Application Guide

BUMI COAT

Product Description

BUMI COAT is a two-component, solvent based, glass-ceramic composite coating. It is resistant to low temperature of -20ºC and high temperature resistance up to 1000ºC continuously, if the substrates permit. The coating can be used as both primer and finish coat.

Suitable for steel surfaces such as carbon steel and stainless steel, in addition to ceramic substrates. All applications are advised to adhere to the Application Guide. Application can be performed on hot substrates up to 70ºC

Scope

The Application Guide best practice recommendations in using the product. The information and guidelines provided acts as a mere guide and is not mandatory requirement. These are guidelines to assist in optimizing the use of the product in a safe and efficient manner. Adherence to the Application Guide does not relieve the applicator's responsibility and coating application knowledge & techniques.

Referred Standards

References in the Application Guide generally made to ISO Standards.

Surface Preparation

The quality requirement for surface preparation before BUMI COAT application can vary depending on the area of use, durability expectation, and project specification.

Surface must be free of contaminant including salt. Water used for rinsing must be potable water grade (free of organic contaminant, radiological threats, inorganic pollutants, waterborne pathogens and turbidity). Surface must be dry before the mechanical surface preparation starts. Paint solvents (thinners) shall not be used for general degreasing or preparation of the surface for painting due to the risk of spreading dissolved hydrocarbon contaminants.

Process sequence

Surface preparation and coating should only commence after all welding, degreasing, removal of sharp edges & surface shelling, weld spatter and treatment of welds is complete. It is necessary to complete all forms of hot work before coating commences.

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Carbon Steel

Initial rust grade

The steel shall preferably be Rust Grade A or B (ISO 8501-1). It is practically possible to apply the coating to Rust Grade C and D, but it is challenging to determine or achieve a specified film thickness on such rough surface. This, in turn, reduces the lifetime of the coating. Coating on surface prepared Rust Grade C or D requires an increased frequency in inspection and testing.

Abrasive blast cleaning

Cleanliness

The surface must be dry abrasive blast cleaned to Sa 2.5 (ISO 8501-1) using abrasive media suitable to achieve a sharp and angular surface profile.

Surface profile

Recommended surface profile 45 – 85 μm, grade Fine to Medium G (ISO 8503-2)

Abrasive media quality

The abrasive media must be compatible with the surface to be blast cleaned and the specified coating system. The abrasive media used shall comply with ISO 11124 (specification for metallic blast-cleaning abrasives), or ISO 11126 (specification for non-metallic blast-clean abrasives). The abrasive media should be tested in accordance to ISO 11125 for metallic abrasives and ISO 11127 for non-metallic abrasives.

Abrasives and blasting pots require dry storage shelters to prevent equipment from becoming clogged with damp abrasives.

Abrasive media used should be new and uncirculated, steel grit being the only exception. If circulation is utilized, the process must include a thorough cleaning and filtering process.

Compressed air quality

The blasting pots must be supplied with clean air. The supply must be secured to prevent contamination of the abrasive and the blast cleaned surface. Compressors must be fitted with enough oil and water traps.

Dust contamination

In concluding the blasting process, the prepared surface shall be cleaned by removing residues of abrasive media and surface particulate contamination. Maximum allowed contamination level is rating 2 (ISO 8502 -3). Dust particle size not exceeding class 2.

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Hand and Power Tool Cleaning

Power tool cleaning

Surface Preparation Standard	Mechanical preparation methods to minimum of St 2 (ISO 1801-1) to form scratch patterns, and all forms of polish removed.
Mechanical Preparation Methods	Disc grinding, Hand sanding and Wire brushing

Surface must be free from mill scale, residual corrosion and failed coating. The surface must be suitable for paint application. Extra care should be taken in using wire brush. The metal surface should not be polished. A polished metal surface will reduce the adhesion and bonding of the coating. The prepared surface should look rough and matte before coating is applied.

Stainless Steel

Abrasive blast cleaning

The surface to be coated must be dry abrasive blast cleaned. Use only abrasive non-metallic abrasive media to achieve a sharp and angular surface profile. Surface profile should be between 25 – 55 μm, grade Fine G; Ry5 to ISO 8503-2.

Ferrite free almandite garnet grade 30/60 and grade 80 (US Mesh size) & Aluminium oxide G24 will be suitable for stainless steel blast cleaning.

Do not use chlorinated or chlorine containing solvent or detergent on stainless steel.

Coated surfaces

The performance of BUMI COAT may be jeopardized and life could be reduced if applied over and existing coating. The surface to be overcoated with this product should be washed with detergent rinsed with fresh water before mechanical surface preparation commences. For overcoating over BUMI COAT, *Please refer to the "Over coating intervals" section.*

Shop primers

Shop primers are rust preventing paint for temporary protection of steel and profiles. Shop primers are accepted as a temporary protection. However, the primers should be completely removed through blast cleaning to a minimum of Sa 2.5 (ISO 1801-1) using suitable abrasive media to achieve a sharp and angular 45 -85μm. grade Medium G, Ry5 (ISO1803-2)

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Other surfaces

Ceramic substrate

The surface should be dry and clean.

Application

Conditions for application

Air Temperature : 10 - 70ºC
Substrate Temperature : 10 - 70ºC
Relative humidity : Below 85%

- Do not apply the coating if the substrate is wet or likely to become wet
- Do not apply the coating if the weather is visibly deteriorating or conditions deemed unfavorable for curing
- Do not apply the coating in high wind situations

Material storage conditions

Keep the containers in a dry, cool, well ventilated place and away from sources of heat and ignition. Containers must be kept tightly closed. Handle with care.

Shelf life at 25 ºC

BUMI COAT PART A	12 months
BUMI COAT PART B	24 months

Storage temperature must not exceed 40 ºC. Keep out from direct sunlight.

Product Mixing Ratio

	DENSITY	PARTS BY WEIGHT	PARTS BY VOLUME
BUMI COAT PART A	1.8 Kg/L	100	100
BUMI COAT PART B	1.02 Kg/L	2	3.6
EXAMPLE		*A=1KG, B=20g*	*A=1L, B=36ml*

Induction Time : 30 minutes at 25 – 40ºC

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Product Mixing

This is a heavy-bodied material and tend to settle after an extended period of storage. If settling occurred, the mixing should be done manually to ensure the settled material distributed evenly. Lumps should be broken up. It is normal to have a small amount of thin liquid at the top of the cans. Pour off the thin liquid into a mixing bucket, followed by the heavy bodied liquid. Scrape the residue from the can into the mixing bucket. It is best if mechanical agitation and heavy-duty mixer or similar tools are utilized, stirring until the consistency is uniform. Do not incorporate air or water into the mixed product. Add Part B in appropriate ratio as tabled above and continue to mix for an even distribution. If 1 can PART A (5kg) is used, pour in the whole 0.1kg of PART B.

Pot Life

Pot Life at ambient temperature : 12 hours

The temperature of PART A and PART B are recommended to be above 18ºC or higher before mixing commences.

Thinner

Thinner : Xylene

Thinning is important to achieve the best spraying properties. It is recommended to thin the product by 5% (in volume ratio). Addition of thinner beyond the recommended percentage may cause sagging.

Application data

Spray Application

Air Paint Sprayer / High Volume – Low Pressure (HVLP) Guide

Nozzle Tip : 4 – 5 mm
Pressure at nozzle (minimum): 7 bar/101 psi

Airless Spray Guide

Nozzle Tip : 4 – 5 mm
Pressure at nozzle (minimum): 150 bar/2200 psi

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Variation in pressure at nozzle is a common occurrence due to several factors

- Length of hose
- Length of hose whip end-line
- Diameter of the hose
- Paint viscosity
- Spray nozzle size
- Adequacy of compressor's air capacity
- Incorrect or clogged air filter

Spray application guide

Apply even multiple passes, overlapping 50% on each pass. Avoid arcing, excessive reaching and dry spray. Check the Wet Film Thickness as often as possible to achieve a uniform and even coat application. For pitting corrosion on aged metal, and hard to reach places, spray a single pass, and use brush to cover the areas spray could not. Avoid excessive thickness build up in the adjacent areas.

Brush application guide

Brush application can be utilized. It is technically difficult to achieve an even coat. Brush applications are suitable for small areas and areas that could not be reached by spray application. The application should be done with round, good quality bristle brushes. The brush should be wet out the surface during the first pass, followed by additional passes to create an even layer without clumps and streaks. Continue the process of even layering until the desired wet film thickness is achieved.

Film Thickness percoat

Typical Recommended Coating Thickness

Wet film thickness (WFT)	150–200microns
Dry film thickness (DFT)	120–150microns
Theoretical coverage	4.0 m²/kg

2 coats can be applied with maximum of 200 microns WFT for each coat. A minimum of 24 hours of curing at room temperature is needed in between the first and second coat. *Please refer to the "Over coating intervals" section.*

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Drying and curingtime

Drying

	Substrate Temperature		
	10ºC	**25ºC**	**40º C**
Surface touch dry	10 h	2 h	1 h
Walk-on-dry	24 h	8 h	5 h
Dry to over coat (minimum)	24 h	8 h	5 h
Dried / cured for service	10 d	48 h	12 h

Surface touch dry : The state of drying when slight pressure with a finger does not leave an imprint of reveal tackiness.

Walk-on-dry : Minimum time before the coating can tolerate normal foot traffic without permanent marks, imprints or other physical damage.

Dry to over coat : The recommended shortest time before the next coat can be applied.

Dried / cured for service : Minimum time before the coating can be permanently exposed to the intended environment.

Curing

Abrasion resistance of the product can be realized with heat induced (direct or indirect) curing. Curing is an additional non-compulsory process.

Direct / Indirect Heat			
50ºC	**100º C**	**150º C**	**200º C**
12 h	8 h	2 h	1 h

Curing is resulted by substrates' natural operating temperature or by other heating element such as heating torch, burner and oven.

Drying and curing times are determined under controlled temperatures and relative humidity below 85% and at average DFT of the product.

Over coatingintervals

BUMI COAT maximum thickness

Number of coats : 2
Wet film thickness :400µm (200µm on each coat)
Dry film thickness :300µM (150µm on each coat)

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Minimum time required before overcoating

	Substrate Temperature		
	10ºC	25ºC	40º C
Dry to over coat (minimum)	24 h	8 h	5 h

The surface must be clean and dry and suitable for overcoating

Health and Safety

Use under well ventilated conditions. Do not inhale spray mist. Avoid skin contact. Spillage on the skin should immediately be removed with suitable cleanser, soap and water. Eyes should be well flushed with water and medical attention provided immediately.

Colour Variation

Colour retention may vary depending on exposure, environment such as temperature, UV intensity etc., and application quality. Product may fade and chalk when exposed to sunlight and weathering.

Disclaimer

The information provided in this document is given to the best of MBESB's knowledge, based on laboratory testing and practical experience. However, the condition of which the product may be used is beyond MBESB's control. Users should always consult MBESB for general suitability of this product for their needs and specific application practices.

The Application Guide (AG) must be read in conjunction with Technical Data Sheet (TDS) and Safety Data Sheet (SDS)

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