

COMPANY STANDARDS

C6001-45

TITLE :

POLYURETHANE FINISH PAINT -
GOLDEN YELLOW

Two pack, liquid type, Air Drying

PAGE NO. 1 OF 6

DATE :

1998-03-26

0. GENERAL :

This specification number shall invariably be used wherever this quality of paint is to be indicated. This standard gives specification for Polyurethane finishing paint by spray application to exterior or interior of steel surfaces which are exposed to severe weathering and abrasion. This paint shows outstanding resistance to chemicals, solvents and excellent durability in marine atmosphere.

This Issuance supersedes C6001-45 Issue-0 dated 1995-12-08.

1. SCOPE :

This standard specifies the requirements, application methods, properties, chemical composition, surface preparation of substrate and performance characteristics of Polyurethane Finishing Paint, Two-pack, Liquid Type, Air-Drying to be used on BEML equipments.

2. APPLICATION :

This Paint is applied by any of the following commercially available range of spraying equipment.

- Conventional air atomising spray
- Airless spraying
- Brushing

3. COMPATIBILITY :

This paint shall be compatible with :

- Polyurethane Zinc Phosphate Primer to Company Standard C6001-46
- Epoxy process Primer to Company Standard C6001-36

There shall be no evidence of lifting or irregularity upon application of top coat of this finishing paint on the primer after the primers have dried as indicated in the standards.

PREPARED BY :
CSD

ISSUE No:
One

REPLACEMENT FOR:
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REFERENCE:
IS-13213
IS-8662

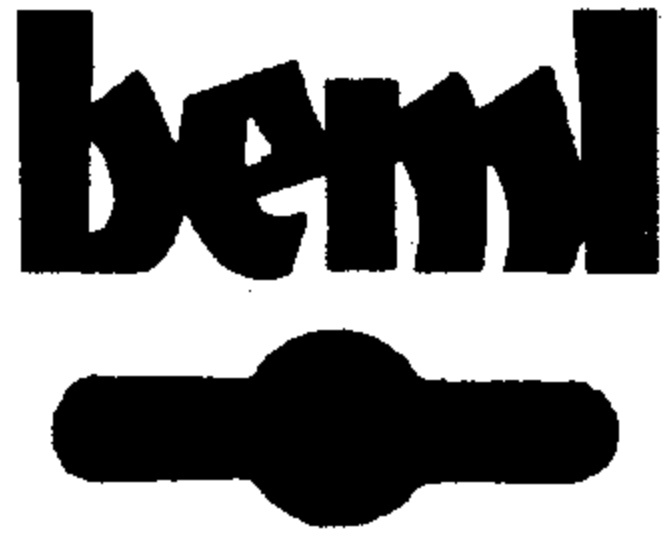
APPROVED BY :

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4. SURFACE PREPARATION :

The surface to be painted shall be prepared as per the following Company Standards :

- a) PR1007-C Issue-1 "Final painting of Earth Moving Equipments".
- b) PR1032-C "Finish painting of Components and Aggregates of BEML Equipments".

5. CHEMICAL COMPOSITION :

5.1 The paint shall consist of polyurethane resin and suitable hardener to be mixed in a simple proportion by volume to satisfy all the requirements of this standard.

The polyurethane resin shall consist of an appropriate polyol with pigments, extenders, solvents and additives.

The hardener consists of an aliphatic poly-isocyanate ASTM type-V with solvents and additives.

5.2 Method for identifying aliphatic isocyanate :

Aliphatic isocyanates show no colouration while aromatic hydrocarbon show light brown or dark reddish brown with 3% hydrogen per-oxide in 40-50 % solution of poly-isocyanate in acetone (Annexure-B, Clause 4.1.2 of IS:13213).

5.3 MATURITY TIME :

After mixing two pack resin and hardener before spraying, the mixture is to be allowed maturing time as recommended by the supplier. The typical maturity time is 30 minutes.

5.4 VOLUME SOLIDS :

The minimum percentage of volume solids is 40 when tested as per Annexure-D of IS:13213.

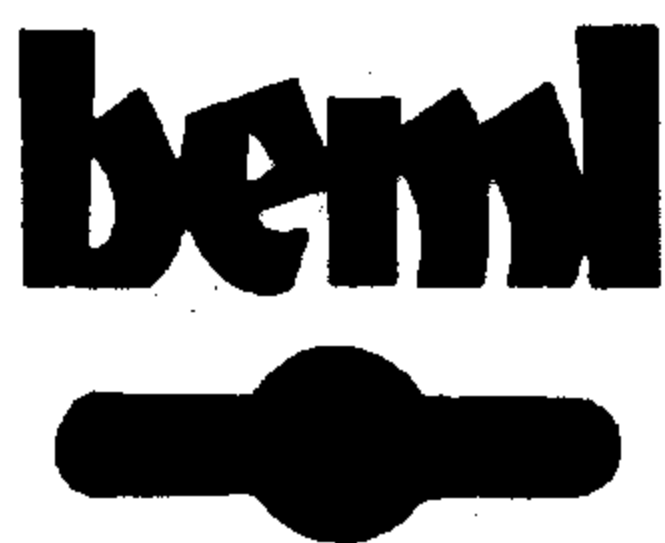
6. PROPERTIES :

Properties shall be as per Table-1.

7. PERFORMANCE CHARACTERISTICS :

Performance characteristics shall be as per Table-2.

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8. APPROVAL OF PAINT :

- 8.1 The supplier shall carry out all the tests and offer a "Sample" along with test results. The "Sample for registration" shall be submitted as directed by Material Management Department of BEML. Unless otherwise specified the sample shall be 3 X 500 ml along with test certificate.
- 8.2 BEML Quality Engineering Department shall carry out all tests indicated in this specification on the Registered Sample from suppliers and accord approval for use in BEML against this specification.

9. QUALITY OF SUPPLIES :

The components of the paint as delivered shall be free from gel, coarse particles, skins, foreign matter and sediments.

Supplier of the paint shall carry out testing and furnish test certificate for each batch of supply in respect of ;

Chemical Composition
Toxicity and Odour
Viscosity and Hiding Power
Keeping Properties
Colour and Gloss
Drying Characteristics
Scratch Hardness, Flexibility and Adhesion

BEML may carry out any or all of the tests indicated in this standard for any supply as quality audit. Any non-conformity shall be cause for rejection.

10. PACKING :

Unless otherwise specified in the Purchase Order/Contract, the components of the paint shall be packed in metal containers, with narrow screw cap mouth and with adequate sealing arrangement.

11. MARKING :

Each container shall be marked with the following :

- a) BEML specification No.
- b) BEML Order No.
- c) Name and Class of Material

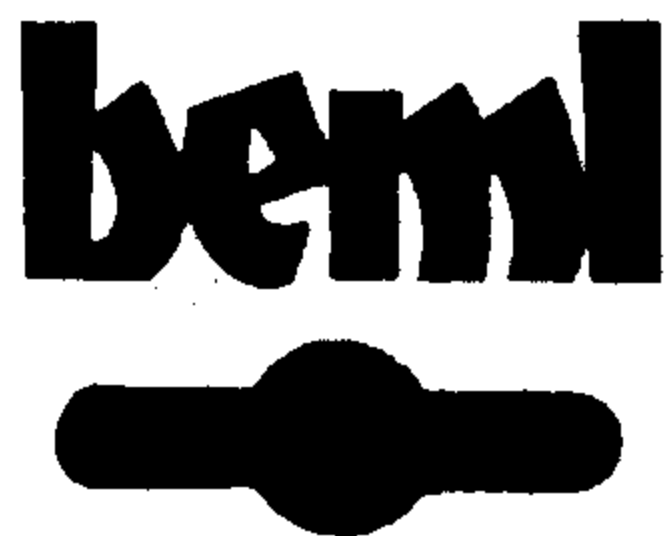
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- d) Name of the Manufacturer and/or Trade Mark, if any
- e) Batch No.
- f) Mass/Volume of the Material
- g) Month and year of Manufacture
- h) Date of Expiry
- i) Mixing proportion recommended for use
- j) Other instructions for safe handling and use of material

TABLE-1
PROPERTIES

SL No	PROPERTY	REQUIREMENT	TEST METHOD
01	COLOUR	Golden Yellow	Shade 356, IS:5
02	CONSISTENCY	Smooth and Uniform	Part-1 Sec-5 of IS:101
03	FINISH	Smooth and full Glossy	--
04	GLOSS, Minimum	86 at 60°	Part-4 Sec-4 of IS:101
05	VISCOSITY : (seconds) (Admixed and thinned for spraying ; thinner not exceeding 5% of admixture)	25 to 30	FORD No.4 cup of IS:101
06	POT LIFE, (hours) minimum	4	Annex-E of IS:13213
07	DRYING TIME, a) SURFACE DRY (hours) maximum b) HARD DRY (hours) maximum	3 8	Part-3 Sec-1 of IS:101
08	SCRATCH HARDNESS	No scratch showing bare	Part-5 Sec-1 of IS:101
09	FLEXIBILITY	No visible damage or detachment	Part-5 Sec-2 of IS:101

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TABLE-1 (Contd..)

SL NO	PROPERTY	REQUIREMENT	TEST METHOD
10	KEEPING PROPERTIES minimum (SHELF LIFE)	One year	Part-6 Sec-2 of IS:101
11	FINENESS OF GRIND (microns) maximum	10	Part-3 Sec-5 of IS:101
12	MASS, minimum (kg/10 litre)	9	Part-1 Sec-7 of IS:101

NOTE :

- 1) Test panels for evaluation of properties shall be prepared as per IS:101-1986, Part-1 Sec-3 and coated with 35 ± 5 microns of DFT of the paint under test.
- 2) SPRAYING VISCOSITY : Normally 25 to 30 seconds.
- 3) RECOATABILITY : Before surface dry or after hard dry.

TABLE-2

PERFORMANCE REQUIREMENTS

SL No	CHARACTERISTICS	REQUIREMENT	TEST METHOD
PANEL PREPARATION :			
	a) PANEL CLEANING	Grit blasting/emerying after degreasing	Part-1 Sec-3 of IS:101
	b) DFT OF COMPATIBLE - PRIMER (microns)	35 ± 5	Annexure-C of IS:13759
	c) DFT OF FINISHING - PAINT (microns) minimum	35	--do--
PERFORMANCE CHARACTERISTICS :			
01	ACCELERATED TESTS : a) RESISTANCE TO - SULPHURIC ACID (30%, 24 hours) Comparison is between immersed and unimmersed portions	No wrinkling & lifting. Gloss & colour shall be minimum - between two portions	Annex-F of IS:13213

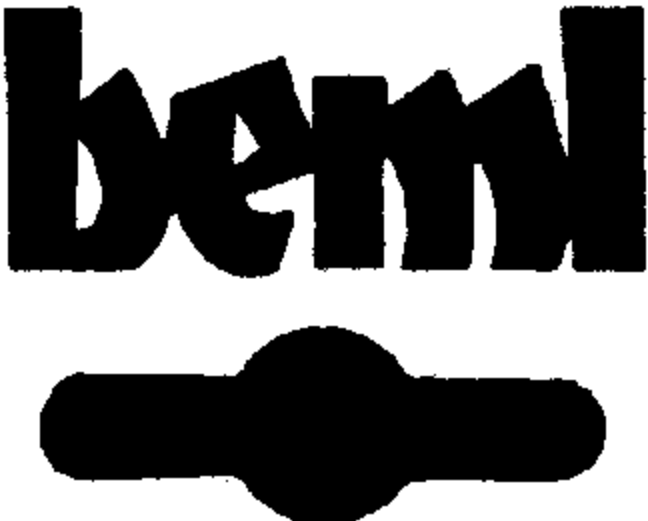
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TABLE-2 (Contd..)

SL No	CHARACTERISTICS	REQUIREMENT	TEST METHOD
	b) RESISTANCE TO - CAUSTIC POTASH (20% of Potassium hydroxide for - 24 hours)	--do--	--do--
	c) RESISTANCE TO OIL (lubricating oil for 24 hours)	--do--	--do--
	d) RESISTANCE TO - SOLVENTS 1. Xylene 2. Ethanol 3. Acetone	--do--	--do--
02	ACCELERATED WEATHER TEST		Annex-G of IS:13213
	a) Panel preparation		Annex-H of IS:13213
	b) Colour	Slight colour change is permitted	D-4.3 of IS:8662
	c) Gloss (Retention) minimum	90 % of original gloss	
	d) Checking Cracking Flaking Chalking Spotting Blistering and Corrosion	No Checking No Cracking No Flaking No Chalking No Spotting No Blisters & No signs of Corrosion	D-3.2.4 D-3.2.5 D-3.2.6 D-3.2.7 D-3.2.8 D-3.2.9 of IS:8662

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