

67962

# BRISSCO

*Brissco Equipment Limited  
Signs and Graphics Division  
Unit 25, Cater Road, Bristol BS13 7TX  
Telephone 0117 964 3925 Fax 0117 978 0440*

For the attention of Mr H J Arnold  
Eastern Shires Purchasing Organisation  
Leicester Road  
Glenfield  
Leicester  
LE3 8RT

9 February 1996

Dear Mr Arnold

With reference to your letter dated 30 January 1996, please find enclosed information as requested on the School Bus plates which we supply to yourselves.

We do not have particular information relating solely to these plates but do have sheets on the individual products used to manufacture them, as follows:-

The plate is made from a material called Metzoplast ABS/H.

The reflective material is known as FasCal 2420.

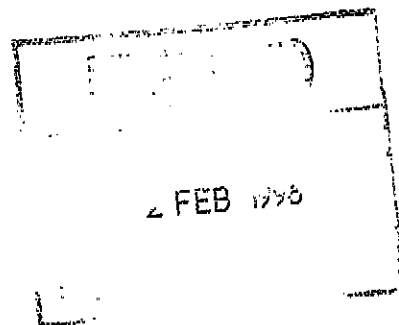
The ink used is 3M Scotchlite Ink 905 Black.

I trust this is sufficient and apologize for them being on paper, as we have no means (as yet) to send you the information in a computerized form.

Yours sincerely



Darren Beale  
Sales Coordinator



Enc.

67962


**METZOPLAST**  
 PLATTEN UND FOLIEN

# METZOPLAST ABS/H

## Brief characteristic:

Acrylonitrile butadiene styrene propfopolymerisat with high impact strength and excellent thermoformability.

### Mechanical properties

Yield strength	DIN 53455	N/mm <sup>2</sup>	42
Elongation at yield	DIN 53455	%	> 4
Tensile strength at break	DIN 53455	N/mm <sup>2</sup>	34
Elongation at break	DIN 53455	%	> 40
Modulus in flexure	DIN 53457-B4	N/mm <sup>2</sup>	2500
Flexural stress at conventional deflection	DIN 53452	N/mm <sup>2</sup>	
Impact strength at 23°C	DIN 53453	kJ/m <sup>2</sup>	60
Impact strength at -30°C	DIN 53453	kJ/m <sup>2</sup>	50
Impact strength notched at 23°C	DIN 53453	kJ/m <sup>2</sup>	10
Impact strength notched at -30°C	DIN 53453	kJ/m <sup>2</sup>	6
Izod Impact Strength notched at 23 °C		J/m	
Indentation hardness (H 358/30)	DIN 53456	N/mm <sup>2</sup>	

### Thermal properties

Vicat softening point VST B 120	DIN 53460	°C	100
ISO/R75 process A	DIN 53461	°C	94
ISO/R75 process B	DIN 53461	°C	98
Continuous working temperature		°C	-30/+85
Thermal coefficient of linear expansion	DIN 53752	10 <sup>-5</sup> /K	10,2
Thermal conductivity	DIN 52612	W/Km	0,16
Specific heat		kJ/kgK	2,4

### Electrical properties

Dielectric constant (1 MHz)	DIN 53483		2,8
Dissipation factor (1 MHz)	DIN 53483	10 <sup>-4</sup>	7
Specific volume resistivity	DIN 53482	Ωcm	10 <sup>15</sup>
Surface resistivity	DIN 53482	Ω	10 <sup>15</sup>
Dielectric strength	DIN 53481	kV/mm	KC 600
Resistance of tracking	DIN 53480	level	

### Other properties

Shrinkage		%	0,4 - 0,6
Water absorption	DIN 53495	%	0,3
Density	DIN 53479	g/cm <sup>3</sup>	1,05

8/94-BK

This are typical values and can't be cons  
 The mechanical properties of this technik  
 The information contained herein is base  
 made without guarantee of performance

**FAX** TO: Brisso  
 FAX NO: 0117 9772722 PAGE: 1 OF: 1  
 ATTENTION OF: Darren Beale  
 FROM: Mac San DATE: Feb 9 1996  
 COMPANY: Brisso FAX NO: 0117 9772722  
 Post-it Notes from 3M

Ref No: 7888

## TECHNICAL INFORMATION

### FasCal® 2420 Retro-reflective

**Description:**

FasCal 2420 is a retro-reflective film that has similar light reflecting properties as the films used for traffic signs and car licence plates. Bright daytime colours as well as highly visible colours at night when illuminated by car headlights make the graphics visible round-the-clock.

Facefilm : vinyl overlaminated reflective film

Adhesive : permanent, acrylic

Liner : 2-side polyethylene coated kraft paper, 160 g/m<sup>2</sup>

**Conversion:**

FasCal 2420 shows excellent cutting performance on computerised signmaking equipment, both on drum and table plotters. FasCal 2420 can also be screenprinted with high quality transparent screen inks. (Opaque inks will eliminate the retro-reflective properties).

**Uses:**

FasCal 2420 is recommended for retro-reflective signs, symbols, vehicle graphics, safety markings and striping on flat application surfaces, for which a **medium durability** is required.

**Features:**

Excellent colour brightness at nighttime illumination with car headlights.

Excellent cutting and weeding properties.

Excellent dimensional stability.

Permanent bond to a wide variety of substrates.

Excellent printability.

**Colour matching:**

On request, custom colours can be made at a minimum quantity of 1100 square meters.

# Physical and chemical characteristics

## General:

Caliper, facefilm	ISO 534	130 micron
Dimensional stability	DIN 30646	0.3 mm max.
Adhesion, initial	FINAT FTM-1, stainless steel	540 N/m
Adhesion, ultimate	FINAT FTM-1, stainless steel	720 N/m
Flammability		Self extinguishing
Shelf life	Stored at 22°C/50-55% RH	2 years
Durability	Vertical exposure	4 years*

\*The durability is based on middle European exposure conditions. Actual performance life will depend on substrate preparation, exposure conditions and maintenance of the marking. For instance, in the case of signs facing south; in areas of long, high temperature exposure such as southern European countries; in industrially polluted areas or high altitudes, exterior performance will be decreased.

### Warranty:

FasCal® materials are manufactured under careful quality control and are warranted to be free from defects in material and workmanship. Any material shown to our satisfaction to be defective at the time of sale will be replaced without charge. Our aggregate liability to the purchaser shall in no circumstances exceed the cost of the defective materials supplied. No salesman, representative or agent is authorized to give any guarantee, warranty or make any representation contrary to the foregoing. All FasCal® materials are sold subject to the above conditions, being part of our standard conditions of sale, a copy of which is available on request.

All technical data subject to change

## Thermal:

Application temperature	Minimum + 10°C
Service temperature	-40° to + 82 °C

## Chemical:

Humidity resistance	120 hours exposure	No effect
Water resistance	48 hours immersion	No effect

### Important:

Information on physical and chemical characteristics is based upon tests we believe to be reliable. The values listed herein are typical values and are not for use in specifications. They are intended only as a source of information and are given without guarantee and do not constitute a warranty. Purchasers should independently determine, prior to use, the suitability of this material for their specific use.

## Test methods:

### Dimensional stability:

Is measured on a 150 x 150 mm aluminium panel to which a specimen has been applied; 72 hours after application the panel is exposed for 48 hours to +70°C, after which the shrinkage is measured.

### Adhesion:

(FTM-1, FINAT) is measured by peeling a specimen at a 180° angle from a stainless steel panel, 24 hours after the specimen has been applied under standardised conditions. Initial adhesion is measured 20 minutes after application of the specimen.

### Flammability:

A specimen applied to aluminium is subjected to the flame of a gas burner for 15 seconds. The film should stop burning within 15 seconds after removal from the flame.

### Temperature range:

A specimen applied to stainless steel is exposed at high and low temperatures and brought back to room temperature. 1 hour after exposure the specimen is examined for any deterioration.

### Note:

Prolonged exposure to high and low temperatures in the presence of chemicals such as solvents, acids, lyes etc. may eventually cause deterioration.

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INK 905 BLACK

#007

**3M**  
**67962**

3M UK PLC  
3M HOUSE, PO BOX 1, MARKET PLACE,  
BRACKNELL, BERKSHIRE, RG12 1JU  
Tel: 01344 858000

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MATERIAL SAFETY DATA SHEET  
\*\*\*\*\*

Document id : 10-0598-2 Issue date : 95.08.23  
Version : 3.00 Supersedes date : 94.08.10  
: 1

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1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION  
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Tradename:  
Scotchlite Brand Transparent Screen Printing Ink 905 Black

3M Product ID:  
75-0299-0674-2

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2 COMPOSITION/INFORMATION ON INGREDIENTS  
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Ingredient name and classification	CAS number	Percentage
CYCLOHEXANONE (Xn; R:10-20)	108-94-1	33.5 - 50.2
VINYL ACETATE-VINYL ALCOHOL-VINYL CHLORIDE POLYMER	25086-48-0	18.8 - 28.1
DIETHYLENE GLYCOL MONOETHYL ETHER ACETATE	112-15-2	10.5 - 15.7
ALKYD RESIN	---	6.5 - 9.7
XYLENE (XN; R:10-20/21-38)	1330-20-7	5.3 - 7.9
CARBON BLACK	1333-86-4	2.8 - 4.2
AROMATIC KETONE	---	1.2 - 1.8
EPOXIDIZED SOYBEAN OIL	8013-07-8	.8 - 1.3

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3 HAZARDS IDENTIFICATION  
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Critical hazards: Flammable. Harmful by inhalation. Irritating to eyes. May cause skin irritation. May be harmful if absorbed through the skin.

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4 FIRST-AID MEASURES  
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**Eye Contact:**

Immediately flush eyes with large amounts of water. Get immediate medical attention.

**Skin Contact:**

Flush skin with large amounts of water. If irritation persists, get medical attention.

**Inhalation:**

Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.

**Ingestion:**

If swallowed, call a medical doctor immediately. Only induce vomiting at the instruction of a medical doctor. Never give anything by mouth to an unconscious person.

**5 FIRE-FIGHTING MEASURES**

**Suitable Extinguishing Media:**

Water spray. Carbon dioxide. Dry chemical. Alcohol-type foam.

**Unsuitable Extinguishing Media:**

Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. Water or foam may cause frothing.

**Exposure Hazards:**

Vapours may travel long distances along the ground or floor to an ignition source and flash back.

**Combustion Products:**

Carbon Monoxide and Carbon Dioxide. Hydrogen Chloride. Hydrocarbons.

**Fire-Fighting Procedures:**

Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, tunic and trousers (leggings), bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

**6 ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:**

Refer to other sections of this Material Safety Data Sheet for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

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Environmental Precautions:

Methods for Cleaning up:

Ventilate area. Extinguish all ignition sources. Contain spill.  
Cover with inorganic absorbent material. Collect using  
non-sparking tools. Collect spilled material. Clean up residue.  
Place in a suitable container and seal.

7 HANDLING AND STORAGE

Precautions for Safe Storage:

Incompatible Materials:

Store away from acids. Store away from heat.

Ventilation:

Keep container in well-ventilated area.

Explosion Prevention:

Combustible liquid and vapour.

Precautions for Safe Handling:

Keep container tightly closed when not in use.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection:

Avoid eye contact. The following should be worn alone or in  
combination, as appropriate, to prevent eye contact: Wear  
unvented goggles during operations in which exposure is likely.

Hand Protection:

Wear appropriate gloves when handling this material. A pair of  
gloves made from the following material(s) are recommended:  
Butyl rubber, Polyvinyl alcohol.

Skin Protection:

Avoid prolonged or repeated skin contact. Use one or more of  
the following personal protection items as necessary to prevent  
skin contact: Apron. Protective garments (other than gloves)  
should be made of either of the following materials: Butyl  
rubber, Polyvinyl alcohol.

Respiratory Protection:

Avoid inhalation of vapours. Select one of the following  
respirators based on airborne concentration of contaminants and  
in accordance with national regulations: half-mask organic  
vapour respirator full-face organic vapour respirator

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**Ingestion:**

Do not eat, drink or smoke when using this product.

**Recommended Ventilation:**

Provide appropriate local exhaust ventilation at transfer points. Provide appropriate local exhaust ventilation on open containers. Provide sufficient ventilation to maintain emissions below recommended exposure limits. Use with adequate dilution ventilation. If exhaust ventilation is not adequate, use appropriate respiratory protection.

**Exposure Limits:**

CYCLOHEXANONE (Xn; R:10-20) (108-94-1)  
UK HSE TWA: 25 ppm; 100 mg/m<sup>3</sup> OES

UK HSE STEL: 100 ppm; 400 mg/m<sup>3</sup> OES

XYLENE (XN; R:10-20/21-38) (1330-20-7)  
UK HSE TWA: 100 ppm; 435 mg/m<sup>3</sup> skin OES  
UK HSE STEL: 150 ppm; 650 mg/m<sup>3</sup> skin OES

CARBON BLACK (1333-86-4)  
UK HSE TWA: 3.5 mg/m<sup>3</sup> OES  
UK HSE STEL: 7 mg/m<sup>3</sup> OES

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odour:	Black liquid with a solvent odour.
pH:	Not applicable
Boiling point/boiling range:	Greater than 150 degrees C Cyclohexanone
Melting point/melting range:	Not determined
Flash point:	42.8 degrees C Tag closed cup
Autoflammability:	Not determined
Vapour pressure:	Not determined
Specific gravity:	Approximately 1 Water=1
Vapour density:	Not determined



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Volatile organic compounds:	Approximately 612 grams/litre As packaged
Evaporation rate:	Not determined
Viscosity:	2000.0 - 3000.0 Centipoise

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#### 10 STABILITY AND REACTIVITY

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Materials to Avoid:  
Strong acids. Strong bases. Strong oxidising agents.

Hazardous Decomposition:  
Stable. Hazardous polymerisation will not occur.

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#### 11 TOXICOLOGICAL INFORMATION

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Effects from Eye Contact:  
Severe Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, cloudy appearance of the cornea, impaired vision and possible permanent impairment.

Effects from Skin Contact:  
Moderate Skin Irritation (after prolonged or repeated contact): signs/symptoms can include redness, swelling, itching, and dryness. May be absorbed through the skin and produce effects similar to those caused by inhalation and/or ingestion.

Effects from Inhalation:  
Single overexposure, above recommended guidelines, may cause:  
Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.  
Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

Effects from Ingestion:  
Ingestion is not a likely route of exposure to this product.  
Ingestion may cause: Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomit, and blood in faeces.  
Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, muscular weakness, incoordination, slowed reaction time, fatigue, blurred vision, slurred speech, giddiness, tremors and convulsions.

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#### 12 ECOLOGICAL INFORMATION

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Ecotoxicity Data:

Other Effects and Information:

Since regulations vary, consult applicable regulations or  
authorities before disposal.

13 DISPOSAL CONSIDERATIONS

Product as Sold:

Dispose of waste product in a facility permitted to accept  
chemical waste.

Product in Use:

Dispose of waste product in a facility permitted to accept  
chemical waste.

Potential for Recycling:

Reclaim if feasible.

Special Instructions:

14 TRANSPORT INFORMATION

UN NUMBER:

UN number: UN1210

UK ROAD/SEA FREIGHT (IMO) CLASSIFICATION:

Substance Identification Number: UN1210

Class: 3.3

Packing Group: III

Proper Shipping Name: Ink

PGR (if applicable) If the product is in container  
size of 200 litres or greater  
PGR regulations will apply.

ADR/RID CLASSIFICATION:

Class: 3.0

Item Number: 31a

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ICAO/IATA CLASSIFICATION:

Class: 3.0  
Sub-Risk:  
Packing Group: III  
Proper Shipping Name: Printing Ink

15 REGULATORY INFORMATION

Precautionary Label Information:

Symbol(s):  
St. Andrew's Cross (Harmful)

Risk Phrases:

Flammable. Harmful by inhalation. Irritating to eyes. May cause skin irritation. May be harmful if absorbed through the skin.

Safety Phrases:

Keep away from heat. Keep away from sources of ignition - No Smoking. Keep container tightly closed. Avoid contact with eyes. Avoid prolonged or repeated contact with the skin. Do not breathe vapour. Use only in well ventilated areas. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash with soap and water. Wear eye and face protection. If swallowed, do not induce vomiting. Seek medical advice immediately and show this container or label.

16 OTHER INFORMATION

Regulatory Information:

The following UK Regulations as amended may affect the product as supplied:  
The Chemicals (Hazard Information and Packaging) Regulations 1994  
The Dangerous Substances (Conveyance by Road in Road Tankers Tank Containers/Regulations 1992)  
The Carriage of Dangerous Goods By Road and Rail (Classification, Packaging and Labelling) Regulations 1994  
The Petroleum (Consolidation)

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Act 1928  
The Control of Substances  
Hazardous to Health Regulations  
1994  
The Control of Pollution  
(Special Waste) Regulations 1980  
The Environmental Protection  
Act, 1990  
The Health and Safety at Work  
Act, 1974

Reissue date/Reason for reissue.

23/08/95: To make changes to label text in section 15.

Intended Use of Product:

Ink to be used for the screen printing of films and signs.

Limitations on Use of Product:

For industrial use only.

The information on this Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law).

The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials.

For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.