



## JFE PORCELAIN ENAMEL

JFE Metal Products Corporation offers a wide range of JFE brand porcelain enamel products.

Surfaces for chalkboards, markerboards, projection screens and sheet for building interior.

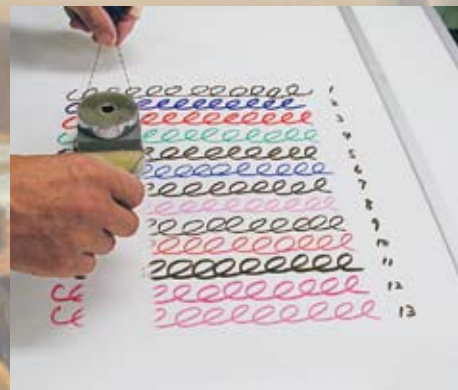


JFE Metal Products Corporation





Porcelain enamel production technology which initiated 4000 years ago is succeeded in today's world through our latest technology.





# JFE PORCELAIN ENAMEL (Dual Coated)



## Are you planning to upgrade your Chalkboard, Markerboard or Projection Screen?

Choose the best fit for your application from our product lineup. JFE Metal Products Corporation is delighted to support upgrading educational & business rooms, commercial facilities, house interior by creating a comfortable atmosphere through supplying our JFE PORCELAIN ENAMEL products.



## JFE PORCELAIN ENAMEL for Markerboards

Enjoy the comfort of smooth writing & erasing.  
Surfaces are easy on human eyes and creates a bright atmosphere.  
Low gloss type is also available.



## Marker Boards

JFE<sup>®</sup> series B-931-SMR

Comfortable writing & erasing in conference and class rooms. Documents and notices can be easily attached by magnets. Low gloss type can be used as a projection surface for presentations and discussions. A wide variety of JFE PORCELAIN ENAMEL is available for your application.

### Color Image



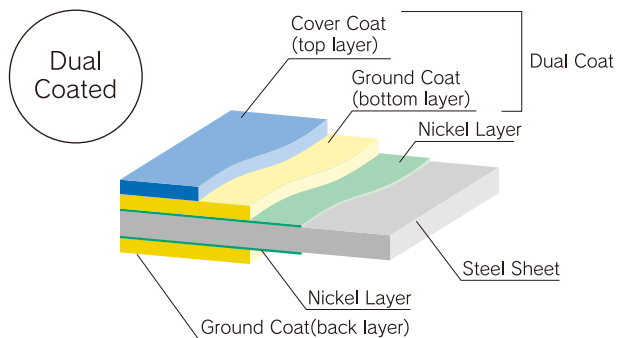
B-931-SMR  
High Gloss

B-946-SMR  
High Gloss

B-937-SMR  
Low Gloss

B-938-SM  
Low Gloss

B-455-SM  
Low Gloss/  
Projectionable



 Erasability is inferior  
INFO

## Features

Low reflection avoids eyestrain and very easy on human eyes.  
 Fine surface particles enables extremely smooth writing and erasing.  
 As a result, JFE PORCELAIN ENAMEL enhances communication in class rooms and conference rooms.

### Durable

High abrasion resistance is obtained through JFE's baking technology at high temperature( approx. 800℃)

### Economic

The durable surface last for so long. Recoating, replacment of surface is usually not required. Maintenance costs are minimal and investment costs ends up being very low.

### Magnets Attachable

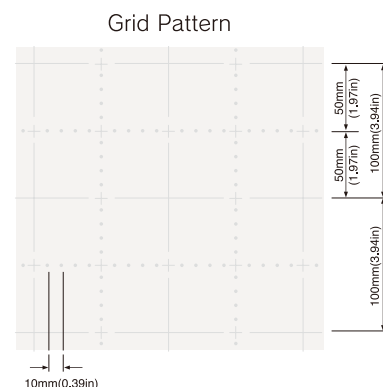
Documents and notes etc. can be easily attached by magnets.

### Grid Pattern Available (Grid lines are also porcelain enamel)

Grid pattern can be printed. They are very helpful to write letters, diagrams, graphs neatly. JFE's grid pattern consists of a combination of solid and dotted lines. There is no need to worry about erase nor wear off of the grid lines because they are also porcelain enamel that are embedded by our baking process.

### Other Usages

JFE PORCELAIN ENAMEL products for markerboards can also be used in many applications such as partations and menu boards.  
 (→ P11)



## A Projectionable Markerboard Surface B-455-SM

Halation has been minimized by our surface frosting technology for the pupose of better projecting performance.



Gloss level has been reduced for better projection performance, so erasability is inferior to other white board surfaces.  
 Confirmation of erasability of the surface is recommended through large size samples.

### A marker board can also be used for projection pupose

This surface provides comfortable writing and projection with reduced halation.

### Applications

- For business presentations.
- For discussions at designer office s
- For class rooms





# JFE PORCELAIN ENAMEL for Projection(Mica Screens)

Two types of Mica Screens are available depending on usage



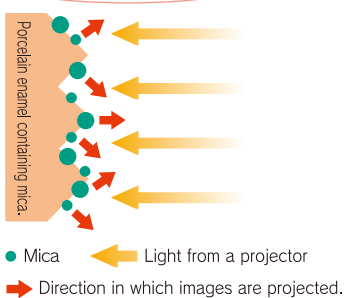
## Mica Screens

S-952-MM

### Structure of Mica Screens

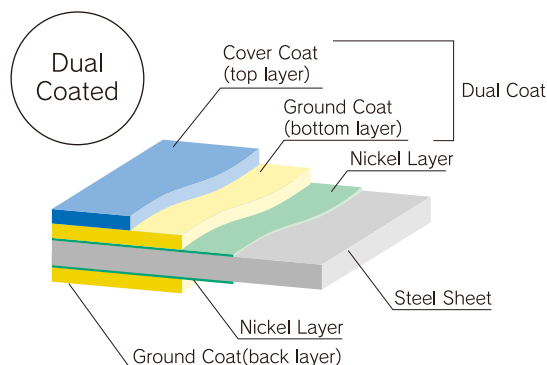
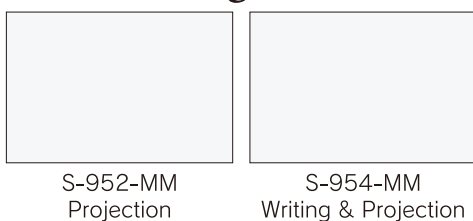
Special mica has been distributed on an embossing finished JFE PORCELAIN ENAMEL to realize a high performance projection screen. This has enabled us to provide features of both white matt screens and beads screens. The surface offers a wide view angle and high reflection brightness.

Mica Screen Surface



Item	Mica Screen (Enamel)	White Matt Screen (Cloth)	Beads Screen (Cloth)
Reflection	Difused and Regular Refection	Difused Reflection	Regressive Reflection
View Angle	Wide Angle	Wide Angle	Narrow Angle
Reflection Brightness	High	Low	High
Projected Image	Sharp	Soft	Sharp
Halation	Slight	Scarce	Much

### Color Image



## Mica Screen for Projection(S-952-MM)

Images projected on Mica Screen are extremely clear. The surface can be used in various places, from theaters to homes.

### Superior Projection Clearness and Precise Color

Due to our mica technology S-952-MM provides projection clearness that is acceptable even at high class theater level.

### Wide View Angle

Thanks to our mica technology, the wide view angle provides all viewers, no matter where they are seated a clear image.

### Wet Erasable

The surface is wet erasable after writing with white board maker pens.

### Economic

Maintenance is easy. Stain can be cleaned by wet cloth and there will be no color fade out. Thanks to the durability and abrasion resistance, product life is so long and investment costs ends up being very low.



## Mica Screen for Projection & Writing/Erasing(S-954-MM)

Writing & erasing can also be done on a projection screen with S-954-MM. Education programs and presentations become more efficient with both functions. (Perfect match with ultra short throw projectors)

### Clear Projection

The product was developed for usage with ultra short throw projectors. Projection images are clear thanks to our mica technology.

### Wide View Angle

Thanks to our mica technology, the wide view angle provides all viewers, no matter where they are seated a clear image.

### Improved Erasability

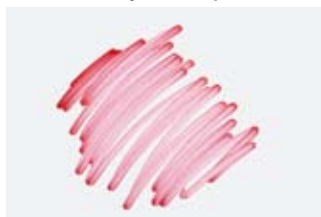
Erasability has been improved by increasing the glossiness so that the surface can even be used as a marker board.

### Economic

Maintenance costs are minimized with the durability of the material which is baked at a high temperature of 800°C.



### Erasability Comparison



B-931-SMR  
Writing

S-952-MM  
Projection

S-954-MM  
Writing & Projection

## JFE PORCELAIN ENAMEL for Chalkboards

The durable surface ensures a long product life. The soft colors avoids eyestrain and are comfortable on human eyes. The perfect applicability of chalk and smooth erasability is highly recommended for usage in classrooms.



## Chalkboards

Students usually spend most of the time in their classrooms facing chalkboards. We consider that it is our mission to contribute to educational programs by providing a comfortable environment through the supply of JFE PORCELAIN ENAMEL. Wide variation of colors are available for various requirements.

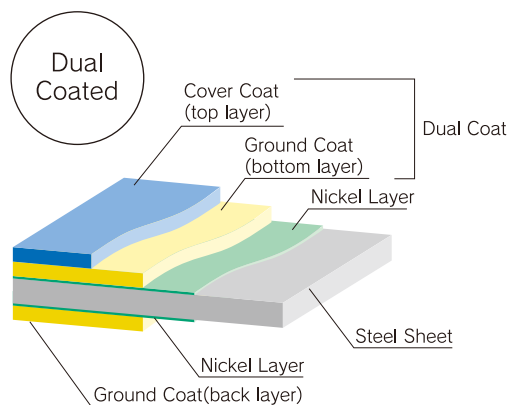
### Color Image



B-532-CM  
Standard Green  
(Improved Erasability)

B-001-CM  
Traditional Black

S-524-CMM  
Projectionable  
Chalkboard





## Features

The hard surface finish realizes the perfect applicability of chalk and smooth erasability. The colors are very easy on human eyes and are suitable for classrooms.

### Enhanced Durability

High abrasion resistance is obtained by JFE's baking technology at high temperature.

### Economic

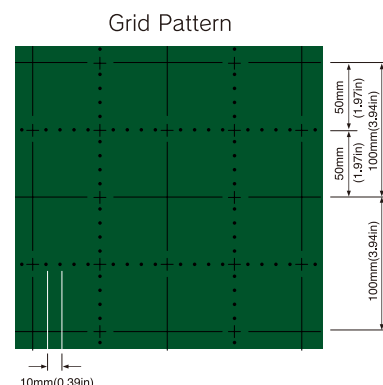
The product's surface last for so long due to the durability. Recoating, replacment is usually not necessary for so long and maintenance costs are minimal. Investment cost end up being very low.

### Magnets Attachable

Documents and notes etc. can be easily attached by magnets because of the steel substrate.

### Grid Pattern Available (Grid lines are also porcelain enamel)

Grid lines can be printed. They are very helpful to write letters, diagrams, graphs neatly on the surface. JFE's grid pattern consists of a combination of solid and dotted lines. There is no need to worry about erase nor wear off of the grid lines because they are also porcelain enamel that are embedded by our baking process.



### Other Usages

JFE PORCELAIN ENAMEL for chalkboards can also be used as a writable surface in interior applications such as walls or columns.  
(→ P11)

## A Projectionable Chalkboard Surface S-524-CMM

Our recent surface treatment technology allows us to provide a chalkboard surface that can also be used as a projection screen. Enjoy the same features that other JFE PORCELAIN ENAMEL chalkboard surfaces offer. The best projectionable type chalkboard surface for ICT education programs.

### Superior Projection, Erasability

JFE technology offers a surface for chalkboards not only with superior erasability, but also shows clear images with high brightness when used as a projection surface.

### Economic

Just simply project images on the chalkboard. Preparation of screens are no longer required. Classroom activities become more efficient. Recoating, replacment is usually not required. Maintenance costs are minimal and investment costs ends up being very low.

### Magnets Attachable

Documents and notes etc. can be easily attached by magnets because of the steel substrate.

### Improved Grid Pattern

Color of grids line has been changed to a lighter color so that projected images can be observed with out distraction of the lines.



## Kitchen Panels / Other Interior Applications

JFE PORCELAIN ENAMEL is another choice for interior applications.

### Kitchen Pannels



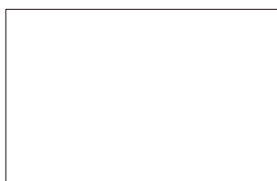
## Kitchen Pannels

W-931-SM

The luxurious surface of JFE PORCELAIN ENAMEL is enjoyed as interior material. Pannels for kitchens are an ideal application for the product. The surface is made of an inorganic, incombustible material similar to glass. Neither smoke nor toxic gas will be generated when exposed to high temperature.

- Luxurious
- Durable and Long lasting
- Easy to Clean
- No Color Fading
- Resistant to Fire
- Magnets Attachable

### Color Image



W-970-SM  
Pure White



W-931-SM  
Cool White



W-455-SM  
Creamy White

## Toilet Boothes Pannels



The glassy surface is very easy to clean up and hygenic. This makes maintenance quite an easy job.

## Building Materials

### Other Interior Applications

The material is corrosion and abrasion resistant and very strong against moist solar heat, dust, etc which is suitable for modern construction.

It is widely used in various applications as a basic material for construction.

#### Advantages of JFE PORCELAIN ENAMEL as Construction Material

- 1.The material is corrosion and abrasion resistant and very strong against moist, solar heat, dust, etc which is suitable for modern construction.
- 2.Superior abrasion resistance compared to aluminium, plastics, coated steel.
- 3.The glassy surface is very easy to clean up and hygenic.
- 4.High chemical resistance.
- 5.Fire resistant.
- 6.No fading of colors.





## Other Applications for JFE PORCELAIN ENAMEL

### JFE PORCELAIN ENAMEL Directly Attached to Walls or Columns

Wall at a Corporate Refresh Room

**B-455-SM**



Columns at Shops

**B-001-CM**



### JFE PORCELAIN ENAMEL Panels Attached to Walls

Conference Room

**B-931-SM**



Menu Boards at a "Kaiten Sushi Shop"

**B-002-SM**



### JFE PORCELAIN ENAMEL Directly Attached to Curved Walls

Conference Room

**B-455-SM**



# Production of JFE PORCELAIN ENAMEL

## Quality is JFE's Goal

### High Quality Steel Substrate

High quality steel that is designated for porcelain enamel production is supplied by JFE Steel for the production of JFE PORCELAIN ENAMEL. The steel is a unique cold rolled product with ultra low carbon and impurities. JFE Metal Products Corporation and JFE Steel work very close to maintain our world class quality level.

### Advanced Coating Technology

The cold rolled steel is nickel coated as pretreatment. After pretreatment, a glassy porcelain enamel layer "ground coat" is coated on both sides of the steel. This is followed by another coat of a layer of porcelain enamel as the top layer "cover coat". Baking temperature for both layers are approx. 800°C which ensures the durability of JFE PORCELAIN ENAMEL.

Grid lines are also porcelain enamel that are embedded on to the material with our unique technology.

### Stringent Quality Control

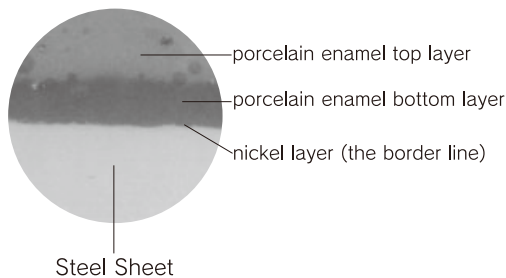
By the adoption of CCD cameras in addition to our trained inspector's visual inspection, JFE PORCELAIN ENAMEL products clear the highest level of inspection in the world. We are very proud to say that JFE PORCELAIN ENAMEL quality is based on more than 50 years of experience of production which we believe is your best choice.

### The following substances designated by the RoHS Directive as hazardous substances are not included in our products:

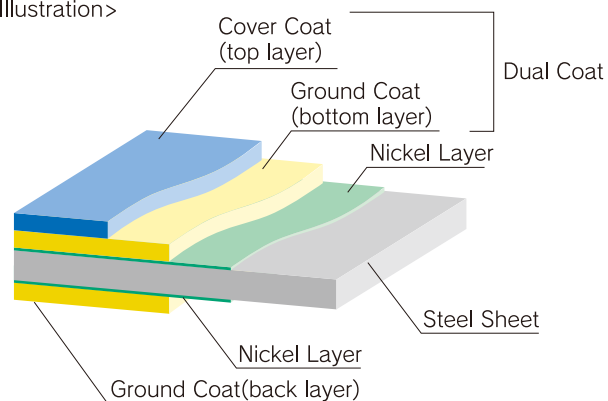
- (1) Lead
- (2) Mercury
- (3) Cadmium
- (4) Hexavalent chromium
- (5) Polybrominated biphenyls (PBB)
- (6) Polybrominated diphenyl ether (PBDE)
- (7) Bis(2-ethylhexyl)phthalate (DEHP)
- (8) Butyl benzyl phthalate (BBP)
- (9) Dibutyl phthalate (DBP)
- (10) Diisobutyl phthalate (DIBP)

### ► Cross Section of JFE PORCELAIN ENAMEL ►

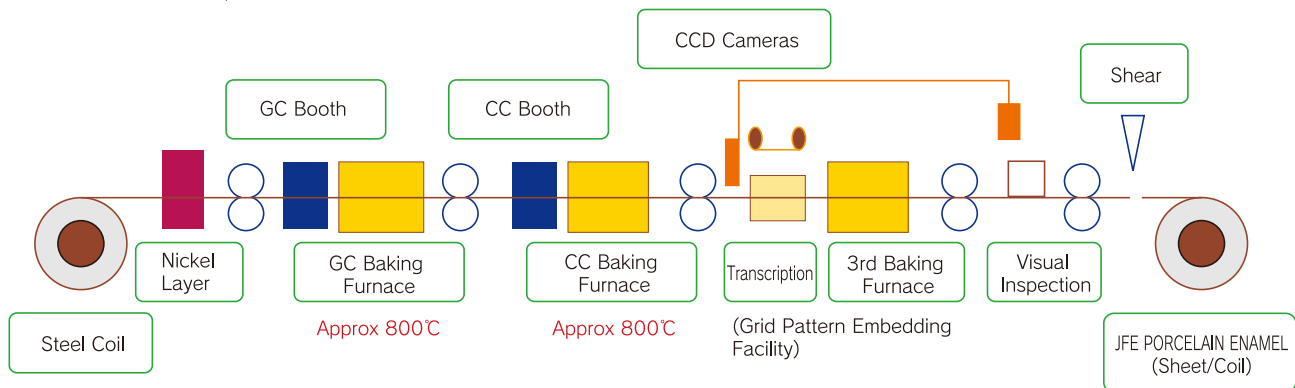
<Photomicrograph>



<Illustration>



### ► Production Flow ►

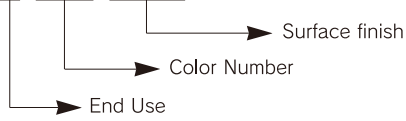


CC...Cover Coat, GC...Ground Coat

# JFE PORCELAIN ENAMEL Standards

## ● Product Standards ●

### B-931-SMR



## ● End Use Category ●

Character	End Use
B	Markerboard, Chalkboard
S	Screen
W	Interior

## ● Surface Finish ●

Surface Finish	Character	Surface Glossiness	End-Use	Remarks
Chalk Mat	CM	No Gloss	Chalkboard	CMR = Chalk Mat Roll-Coated
	CMM		Chalkboard and Projection Screen	—
Semi Mat	SM	Semi Gloss	Markerboard	SMR = Semi Mat Roll-Coated
Gloss	G	Gloss		—
Mica Mat	MM	Gloss Controlled	Projection Screen	—

## ● Width & Length ●

Coil Width		Coil Length		Coil Width		Coil Length	
mm	inch	M	feet	mm	inch	M	feet
890	35.06	152	498	1500	59.06	108	354
914	36.00			1524	60.00		
1190	46.85			1219(24GA)	48.00	76	249
1219	48.00			1524(24GA)	60.00	54	177

## ● Grid Pattern ●

Coil Width	Grid Pattern	Coil Width	Grid Pattern
890mm	Grid Pattern embedded on the whole surface of each coil.	3 feet (914mm)	Grid Pattern of 900mm width embedded in the center portion of each coil surface
1190mm		4 feet (1219mm)	Grid Pattern of 1200mm width embedded in the center portion of each coil surface
1500mm	Grid Pattern of 1200mm width embedded in the center portion of each coil surface	5 feet (1524mm)	

\* Grid lines are also porcelain enamel that are embedded by our baking process.

\* Mica Screens only available without grid pattern.

# Tips for Users

## ( Chalkboard )

### Daily Maintenance

- \* Clean the surface of the chalkboard with a clean chalkboard eraser, and wipe out particles of chalk.
- \* Wipe the surface of the chalkboard with a well wrung-out cloth. Do not use a neutral or alkaline detergent.
- \* Use a soft dried cloth to wipe residual moisture away.

### Precautions

- \* Some types of chalk are incompatible with the chalkboards. The user should check the chalk maker, type, quality, manufacturing processes, and the eraser. Contact our sales force for guidance.
- \* No foreign substance should be left on the blackboard. Avoid single and double-sided adhesive tape, wet chalk, and wet erasers.
- \* No liquid (such as juice) other than water should contact chalkboards.
- \* Clean the eraser as frequently as possible. If necessary with an eraser cleaner to remove accumulated chalk particles.

## ( Markerboard )

### Daily Maintenance

- \* Use a clean cloth, clean water and clean the whole surface of the markerboard.

### Precautions

- \* Please wait until figures and characters dry before erasing. (Ink will remain wet on the surface immediately after writing)
- \* Avoid usage of marker pens with bent or soft tips, or when flow of ink is not proper to prevent erasing problems.
- \* Avoid usage of an overused eraser which also may lead to erasing problems. Replacement of erasers on a regular basis is recommended.
- \* Usage of some marker pens may lead to erasing problems. Please feel free to contact our sales force for guidance.
- \* Usage of anhydrous ethanol is recommended in case of removing tough stain.



## Standard Color Samples

Any color number finishing with R indicates JFE-R Series with a quality-improved surface.

### ( For Markerboards )

Color Number	Color Image	Features	Gloss Level	Writability	Erasability
B-931-SMR		A slightly blue/grey white with a higher gloss level	75% (Gs (20))	A	A
B-946-SMR		A slightly creamy white with a higher gloss level	72% (Gs (20))	A	A
B-937-SMR		A slightly creamy white with a lower gloss level. Surface is roll coated finish.	85% (Gs (45))	A	B
B-938-SM		A slightly creamy white with a lower gloss level. Surface is spray coated finish.	84% (Gs (45))	A	B

### ( For Projection Screens )

Color Number	Color Image	Features	Gloss Level	Writability	Erasability	Projection Quality
S-952-MM		A Mica Screen surface for projection screens. Projected images are extremely clear. Excellent view from any point in the room.	23% (Gs (45))	D	Wet Erasable	A
S-954-MM		A Mica Screen surface for projection & writing/erasing. Best match with ultra short throw projectors.	78% (Gs (45))	A	B	B+
B-455-SM		A low gloss surface to project on a writing & erasing surface.	60% (Gs (45))	A	C	B+

### ( For Chalkboards )

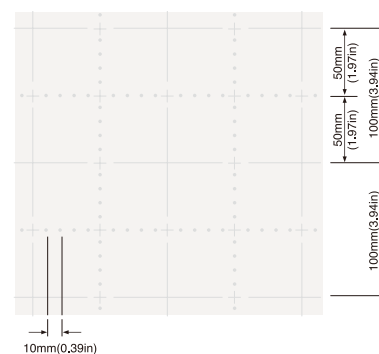
Color Number	Color Image	Features	Gloss Level	Writability	Erasability	Projection Quality
B-532-CM		The basic green chalkboard surface. For smooth writing & erasing. The color is very easy on students eyes.	27% (Gs (75))	A	A	—
B-001-CM		For tradition type black color chalkboards.	13% (Gs (75))	B	B	—
S-524-CMM		A projectionable chalkboard surface. An ideal product for ICT educational programs.	21% (Gs (75))	A	A+	B

◆Please contact us for colors/sizes not shown in the catalog.

A=Excellent, B=Good, C=Acceptable, D=Slightly Inferior

◆Please contact us for all details

Grid Pattern



## JFE PORCELAIN ENAMEL

JFE PORCELAIN ENAMEL is applicable to a wide range of products including markerboards, chalkboards, projection screens and building interior

**JFE Metal Products Corporation**

<http://www.jfe-kenzai.co.jp/>

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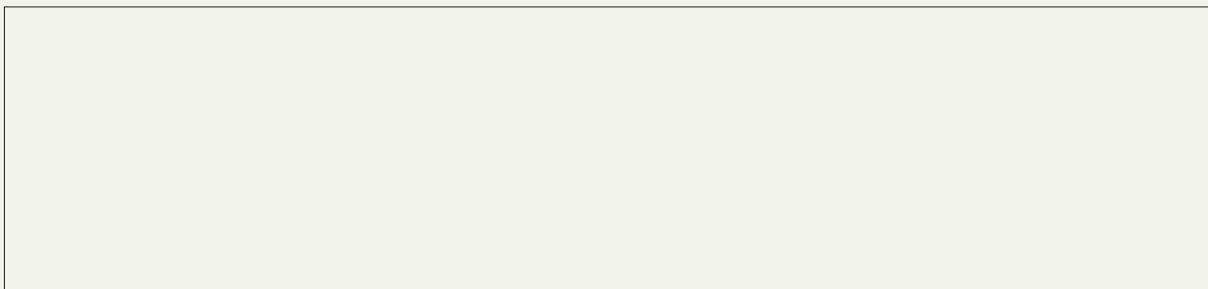
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This catalog uses environmental-friendly soybean ink.

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