

FINISHING PAINTS BASE PAINT

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NO USE RESTRICTION

*This is a translation, the French original shall be used in all cases of litigation**Date of translation : 26/11/2003*

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1. OBJECT AND FIELD OF APPLICATION

This norme defines the physio-chemical characteristics requirements of base paint on motor vehicle bodies, applied during first assembly, on baked cataphoresis, on baked primer or on baked clearcoat for recycling purposes. These requirements are based on the durability and/or applicability of the products.

It applies to interior bodywork base paints as far as this area is defined as requiring a base paint, and exterior bodywork on metallic substrates in cataphoresis and /or in primer and to plastic substrates in primers.

In addition, it defines the slots into which certain physio-chemical and optical characteristics of base paint must be located in order to meet the function.

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2. EXPRESSION ON DOCUMENTS

The application of the requirements of this norme must comply with § EXPRESSION ON DOCUMENTS in norme B15 5050.

3. GENERAL REQUIREMENTS

This norme must include document B72 0100.

4. DEFINITIONS

4.1. PAINT COATING

It consists of one or more paint layers. The constituent products of the various layers are from the following categories :

- primary paint (weldable or not), for example cataphoresis,
- intermediate paint (primer),
- finishing paint (base + clearcoat or colour coat with no lacquer).

4.2. FUNCTIONS OF THE BASE PAINT IN THE PAINT FILM

The base paint must meet 2 general functions :

- GUARANTEE THE FINAL COLOUR DUE TO A SUITABLE COVERING ABILITY
 - Function : APPEARANCE
- PROVIDE A GOOD MECHANICAL LINK BETWEEN THE PRIMER AND THE CLEARCOAT
 - Functions : MECHANICAL STRENGTH, ADHESION

Furthermore, the base paint must show sufficient application properties for mass production.

4.3. DEFINITIONS OF EXTERIOR AND INTERIOR AREAS

Exterior areas : areas located outside the passenger compartment which are in actual fact in contact with the surroundings. These are located on the vehicle exterior in relation to the sealing joints (for doors, tailgate, sun roof, ...) or the vehicle interior for certain access panels (examples : door interiors,...).

Interior areas : areas located inside the passenger compartment or boot in relation to sealing joints.

4.4. LEVELS OF REQUIREMENTS

As the product is unique for all these areas, one level only of the most stringent functional performances is required corresponding to the exterior areas of the vehicle considered.

The base paints selected throughout this norme must therefore enable to reach level “6” such as defined in norme B15 5050, when they are incorporated into a conventional paint scheme (cataphoresis + primer + base + clearcoat) for motor vehicle bodywork first assembly.

5. RELATIONSHIP WITH “PAINT” STANDARDS

Approved paints, used according to the application and baking ranges selected for the plant considered, must meet the requirements defined in § 4.4.

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6. QUALITY CONTROL

6.1. PRODUCT APPROVAL

The functional characteristics of new materials are validated during approval by DPTA/DMOV/MXP/PEI on test specimens which are produced to simulate the paint scheme application of the vehicle (s) of the plant concerned.

In the specific case of certain materials that do not comply with this norme but are nevertheless adopted by the General Management, the requirement shall be replaced by the value stated in the approval report DPTA/DMOV/MXP/PEI (for example : colours affected by chipping, etc.).

6.2. PRODUCTION QUALITY CONTROL

The functional characteristics of base paints are checked on components sampled from production.

The frequency, the number and the type of samples and components taken from finished vehicles for quality control are determined by the DMOV-MXP00-013 procedure.

6.3. MEETING THE REGULATION

In order to meet the current regulation or the regulation in the process of being set up, the base paints must meet the requirements of norme B20 0250.

7. CHARACTERISTICS

Before producing test plates for the purpose of checking the conformity of the base paints to this norme, a visual acceptance of the colour in a light chamber shall be carried out according to test method D14 1343 on plates produced by the Supplier with the equipment and conditions simulating those of the target plant installation.

7.1. CHARACTERISTICS OF THE LIQUID BASE PAINT

7.1.1. PHYSIO-CHEMICAL CHARACTERISTICS

The characteristics of liquid base paints are checked during approval. The permissible brackets are determined after measuring the first five delivered batches considered suitable for production.

Document s	Application s	Characteristics		Expression of results	Requirements
D55 1016	(3)	Consistency	Concentrated	s	(*)
			Diluted (1)	s	(*) (6)
D55 5375		Viscosity of water based base paints		mPa.s	(8)
D55 1339	(3)	Dilution rate (2)		%	(*)
D55 1017	(3)	Amount of dry extract			
Condition C	(3)	- Thinned base paints			
Condition A	(3)	- Water based base paints			
			Concentrated	%	(*)
			Diluted	%	(*) (7)
D55 1018	(3)	Density of the concentrate		kg/m ³	(*)
D55 1344	(4)	Compatibility with plant production diluent		-	(5)
D55 5482	(3)	Resistivity of thinned base paints		Ω.cm	(*) (6)
	(3)	Conductivity of water based base paints		S/cm	(*) (6)
D15 1666		pH measurement		Unit	(8)

Note :

- (1) The 2,5 cup must be used when the viscosity in cup 4 is ≤ 20 seconds.
- (2) A solvent (or mixture of solvents) may be imposed according to the installations.
- (3) Methods to be carried out systematically.
- (4) Methods to be carried out according to technical demands.
- (5) No anomaly.

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- (6) A value may be imposed according to the installations.
 (7) A minimum value may be imposed for health, safety and pollution reasons (atmospheric wastes).
 (8) Method for applying characteristics valid only for water based base paints without requirements at present.
 (*) Conforms to the approved sample, the value of which must be stated on the approval report, according to the technical specifications B20 0150.

7.1.2. CLEANLINESS BY FILTRATION

Cleanliness of base paints shall be assessed by means of test method D55 5411 and the following table :

Impurities	Acceptance limit	Demerit
Fibres (F)	$0,2 \leq F < 2 \text{ mm}$	3 points
	$2 \leq F < 8 \text{ mm}$	5 points
	$8 \text{ mm} \leq F$	15 points
	Agglomerates	15 points
Particulates (P)	$60 \leq P < 100 \text{ }\mu\text{m}$	5 points
	$100 \text{ }\mu\text{m} \leq P$	15 points

The acceptance limit is set to ≤ 100 points.

Remark : For some base paints (at present, this concerns only a few pearlescent base paints), the test leads systematically to a clogging of the filter. In this case and after justification by the Supplier, the test shall not be performed.

7.1.3. STABILITY IN CIRCULATING

The stability of the base paint (applicability, colour and effects, if required) shall be verified after ageing corresponding to 3 days circulating without addition within an industrial system.

7.1.4. APPLICABILITY

Documents	Characteristics	Expression of results	Requirements
D25 5470	Pitting limit (1)	μm	≥ 55
D25 5472 D25 1413 D25 5463	Appearance potential (1) Specular gloss at 20° - Orange peel = f (thickness) Horizontally Vertically - Weighted depth of image = f (thickness) Horizontally Vertically	Unit Unit Unit Unit Unit	85 ≥ 75 (2) ≥ 60 (2) ≥ 65 (2) ≥ 60 (2)
D25 5473	Rinsability (3)		Conform
D25 5474	Ability of paint mist to wet out again		No defect
D25 5472 D25 1413 D25 5463	Conformity in recycling Double application of the method of operation Specular gloss at 20° - Orange peel = f (thickness) Horizontally Vertically - Weighted depth of image = f (thickness) Horizontally Vertically	Unit Unit Unit Unit Unit	85 ≥ 75 (2) ≥ 60 (2) ≥ 65 (2) ≥ 60 (2)

Note :

- (1) Apply, as a reference, a plant production range in the same test conditions.
 (2) To the min. thicknesses defined by the DMOV/MXP00-0528 procedure.
 (3) For information.

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7.2. CHARACTERISTICS OF THE CURED BASE PAINT WITH NO CLEARCOAT

Documents	Characteristics	Expression of results	Requirements
D27 5437	Solvent thinning (1) - Xylene - Ethanol	min min	≥ 1 ≥ 1

Note : (1) The thinning shall be examined in a direct cataphoretic application.

7.3. CHARACTERISTICS OF THE CURED BASE PAINT WITH CLEARCOAT

7.3.1. CHARACTERISTICS CHECKED ON A SUITABLE SUBSTRATE

Documents	Characteristics	Expression of results	Requirements
D55 1303	Actual covering capacity	μm	≤ 12
D25 5480	Apparent covering capacity on suitable tinted primer (1)	μm	≤ 12

Note : (1) Test to be carried out only if the actual covering capacity is $> 12 \mu\text{m}$.

7.3.2. CHARACTERISTICS CHECKED ON THE COMPLETE FILM

For all the tests on a complete film, the base paint to be approved is applied to a full range of products already validated for the target plant and implemented in the conditions described in the DMOV-MXP00-0528 procedure.

These tests shall be carried out with the coloured primer combined with the base paint examined (defined after tracing the reflectance curve and/or the search for minimum contrast between the base colour, applied to a bored plate, and the primer colour) or, failing that, the one specified for the plant, and the various clearcoats used on the plant.

7.3.2.1. Resistance to water

Documents	Characteristics	Expression of results	Requirements
D27 1327	Resistance to immersion in water - Duration - Blistering / colour change	h Grading	240 0
D25 1075	- Adhesion	Grading	a or b
D27 1571	Blistering from humidity - Duration - Blistering / colour change	h Grading	96 0
D25 1075	- Adhesion	Grading	a or b
D27 5438 D25 1075	Ageing in autoclave (1) - Adhesion in 1 st assembly - Adhesion in rework (2) - Blistering	Grading Grading Grading	a or b a or b 0

Note :

(1) Stoving of the primer shall be carried out in the following conditions :

- Thinned primers at low temperature : 30 min at 160°C.
- Thinned primers at high temperature : 30 min at 185°C.

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- Water based primers : 25 min at 160°C, conditions defined in the DMOV-MXP00-0528 procedure and mentioned in the test method.

(2) The rework at the end of the track (catalysed base + clearcoat PU 2K) and the production range recycling shall be examined.

7.3.2.2. Resistance to chipping

Documents	Characteristics	Expression of results	Requirements
D24 1312	Resistance to chipping <ul style="list-style-type: none"> - Normal appearance chipping - Rework appearance chipping (1) 	Grading Grading	≤ 2 ≤ 3

(1) The rework at the end of the track (catalysed base + clearcoat PU 2K) and the production range recycling shall be examined.

7.3.2.3. Resistance to chemical agents

Documents	Characteristics	Expression of results	Requirements
D27 5437	Solvent thinning <ul style="list-style-type: none"> - Xylene - Ethanol 	min min	≥ 3 ≥ 3
D27 5377	Staining <ul style="list-style-type: none"> - by the iso-octane/toluene blend - by the hexadecane/ α-methyl-naphtalene blend - by temporary protection products - by protection removal products - by glass wash liquids 	Grading Grading Grading Grading Grading	0 0 0 0 0
D27 1433	Resistance to diluted sulphuric acid	Grading	≤ 2
D27 5415	Resistance to biological attacks	Grading	≤ 3

7.3.2.4. Mechanical characteristics

Documents	Characteristics	Expression of results	Levels of requirements (according to the clearcoat used)	
			Phase 1	Phase 2
D25 1075	<ul style="list-style-type: none"> - Adhesion in 1st assembly (1) - Adhesion in rework (2) 	Grading Grading	a or b a or b	a or b a or b
D25 1298	Hardness using the Persoz pendulum test	s	≥ 180	≥ 180
D25 1342	ERICHSEN cupping	mm	≥ 3	≥ 5
D24 5359	Resistance to the action of mechanical wash brushes			
D25 1413	When new <ul style="list-style-type: none"> - Residual gloss at 20° - Variation with initial gloss 	UB UB	≥ 70 ≤ 20	≥ 70 ≤ 20

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Note :

- The adhesion on normal range and on direct cataphoresis application.

(2) The rework at the end of the track (catalysed base + clearcoat PU 2K) and the production range recycling shall be examined.

7.3.2.5. Appearance of the complete film

All these characteristics shall be assessed on a sheet and glass application

Documents	Characteristics	Expression of results	Requirements
D25 5472 D25 1413 D25 5463	Appearance potential (1) Specular gloss at 20° - Orange peel = f (thickness) Horizontally Vertically - Weighted depth of image = f (thickness) Horizontally Vertically	Unit Unit Unit Unit Unit	85 ≥ 75 ≥ 60 ≥ 65 ≥ 60
D25 5479	Colour variation in relation to the master sample (2)	ΔE	≤ 1

Note : (1) Apply as a reference the production range of the plant, in the same test conditions

(2) According to the CIE 94 system of references.

8. COHESION OF THE FINISHED FILM

In consistency with norme B14 1820.

Documents	Characteristics	Expression of results	Requirements
			Phases 1 and 2
D41 5464 Condition B	After 10 days at ambient temperature - Peeling test in critical conditions	Cohesive failure of the base paint Adhesive failure base to primer (or lacquer to primer) or clearcoat to base paint	None None
D47 1165 D41 5464 Condition B	After ageing H7 at 60° - Peeling test in critical conditions	Cohesive failure of the base paint Adhesive failure base to primer (or lacquer to primer) or clearcoat to base paint	None None

Note : Other finish materials (primer and clearcoat) being validated, the only acceptable failures in the test are :

- Cohesive failure of the mastic bead

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- *Adhesive failure of the mastic bead < 30% of the surface without affecting the whole width of the bead.*

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9. RECORDS AND REFERENCE DOCUMENTS

9.1. RECORDS

9.1.1. CREATION

- OR : 18/02/2002 – CREATION OF THE NORME.

9.1.2. SUBJECT OF THE MODIFICATION

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9.2 REFERENCE DOCUMENTS

9.2.1. PSA DOCUMENTS

9.2.1.1 Normes

B14 1820	BONDING FUNCTIONS AFTER FINISHING PAINT – GLAZING ELEMENTS BONDED TO BODY EXTERIOR
B15 5020	PAINT COATINGS – DEFINITION OF SPECIFIC TERMS
B15 5050	PAINT COATINGS – FINISHED VEHICLES
B20 0150	PRODUCTS SUBJECT TO A PRODUCT APPROVAL SPECIFICATION – GENERAL REQUIREMENTS
B20 0250	MATERIALS SUBJECT TO REGULATIONS – USE RESTRICTION WITHIN THE PSA PEUGEOT CITROËN GROUP
B72 0100	PAINT SUPPLIES – ALL TYPES – GENERAL REQUIREMENTS
D15 1343	COLOURED MATERIALS – VISUAL COMPARISON OF COLOURS IN A LIGHT CHAMBER
D15 1666	AQUEOUS FLUIDS – pH MEASUREMENT
D24 1312	PAINT COATINGS – RESISTANCE TO CHIPPING
D24 5359	RETEMENTS DE PEINTURES – RESISTANCE A L'ACTION DES BROSSES DE LAVAGE MECANIQUE
D25 1075	PAINT COATINGS – CROSS HATCH TEST
D25 1298	PAINT AND VARNISH COATINGS – HARDNESS TEST (PERSOZ PENDULUM)
D25 1342	PAINT COATINGS AND SIMILAR PRODUCTS – ERICHSEN CUPPING
D25 1413	PAINT COATINGS – RUBBERS AND PLASTICS – GLOSS MEASUREMENT
D25 5463	PAINT COATINGS – ORANGE PEEL AND DEPTH OF IMAGE MEASUREMENT
D25 5470	PAINT COATINGS – PITTING LIMIT ASSESSMENT OF FINISHING PAINTS
D25 5472	PAINT COATINGS – ASSESSMENT OF A CLEARCOAT FINISH POTENTIAL
D25 5473	RETEMENTS DE PEINTURES – EVALUATION DE LA RINÇABILITE DES PEINTURES
D25 5474	RETEMENTS DE PEINTURES – EVALUATION DE L'APTITUDE DES PEINTURES AU REMOILLAGE DES BROUILLARDS
D25 5479	RETEMENTS DE PEINTURES – MESURE DE L'ECART DE TEINTE (SPECTROMETRIE MULTI-ANGLE)
D25 5480	RETEMENTS DE PEINTURES – POUVOIR COUVRANT APPARENT D'UNE BASE OU LAQUE (METHODE PAR GRADIENT D'EPAISSEUR)
D27 1327	PAINT COATINGS – RESISTANCE TO IMMERSION IN WATER (FORD TANK)
D27 1433	PAINT COATINGS AND SIMILAR PRODUCTS – RESISTANCE TO DILUTED SULPHURIC ACID
D27 1571	PAINT COATINGS – BLISTERING FROM HUMIDITY
D27 5377	PAINT COATINGS – STAINING BY CHEMICAL PRODUCTS
D27 5415	PAINT COATINGS – RESISTANCE TO BIOLOGICAL ATTACKS
D27 5437	PAINT COATINGS – STAINING BY CHEMICAL PRODUCTS
D27 5438	RETEMENTS DE PEINTURES FEUIL FINI – RESISTANCE AU VIEILLISSEMENT EN AUTOCLAVE
D41 5464	MASTICS POLYURETHANNE POUR COLLAGE VITRAGE – ADHERENCE PAR PELAGE SUR FINITION PEINTURE EN CONDITIONS CRITIQUES
D47 1165	PRODUCTS APPLIED TO BODY IN WHITE OR COATED WITH PAINT, PLASTICS – ACCELERATED AGEING
D55 1016	ADHESIVES, PAINTS AND SIMILAR PREPARATIONS – CONSISTENCY (CUP METHOD)
D55 1017	LIQUID PREPARATIONS – DETERMINATION OF THE CONVENTIONAL DRY EXTRACT
D55 1018	MASTICS, ADHESIVES, PAINTS AND SIMILAR PREPARATIONS – DENSITY (PYCNOMETER)

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METHOD)

D55 1303 PAINTS – COVERING ABILITY OF THE DRY FILM
 D55 1339 PAINTS AND SIMILAR PREPARATIONS – DILUTION RATE
 D55 1344 PAINTS AND SIMILAR PREPARATIONS – COMPATIBILITY WITH DILUENTS
 D55 5375 PAINTS – VISCOSITY
 D55 5411 PAINTS – CLEANLINESS (FILTERING)
 D55 5482 PEINTURES DE FINITION – MESURE DE RESISTIVITE ET DE CONDUCTIVITE

9.2.1.1. Others :

DMOV-MXP00-0013 SUIVI QUALITE DU FEUIL EN USINE
 DMOV-MXP00-0528 REFERENTIEL D'EPAISSEURS DE CUISSON ET D'ASPECT

9.2.2. EXTERNAL DOCUMENTS

CIE 94 GUIDE FOR FLOODLIGHTING

9.3. EQUIVALENT TO :**9.4. CONFORMS TO :****9.5. KEY-WORDS**