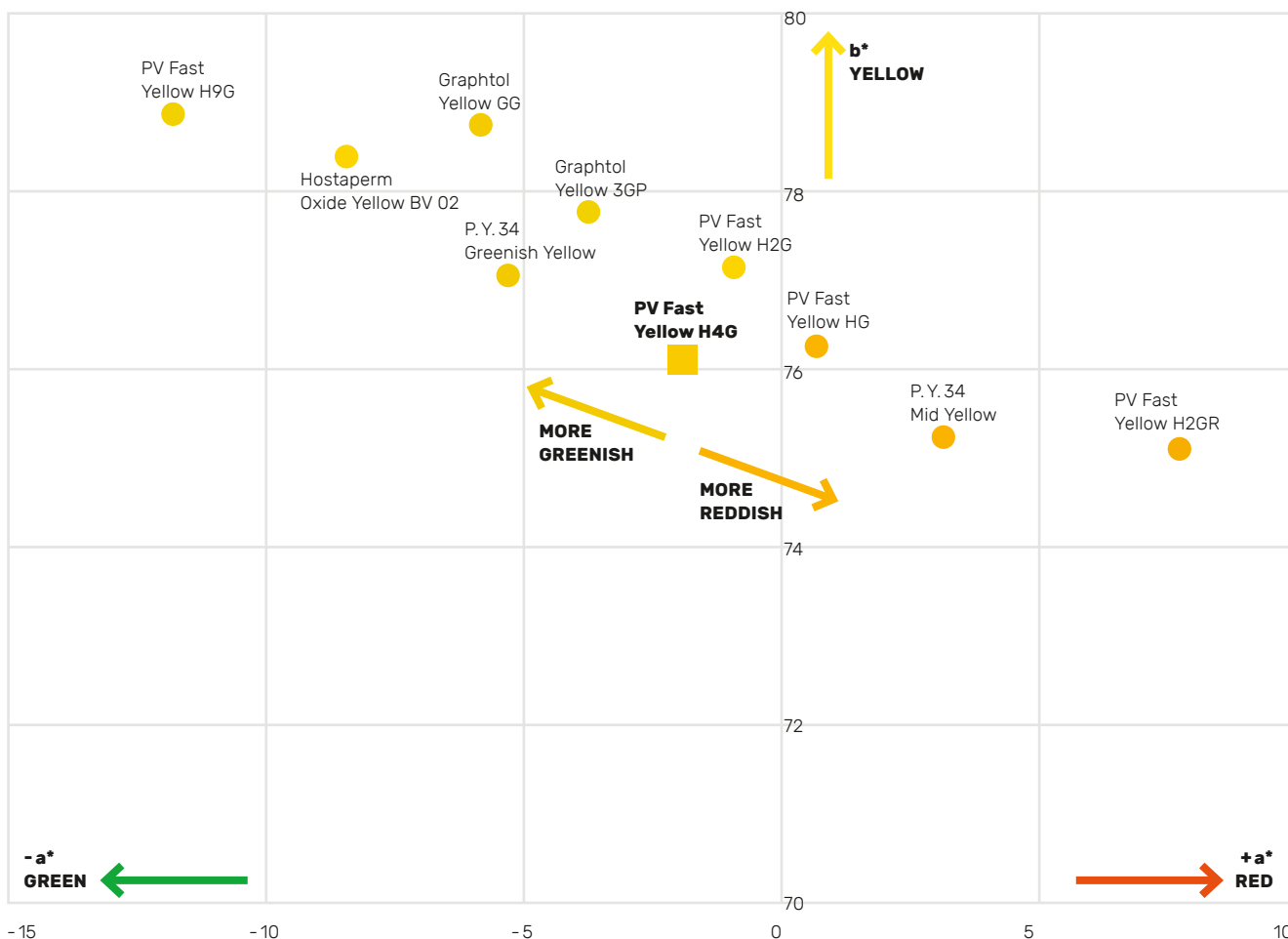
Transparent pigments

Graphtol Yellow 3GP	Graphtol Yellow GG
PV Fast Yellow HG 01	Graphtol Yellow GR
PV Fast Yellow H2GR	PV Fast Yellow HR 02
Graphtol Yellow H2R	

Above pigments on their own or in combination with e.g. P.W.5-TiO₂

PV FAST YELLOW H4G IS IDEALLY POSITIONED TO MATCH GREENISH AND REDDISH LEAD CHROMATE SHADES

GREENISH YELLOW PIGMENT COLORISTICS AT SD 1/3 (PVC + 5% TiO₂) D65, 10 DEGREES CIELAB



CLEAR BENEFITS FOR OUR CUSTOMERS

- The right color with a safer profile for a comprehensive set of applications
- Reformulation can lead to a more efficient and lean solution (technical e.g. weather fastness, production costs, handling, logistics), resulting in optimization and sustainability:
 - PV Fast Yellow H4G displays a high weather fastness, leading to long life of the end product, reducing waste and saving resources
 - The excellent light and good weather fastness of PV Fast Yellow H4G allows a broad range of cost-effective yellow formulations in combination with other pigments
 - The broad application field reduces stock complexity of pigments.
- It is a versatile pigment that can be used worldwide in several polymers and applications:
 - Possibility to produce highly-loaded liquid colors and pastes (lower influence on viscosity)
 - Possibility to produce colors with higher chroma
 - Possibility to formulate a broader range of colors in flexible PVC due to an excellent bleeding fastness

TYPICAL LEAD CHROMATE FULL SHADE COLORS

GREENISH YELLOW



2% P.Y. 34 Lead Chromate
Full shade in PP
Hue angle -89°

MID YELLOW

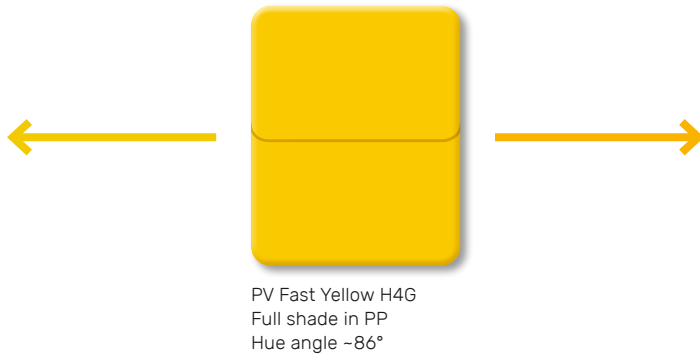


2% P.Y. 34 Lead Chromate
Full shade in PP
Hue angle -84°

REDDISH YELLOW



2% P.Y. 34 Lead Chromate
Full shade in PP
Hue angle -77°



PV Fast Yellow H4G
+ P.Y. 184
Full shade in PP



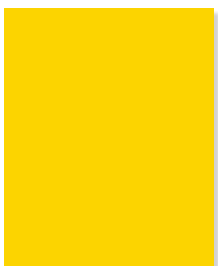
PV Fast Yellow H4G
+ P.Y. 53
Full shade in PP



PV Fast Yellow H4G
+ P.Br. 24
Full shade in PP



PV Fast Yellow H4G
+ PV Fast Yellow H3R
Full shade in PP



PV Fast Yellow H4G
+ P.Y. 184
Full shade in PVC



PV Fast Yellow H4G
+ P.Y. 53
Full shade in PVC



PV Fast Yellow H4G
+ P.Br. 24
Full shade in PVC



PV Fast Yellow H4G
+ PV Fast Yellow H3R
Full shade in PVC

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