

FEPREN

IRON OXIDE PIGMENTS

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FEPREN iron oxide pigments have been a part of the PRECHEZA production programme for more than five decades. The traditional product range has been successfully enlarged and now PRECHEZA offers a complete colour spectrum of iron oxide pigments.

IRON OXIDE PIGMENTS

COLOUR RANGE

PRECHEZA offers a complete colour range of iron oxide pigments. In accordance with current trends, the standard powder form of FEPREN pigments has newly been augmented with granulated and micronized forms of the red pigments.

RED PIGMENTS

FEPREN TP200M, TP303M

Micronized pigments with very high tinting-strength, hiding power and optimal particle size distribution, possessing high light fastness and heat resistance up to 600 °C. Their main characteristics are excellent dispersibility, stable colour shade, colour shade dispersion stability and superior lightfastness. They are intended for a variety of paints & coatings ranges from emulsion and decorative paints, industrial and powder coatings, coil coatings, roof tile coatings, automotive coatings and wood coatings. They can be used for all kinds of plastic packaging materials, plastic tubes in the construction industry, cockpits, artificial leather in cars, plastic materials in the electrical industry, artificial turf, tartan tracks on playgrounds, lamination, foaming, wood plastics and all rubber applications as well. Both micronized pigments are recommended for preparation of Complex Inorganic Colour Pigments (CICPs) because of their exceptional high chemical purity.

FEPREN TP200, TP303

A fine dry-milled pigments with very high tinting-strength, hiding power and good particle size distribution. Possessing high light fastness and heat resistance up to 600 °C. They are both alkali and weather resistant. Suitable for the production of paints, including primers, powder coatings, undercoats and fillers, in the construction industry for cement-based plaster mixtures, the colouring of concrete products such as roof tiles, terrazzo, and coloured floor tiles. They can be also used for the colouring of caoutchouc mixtures, plastics, floor coverings, for the production of ceramic colours, glass, and polishing aids.

YELLOW PIGMENT

FEPREN Y710

A fine dry-milled pigment with good tinting-strength and hiding power. Both alkali and weather resistant, possessing high light fastness and heat resistance up to approx. 160°C. Suitable for the production of paints, both in solvent-based and waterborne systems, e.g., air-drying, oil-bound and decorative, also for primers, undercoats and fillers. In the construction industry it is good for the production of cement-based plaster mixtures synthetic plasters, the colouring of concrete products, such as roof tiles, terrazzo, and coloured floor tiles.

BROWN PIGMENTS

FEPREN HM470A

A fine dry-milled composite pigment with good tinting-strength and hiding power, alkali and weather resistant, possessing high light fastness and heat resistance up to 110 °C. Very good for the colouring of concrete products, such as roof tiles, terrazzo, coloured floor tiles. Suitable for the production of cement-based plaster mixtures, synthetic plasters, and coloured sands.

FEPREN SHD430

A fine dry-milled composite pigment with very high tinting-strength, hiding power and good light fastness. Heat resistant up to approx. 110 °C. Suitable for the production of paints, both primers, undercoats and fillers, used in the building industry in cement-based plaster mixtures, synthetic plasters, in the colouring of concrete products such as roof tiles, terrazzo, and coloured floor tiles. Can also be used for the colouring of caoutchouc mixtures.

BLACK PIGMENTS

FEPREN B630

A fine dry-milled pigment with very high tinting-strength and hiding power. Both alkali and weather resistant, possessing high light fastness and heat resistance up to approx. 110 °C. Suitable for the production of paints, both primers, undercoats and fillers, for the colouring of caoutchouc mixtures and plastics. In the construction industry, can be used for the production of cement-based plaster mixtures, synthetic plasters, and for the colouring of concrete products, such as roof tiles, terrazzo, and coloured floor tiles.

FEPREN B650

A fine dry-milled composite pigment with good tinting-strength and hiding power. Both alkali and weather resistant, possessing high light fastness and heat resistance up to 110 °C. Very good for the colouring of concrete products such as roof tiles, terrazzo, coloured floor tiles. Suitable for the production of cement-based plaster mixtures, and synthetic plasters.

ORANGE PIGMENT

FEPREN OG975

A fine dry-milled composite pigment with good tinting-strength and hiding power. Both alkali and weather resistant, possessing high light fastness and heat resistance up to approx. 160 °C. Suitable for the production of paints in both solvent-based and waterborne systems, e.g., air-drying, oil-bound and decorative, also for primers, undercoats and fillers. In the building industry, good for the production of cement-based plaster mixtures, synthetic plasters, the colouring of concrete products such as roof tiles, terrazzo, and coloured floor tiles.

GREEN PIGMENT

FEPREN G820

A dry-milled chromite pigment with high tinting-strength and hiding power. Both alkali and weather resistant, possessing high light fastness and heat resistance up to approx. 800 °C. Suitable for the production of paints, both primers, undercoats and fillers. Can be used in building industry for the production of cement-based plaster mixtures, synthetic plasters and for the colouring of concrete products, such as roof tiles, terrazzo, coloured floor tiles. Can be used for the pigmentation of plastics.

BLUE PIGMENT

FEPREN CB840

A dry-milled spinel pigment with good tinting-strength and hiding power. It is both alkali and weather resistant, possessing high light fastness and heat resistance up to approx. 1200 °C. Can be used in building industry for the colouring of concrete products such as roof tiles, terrazzo, and coloured floor tiles.



POWDER PIGMENTS

FEPREN iron oxide pigments – typical qualitative parameters

	grade	Fe ₂ O ₃ content [%]	pH of aqueous extract	oil demand [g/100g]	bulk density [kg/m ³]	specific density [g/cm ³]	residue on sieve 45µm [%]	thermal stability [°C]	water- soluble salts [%]
reds alpha Fe ₂ O ₃ Red 101 Colour Index 77491	TP200*	99.5	5.2	22	600	5.0	0.02	600	< 0.3
	TP303*	99.5	5.5	21	640	5.0	0.02	600	< 0.2
	TP200M	99.7	5.5	21	630	5.0	0.00	600	< 0.3
	TP303M	99.6	6.0	19	680	5.0	0.00	600	< 0.2
yellow FeOOH Yellow 42 Colour Index 77492	Y710*	87	4.1	35	190	4.2	0.03	160	< 0.3
orange FeO(OH) + alpha Fe ₂ O ₃ Yellow 42/Red101 Colour Index 77491; 77492	OG975	90	3.9	38	390	4.8	0.05	160	< 0.2
browns alpha Fe ₂ O ₃ + Fe ₃ O ₄ Brown 43 Colour Index 77491; 77499	SHD430*	90	6.9	20	620	5.1	0.08	110	< 0.5
	HM470A	90	8.6	-	750	5.1	0.50	110	
blacks FeO, Fe ₂ O ₃ Black 11 Colour Index 77499	B630*	92	6.6	19	570	5.2	0.05	110	< 0.5
	B650	84	7.7	19	570	5.2	0.50	110	< 2.0
green Cr ₂ O ₃ Green 17 Colour Index 77288	G820	98 (Cr ₂ O ₃)	5.2	12	980	5.3	0.20	800	< 0.3
blue Co(Al,Cr) ₂ O ₄ spinel Blue 36 Colour Index 77343	CB840	–	8.0	29	550	3.4	0.01	1,200	< 0.2

*Satisfied B-category EN 12878 – pigments for steel reinforced concrete

GRANULATED PIGMENTS

FEPREN granulated pigments – typical qualitative parameters

	TP200GA	TP303GA
Fe ₂ O ₃ content [%]	99.0	98.5
volatiles at 105°C [%]	0.5	0.3
specific conductivity [µS/cm]	400	400
pH of aqueous leach	6.3	5.8
residue on sieve 0.6 mm [%]	0.5	0.6
undersize on sieve 0.1 mm [%]	2.5	1.3
EN12878 pigment category	A	A

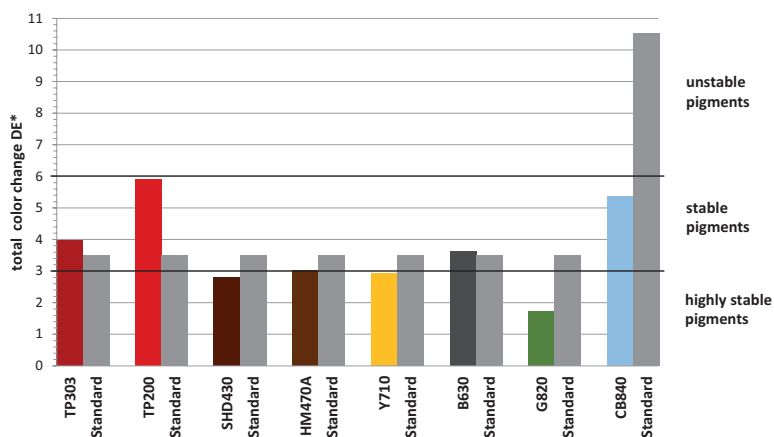
FEPREN PIGMENTS

CONSTRUCTION

FEPREN iron oxide pigments find their widest range of application in the construction industry. FEPREN pigments meet strict criteria for applications in the construction industry as defined by the European Standard EN 12878.

They show good weather resistance, which is ensured by the fact that the products are synthetic pigments based on stable iron oxides. Light fastness is confirmed by a number of tests. Iron oxides are resistant to alkalis and are characterised by a high colouring power, which in the case of FEPREN pigments is guaranteed by the fact that they are synthetic pigments without any other constituents / fillers. If correctly applied, FEPREN pigments show good dispersibility, (the ability to be processed), in concrete mixtures. Pigments based on iron oxides are inert and owing to this remain environmentally safe.

Pigments FEPREN in comparison to global standards after two years of testing at weathering station. Application in concrete (grey cement, dosing 5%; CB840 – white cement, dosing 3%).



The colouring of reinforced concrete

Fine FEPREN pigments of a special production type are able to be used in reinforced concrete under EN 12878 – Category B. These pigments (FEPREN TP200, TP303, Y710, SHD430 and B630) satisfy the low permissible limits for water soluble substances, soluble chloride and total chlorine.

This is particularly important in coloured, steel-reinforced cement, concrete, as not all pigment manufacturers test for the low permissible limits established in the relevant standard.

Dosing FEPREN pigments in concrete mixtures

The resulting colour of the concrete depends on the added amount of colouring pigment and the colour of the cement, mineral admixtures and sands. The dose of pigment also depends on its shade. The amount of the colouring substance is calculated as a percentage dose weight of pigment in relation to the amount of cement in the concrete.

Recommended dosage (grey cement)

pigment	powder/granules [%]
red	2 – 3
yellow	6
orange	5 – 6
brown	4 – 5
black	4 – 5
green	5
blue	5

FEPREN PIGMENTS FOR THE COLOURING OF CONCRETE PRODUCTS



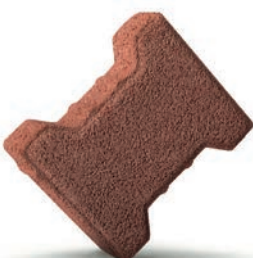
FEPREN **TP200**



FEPREN **HM470A**



FEPREN **G820**



FEPREN **TP303**



FEPREN **SHD430**



FEPREN **CB840***



FEPREN **Y710**



FEPREN **B630**



PRETIOX **FS**



FEPREN **OG975**



FEPREN **B650**



PRETIOX **AV01SF**

Grey cement | Content of dry pigment 5%
*** White cement** | Content of dry pigment 3%

FEPREN PIGMENTS

ASPHALT CONCRETE, MICROSURFACING AND EMULSIONS

Asphalt allows colouring with inorganic pigments, and so various asphalt colour surfaces may be produced. The contribution of colour differentiation brings about not only aesthetic value, but also a particular clarity in local traffic conditions and may improve road safety in such sections.

Alternatively, asphalt binders can be used with virtually transparent hues, (a slight yellow tinge), whereas other options are neutral – from transparent binders of a synthetic origin. In this case, inorganic pigments are especially effective in combination with corresponding coloured minerals (e.g. gravel, sand, or fillers).



Uncoloured



FEPREN Y710



FEPREN G820



FEPREN TP303



PRETIOX FS

Applications in asphalt concretes

Hot mix asphalt concrete

Hot mix asphalt concrete is commonly coloured with inorganic pigment up to 10% of the weight of the total mixture. Pigment dosage is applied directly into the mixer. Coloured mixtures are deposited in completely identical conditions as the laying of the usual black asphalt.

Transparent bitumen

We can take advantage of almost an entire range of affordably produced inorganic pigments, including titanium dioxide. Pigment dosage is reduced by up to one quarter in comparison with classic black asphalt binder applications.

Cold-laid asphalt pavement, asphalt emulsions, micro surfacing and slurry seal

Cold-laid asphalt is commonly coloured with inorganic pigment up to 8-9% of the weight of the total mixture. These low-cost thin layers are economically predetermined to be coloured with inorganic pigments. At present such technology is used mainly in urban areas and in difficult road sections with respect to the above average speed of the reconstruction operation (up to 30 min.). For full colouring, the consumption of powder pigments is estimated up to 0.3 kg/m².



Recommended use of pigmented shades for different bitumen binders

pigment	standard bitumen	transparent bitumen
reds	FEPREN TP200, TP303	FEPREN TP200, TP303
yellow	not recommended	FEPREN Y710
browns	not recommended	FEPREN HM470A, SHD430
green	not recommended	FEPREN G820
white (titanium dioxide)	not recommended	PRETIOX FS

FEPREN IRON OXIDES

PAINTS AND COATINGS



FEPREN pigments are widely used as inexpensive, durable pigments in paints and coatings.

The terms “paints” and “coatings” cover a wide range of solvent-based and waterborne systems. To achieve effective application of finish paints it is recommended to use FEPREN micronized grades. The effective application of FEPREN fine-milled pigments in finish paints is advisable only if pearl mills are used. Colours are available at the “earthy” end of the red, yellow, orange, brown, and black ranges. We guarantee the stable quality of FEPREN pigments, in particular with respect to their colour parameters.

Recommended use of pigmented shades for different paints and coatings

pigment	solvent-based system	waterborne system	powder coatings
reds	TP200, TP303, TP200M, TP303M	TP200, TP303, TP200M, TP303M	TP200, TP303, TP200M, TP303M
yellow	Y710	Y710	not recommended
orange	OG975	OG975	not recommended
brown	SHD430	SHD430	not recommended
black	B630	B630	not recommended
green	G820	G820	G820

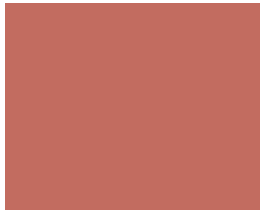
FEPREN PIGMENTS FOR THE COATING INDUSTRY

FULL SHADE



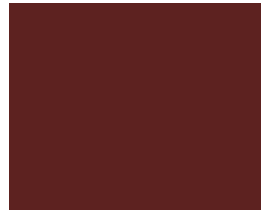
TP200

REDUCTION 1:5 SHADE



TP200

FULL SHADE



SHD430

REDUCTION 1:5 SHADE



SHD430



TP303



TP303



OG975



OG975



TP200M



TP200M



B630



B630



TP303M



TP303M



G820



G820



Y710



Y710



FEPREN IRON OXIDE MICRONIZED PIGMENTS FOR COATINGS

Micronized FEPREN pigments are available in red colour.
Two types – darker TP303M and lighter TP200M colour shades
– are for various fields of application.

FEPREN micronized grades are based on synthetically produced iron oxide pigments manufactured in the calcination process. Owing to their properties, micronized iron oxide pigments are mainly used in technically demanding paints and coating systems and for colouring plastics.

The micronization process is characterized by intensive milling, in which the proportion of agglomerates is significantly reduced. Micronized pigments can thus be more readily dispersed. In addition, both grades provide high colour strength and colour consistency and excellent light fastness. FEPREN red pigments have the highest milling stability. Even when subjected to high shear forces during the dispersion process, they show excellent resistance to colour change. The risk of shade variation through 'over-milling' is minimized.



COLOURATION OF COATINGS

FEPREN MICRONIZED pigments fulfill the highest quality requirements and are applicable for the variety of applications ranges from emulsion and decorative paints, industrial and powder coatings, coil coatings, automotive coatings and furniture coatings.

Within the paints and coatings industry, the pigment quality requirements are high compared to other industries.

Apart from ease of dispersion, the cost reduction owing to a higher pigment loading is beneficial to the customer. For a particularly brilliant finish, both grades can be used in combination with organic pigments. Owing to a spherical structure, the impact of painting direction is minimized and the viscosity in the paint system is reduced. These pigments can be used in almost all temperature ranges relevant for paint and coating applications.



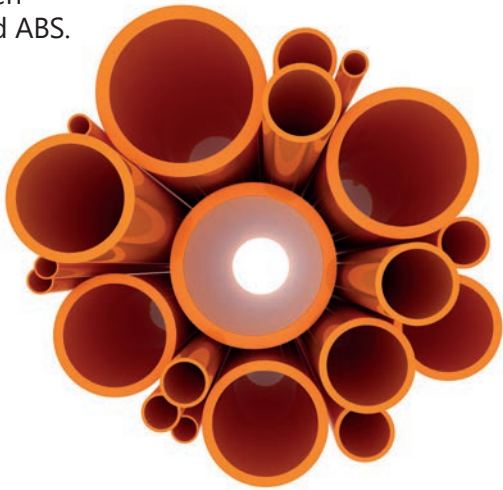
FEPREN IRON OXIDES

PLASTICS

Pigments designed for the colouring of plastics have to meet high technical demands regardless the production technology they would be used in. They have to be easy to break down and quickly distribute to reach their final tinting strength without migration. They also have to have high thermal stability, and their lightfastness and weather stability have to be adequate for the intended applications.

FEPREN pigments can be used in various types of plastics. Heat resistance of FEPREN red pigments of up to 600 °C is an advantage for the application in all plastics production technologies. Fine milled FEPREN red pigments are recommended for the manufacturing of plastics by rolling, casting and extrusion. Micronized FEPREN pigments are both chemically inactive and also have low humidity. They are recommended for use in polyolefins, and they can also be used in all engineering plastics, including HDPE (High Density Polyethylene) and PS formulations. Careful pre-testing should be undertaken for demanding applications such as PVC (good stabilization required), PP and ABS. Black, brown and yellow FEPREN pigments are not recommended due to their limited thermal stability.

All FEPREN pigments comply with the basic requirements of the European Resolution AP (89)1 on the use of colourants in plastic materials coming into contact with food. Directive AP (89)1 bans on the visual migration of the soluble content of certain heavy metals and aromatic amines in the pigments used. Also, visual migration of colourants is banned.



Recommended use of pigmented shades for different types of plastics

pigment	Masterbatches – PP, PE	Pipes, tubes – PVC, PP, PE	Floorings – PVC, rubber
reds	FEPREN TP200, TP303, TP200M, TP303M	FEPREN TP200, TP303, TP200M, TP303M	FEPREN TP200, TP303, TP200M, TP303M
yellow	not recommended	not recommended	not recommended
brown	not recommended	not recommended	not recommended
black	not recommended	not recommended	not recommended
green	FEPREN G820	FEPREN G820	FEPREN G820



WEATHERING STATION EVALUATION OF THE LIGHT FASTNESS OF PIGMENTS IN COLOURED CONCRETE FORMS



Samples of coloured concrete forms are evaluated at a weathering station for a two-year period as a standard, conforming with the recommendation of the European Standard EN 12878. Weathering parameters are continuously evaluated – solar energy, temperature, precipitation etc.

The weathering station situated on the PRECHEZA site simulates an industrial environment at an altitude of approx. 205 m above sea level. A second weathering station in the Hostýn mountains (approx. 700 m above sea level) is located in a higher rainfall environment with intensive solar energy and lower than average temperature. Samples of coloured concrete forms are evaluated on the weathering station for a period of two years as a standard.

HEALTH AND THE ENVIRONMENT

Quality

The manufacture and sales of FEPREN pigments is within the scope of the certified Management System, ISO 9001 Quality, ISO 14001 Environment, ISO 50001 Energy and ISO 45001 Safety.

Safety, health and the environment

FEPREN iron oxide pigments are stable under normal conditions and are inert to most chemical substances. FEPREN pigments are generally not classified as hazardous to human health or to the environment and are also a non-hazardous substance with respect to transport.

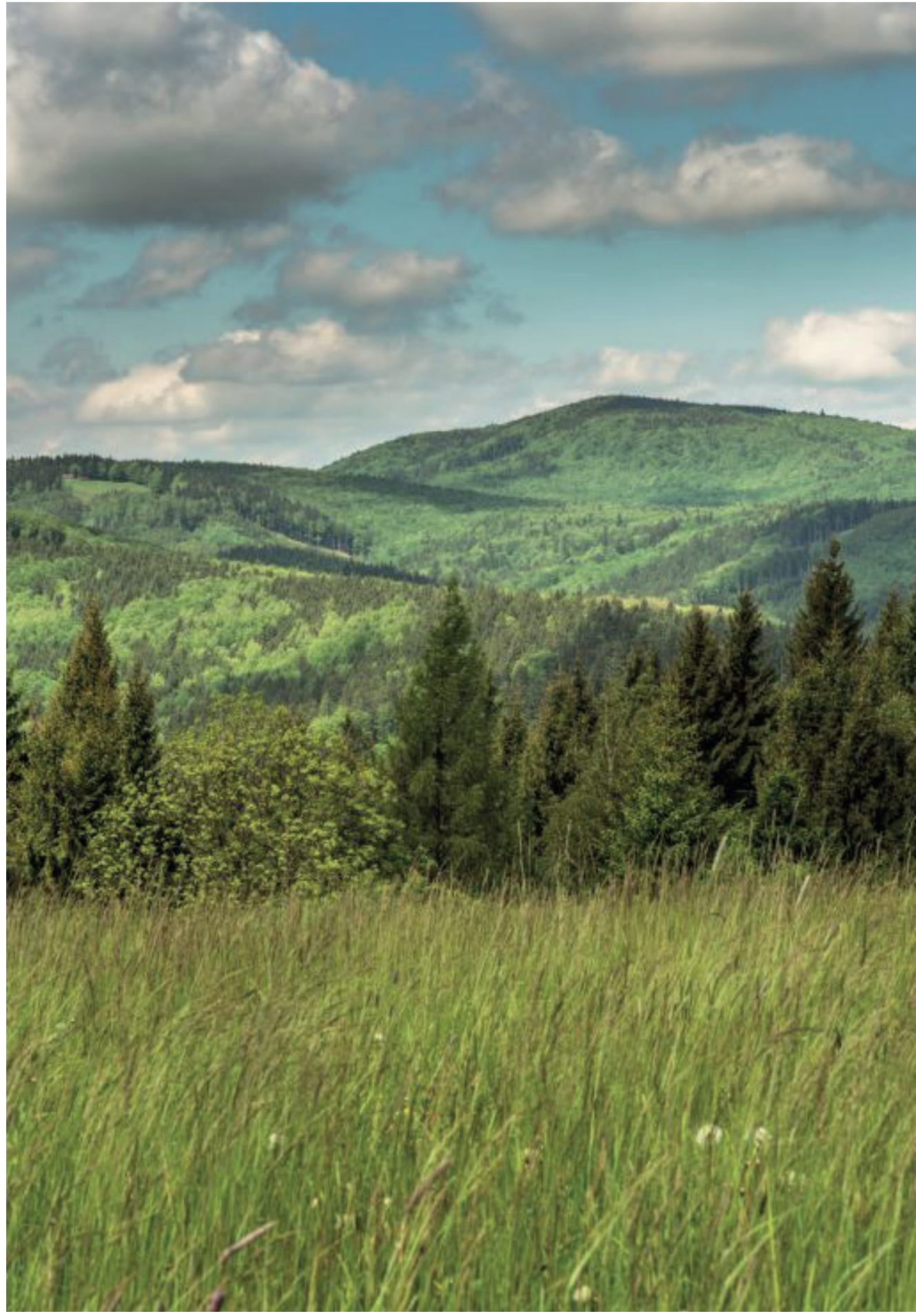
During handling of FEPREN pigments, the creation of dust remains possible. During long-term exposure to dust, suitable dust respirators should be used. All the requirements of REACH EC Regulation 1907/2006 are met. Safety Data Sheets for all FEPREN pigments are available.

Packaging

FEPREN pigments are routinely packed in two-fold vent paper bags each of 25 kg net weight, or in 'big-bags' of 1,000 kg net. FEPREN reds are also available in 25 kg PE bags. FEPREN pigments are delivered on disposable wooden paletts (each palett consisting of 1 ton) covered with polyethylene shrink wrapping.



This leaflet is a general guide to the properties and fields of potential application of FEPREN grades. Information on application is given in good faith and does not constitute any guarantee. For specific grade selection, see Product Specifications or contact Technical Service at PRECHEZA company. Material Safety Data Sheet and additional information about products and company is available on www.precheza.cz. Control quality of pigments is provided in all steps of the production. Samples are available on request. We recommend trial application tests.





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MAKING THE WORLD COLOURFUL