

FINISH PAINTS MONO-COMPOUND WITH ORGANIC SOLVENT SPRAYABLE WITH STOVING

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1. OBJECT

This norme defines the requirements to be met by finish paints, mono-compound with organic solvent, sprayable and with stoving.

These requirements are defined according to the various paint families using the following references :

Family 100 : Finish paint without varnish applied to intermediate paint and or dry recoverable primer.

(substrates 3, 4 and 5 defined by norme B72 0030).

- Sub family 110 : solid colour (opaque),

- Sub family 120 : metallic or pearlescent.

Family 200 : Finish paint with varnish applied to intermediate paint and or dry recoverable primer.

(substrates 3, 4 and 5 defined by norme B72 0030).

- Sub family 210 : solid colour (opaque) type A,

- Sub family 220 : solid colour (opaque) type B,

- Sub family 230 : metallic or pearlescent type A,

- Sub family 240 : metallic or pearlescent type B.

Family 500 : Finish paint without varnish applied to intermediate or finish paint in wet condition.

- Sub family 510 : solid colour (opaque satin),

- Sub family 515 : black satin (special case),

- Sub family 520 : solid colour (opaque and gloss),

- Sub family 525 : black gloss (special case).

Family 600 : Interior finish paint without varnish applied to intermediate paint and or dry recoverable primer

(substrates 4, 5 and 6 defined by norme B72 0030).

- Sub family 610 : opaque solid colour satin for internal applications.

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2. GENERAL REQUIREMENTS

These requirements are those of norme B72 0100 with the exception of the paragraphs below which are expanded as follows :

D – APPROVAL OF SUPPLIES

The supplier must submit a sample of concentrated product between 2 and 5 kg.

F – DELIVERY CONDITIONS

Storage.

The limit temperatures for storage are usually between 5°C and 35°C. When exposed to temperatures below 0°C (transport, storage), the characteristics in the use of the product must not change.

3. GENERAL CONDITIONS

3.1. CONDITIONS OF IMPLEMENTATION

The conditions of implementation must be obtained from the technical departments of the various plants within the Group (Application method, temperature of the substrate, temperature of booths, temperature of the products, stoving conditions,...).

3.2. SUBSTRATES USED

Substrates used for the tests are defined in the appendix of norme B72 0030.

3.3. TEST CONDITIONS

To check that the requirements are observed, proceed with laboratory tests as indicated in § Requirements for the products to be applied, Application requirements, Coating requirements, Test methods – Health safety pollution and test report.

The required thicknesses to obtain the requirements stated in these paragraphs must be compatible with production installations and current operations.

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4. REQUIREMENTS FOR THE PRODUCTS TO BE APPLIED

DOCUMENTS	APPLICA-TIONS	CHARACTERISTICS		EXPRESSION OF RESULTS	REQUIREMENTS FOR ALL FAMILIES
					100 – 200 – 500 AND 600
D55 1016	(3)	Consistency	concentrated	s	*
			Diluted (1)	s	* (6)
D55 1339	(3)	Dilution rate (2)		%	* (6)
D55 1017	(3)	Proportion of dry extract	concentrated	%	*
Condition C			diluted	%	* (8)
D55 1018	(3)	Density of concentrate		g/ml	*
D55 1321	(4)	Compatibility in liquid state (7)		-	(5)
D55 1326	(4)	Settlement		-	(5)
D55 1344	(4)	Compatibility with production diluents		-	(5)
D55 1453	(4)	Stability at 70°C		St %	* (6)
D15 5080	(4)	Resistivity measurement		MΩ.cm	* (6)
D15 5230	(4)	Determination of the flash point in	concentrated state	°C	* (6)
			diluted state	°C	* (6)

(1) The cup 2,5 must be used when the viscosity in cup 4 is ≤20 seconds.

(2) A solvent (or solvent mixture) may be prescribed depending on the installations.

(3) Methods to be carried out systematically.

(4) Methods to be carried out according to technical requirements.

(5) No anomaly.

(6) A value may be prescribed depending on the installations.

(7) With the production product if required.

(8) A minimum value may be prescribed for health, safety and pollution reasons (atmospheric rejects).

* In conformity with the approved sample, the value of which must be stated on the SPA (Product Approval Specification). (See cahier des charges B20 0150).

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5. APPLICATION REQUIREMENTS

TEST METHODS (1)	CHARACTERISTICS		EXPRESSION OF RESULTS	REQUIREMENTS FOR FAMILIES (2) (7)					
				100	200			500	
				110 120	210 220 base	230 240 base	Varnish	515	510 520
D55 1303	Covering capacity of dry film		µm	≤ 35	F ≤ 10 M ≤ 15 C ≤ 20	≤ 12	-	≤ 10	F ≤ 10 M ≤ 15 C ≤ 20 (3)
D55 1346	Run limit		µm	≥ 60	-	-	≥ 50	≥ 20 (4)	≥ 30 (4)
D55 1353	Pitting limit		µm	≥ 60	-	-	≥ 50	≥ 20 (4)	≥ 30 (4)
D25 1379	Stability at high temperature (stoving)	Colour : MES D15 1343	Note	(5)	(5)	(5)	(5)	(5)	(5)
		Hardness : MES D25 1298	s	≥ 150	≥ 150	≥ 150	≥ 150	≥ 150	≥ 150
		Specular gloss variation : MES D25 1413	%	≤ 5	≤ 5	≤ 5	≤ 5	≤ 2	≤ 5
D27 1352	Heat stability (touch-up)	Colour : MES D15 1343	Note	(5)	(5)	(5)	(5)	(5)	(5)
		Adhesion : MES D25 1075	Category	a or b	a or b	a or b	a or b	a or b	a or b
D25 1351	Aptitude to infra-red curing	Temperature	°C	*	*	*	*	*	*
		Voltage	V	*	*	*	*	*	*
		Colour : MES D15 1343	Grading	(5)	(5)	(5)	(5)	(5)	(5)
		Hardness : MES D25 1298	s	≥ 150	≥ 150	≥ 150	≥ 150	≥ 150	≥ 150
		Softening in premium grade fuel : MES D27 5144	Grading	0	0	0	0	0	0
D55 1304	Compatibility of sprays, see § 6.2.		Grading	(6)	(6)	(6)	(6)	(6)	(6)
D55 1101	Compatibility with thick products, see § 6.3.		Grading	(6)	(6)	(6)	(6)	(6)	(6)

Note : A dash means that there is no requirement.

(1) Methods to be carried out according to technical specifications.

(2) "Production" substrates defined by the family or in accordance with the corresponding test methods.

Examples of substrate preparation are defined in the appendix of norme B72 0030.

(3) F = dark colour ($0 \leq L \leq 25$); M = medium colour ($25 \leq L \leq 50$); C = light colour ($50 \leq L \leq 100$);

L = luminance of the colour (the value L is defined according to MES D15 5083).

Note : In the specific case of white, the value of the covering capacity must be set by the approval departments in relation to the exact colour.

(4) With 20 µm (measured in dry conditions) of intermediate or finish paint in wet conditions.

(5) Acceptable.

(6) No anomaly.

(7) Different values may be prescribed depending on the installations in conformity with § Test conditions.

* Conforms to the approved sample, the value of which may be stated on the SPA (Product Approval Specification).

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6. COATING REQUIREMENTS

6.1. FUNCTIONAL CHARACTERISTICS OF THE MULTI-LAYER COATING WITHIN THE PRODUCTION RANGE

The multi-layer coating which includes a finish paint such as defined in this norme must be in conformity with one of the requirement levels described in norme B15 5050 "PAINT COATINGS – FINISHED VEHICLES". For external paints, the supplier must test his products in an industrial environment and in Florida. The test specimens must be exposed for a minimum duration of 2 years and may be required by the departments of the Group responsible for approval.

Finish varnish must contain mandatory ultra-violet stabilising agents. Checks of the performances of a finish paint must be carried out after applying the product to be tested to one or more substrates specified in § Object (ensuring that the sub-layers used are in conformity with the requirements defined in the corresponding standard documents, see paragraph 4.0 in norme B15 5050).

The coatings produced in this way must attain the levels of requirements given in the following table in terms of sub-families in conformity with norme B15 5050.

SUB-FAMILY	LEVEL OF REQUIREMENT						
110	5	5	4	4	4	4	4
120	5	5	4	4	4	4	4
210	5	5	4	5	5	5	5
220	5	5	4	4	5	5	5
230	5	5	4	5	5	5	5
240	5	5	4	4	5	5	5
510	5	5	4	X	4	4	Z
515	5	5	4	X	Y	4	Z
520	4	4	4	3	4	4	4
525	4	4	4	X	4	4	4
610	2	2	2	X	2	2	2

With :

- **LEVEL OF REQUIREMENT X** : Colour conforming to standard (MES D15 1343). Gloss (MES D25 1413) : conforming to the approved sample.
- **LEVEL OF REQUIREMENT Y** : Identical to level 4 in table 5 of norme B15 5050, except for the colour variation (ΔE) for which there is no requirement.
- **LEVEL OF REQUIREMENT Z** : Identical to level 2 in table 7 of norme B15 5050 except for the sensitivity to scratching (MES D15 1211) for which there is no requirement.

In addition, tests simulating touch-up conditions (in the paint shop as well as in "assembly" touch-up), must be carried out.

In the case of a simple touch-up, the coating must remain in conformity with the initial level of requirement except for the hardness and elasticity characteristics (table of characteristics, norme B15 5050).

Note : The objective is to guarantee a "homogeneous" behaviour of the complete film over all the substrates used on the vehicle. When there is no compliance with one or more of the requirements above, it is strictly necessary to analyse the failure. For this purpose, a "Production" product that must be comparable may be used (colour, family...).

6.2. COMPATIBILITY BY RECIPROCAL SPRAYING

It is strictly necessary to check the inter compatibility of finish paints or their compatibility with other products used in the same booth (example : black appearance/family 515). Where applicable, this test will also be carried out for the "Production" product.

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6.3. COMPATIBILITY WITH FINISH PAINTS

It is strictly necessary to check the compatibility of "FINISH PAINT" in liquid or cured state with all the products likely to come into contact with it within the manufacturing range (products providing the bonding, sealing, anti-chipping, anti-abrasion, anti-corrosion and protection functions); in addition to the test methods specified in this document, it is advisable to refer to the specific norme B14 0100 and B14 0110.

7. TEST METHODS – HEALTH SAFETY POLLUTION

The methods mentioned below are particularly used for the compilation of documents concerning Health, Safety and Pollution.

D50 1593 – Measurement of lead, chromium and cadmium.

D65 5032 – Flotation efficiency.

D60 5060 – Identification of benzene.

8. TEST REPORT

The object of the test report is to summarise all the results obtained during approval or acceptance of the product from a supplier. An example is shown in appendix 2 for information.

9. PRODUCT APPROVAL SPECIFICATION

This document groups the physio-chemical characteristics with values not prescribed by the norme. A typical example with the recommended tolerances is shown in appendix 1.

Important :

This example does not prejudge the existence or subsequent validity of documents which are mentioned in it.

APPENDIX 1

TYPICAL EXAMPLE OF A "PRODUCT APPROVAL SPECIFICATION"

 	AUTOMOBILES PEUGEOT, AUTOMOBILES CITROËN	Page 1/4
	PSA PEUGEOT CITROËN DIRECTION DES ETUDES ET TECHNIQUES AUTOMOBILES	
	SPECIFICATION DE PRODUITS APPROUVES	XNN NNNN
	PEINTURE DE FINITION MONOCOMPOSANTE A SOLVANT ORGANIQUE, PULVERISABLE AVEC CUISSON	
Ce document ne peut être communiqué hors du Groupe PSA sans l'accord écrit du fournisseur responsable mentionné ci-après. HORS PSA, SA DIFFUSION EST LIMITEE ET SA REPRODUCTION EST INTERDITE.		
OR JJ/MM/AAAA		

AUTOMOBILES PEUGEOT, AUTOMOBILES CITROËN

PEINTURES DE FINITION MONOCOMPOSANTE A SOLVANT ORGANIQUE

XNN NNNN

2/4

CREATION : OR le JJ/MM/AAAA**OBJET DE LA MODIFICATION :**

OR JJ/MM/AAAA

DOCUMENTS CITES :**Documents PSA :****Normes**

B15 5050, B72 7210, D15 5080, D15 5083, D15 5230, D24 1312, D25 1351, D25 1413, D25 5105, D25 5136, D27 1571, D29 5287, D55 1016, D55 1017C, D55 1018, D55 1303, D55 1339.

Autres :**Documents EXTERIEURS :****SPECIFICATIONS DE PRODUITS APPROUVES****Fournisseur responsable :****Référence fournisseur :****Exemple d'utilisation :****Désignation normalisée de la matière :****Référence documents normatifs :****N° de codification du produit :****Référence au document "Hygiène, Sécurité, Pollution" existant :**

OR JJ/MM/AAAA

REPRODUCTION INTERDITE

AUTOMOBILES PEUGEOT, AUTOMOBILES CITROËN

PEINTURE DE FINITION MONOCOMPOSANTE A SOLVANT ORGANIQUE

XNN NNNN

3/4

1.0 ESSAIS SUR PRODUIT LIQUIDE

Documents	Caractéristiques	Expression des résultats	Résultats ou Valeurs	
			Min.	Max.
			Tolérances recommandées	
D55 1018	1.1 MASSE VOLUMIQUE DU PRODUIT CONCENTRE	g/ml	$\pm 1.10^{-2}$	
D55 1017C	1.2 EXTRAIT SEC DU PRODUIT			
	Concentré	% (m/m)	$\pm 5 \%$ de la valeur initiale	
	Dilué	% (m/m)	$\pm 1 \%$	
D55 1016	1.3 CONSISTANCE DU PRODUIT			
	Concentré (Coupe 4)	s	$\pm 5 \%$	
	Dilué (Coupe 2,5)	s	$\pm 1 \%$	
D55 1339	1.4 TAUX DE DILUANT	% (v/v)		
	1.5 DILUANT UTILISE	Référence		
D15 5230	1.6 POINT D'ECLAIR EN CREUSET FERME			
	(Produit dilué)	°C		
D15 5080	1.7 MESURE DE LA RESISTIVITE			
	(à titre indicatif)	MΩ/cm	$\pm 10 \%$ de la valeur initiale	

2.0 ESSAIS D'APPLICATION

Documents	Caractéristiques	Expression des résultats	Résultats ou Valeurs	
			Min.	Max.
D25 1351	2.1 APTITUDE A LA CUISSON PAR INFRAROUGE	Notation	Selon impératifs techniques de l'usine considérée	
	et/ou			
	2.2 APTITUDE A LA CUISSON PAR CONVECTION	Notation		

OR JJ/MM/AAAA

REPRODUCTION INTERDITE

AUTOMOBILES PEUGEOT AUTOMOBILES CITROËN

PEINTURE DE FINITION MONOCOMPOSANTE A SOLVANT ORGANIQUE

XNN NNNN

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3.0 ESSAIS SUR PRODUIT CUIT

Documents	Caractéristiques	Expression des résultats	Résultats ou Valeurs	
			Min.	Max.
	Les essais doivent être effectués sur le support de référence dont la nature doit être précisée au paragraphe 4.0 de cette spécification.			
D15 5083	3.1 CARACTERISTIQUES COLORIMETRIQUES			
	Champ visuel d'observation :	X		
	Illuminant :	Y		
	(Suite à l'essai de 1500 I)	Z		
	3.2 CONFORMITE DE LA TEINTE			
D25 5136	Indice colorimétrique véhicule (ICV) déterminé avec :	Indice		
B15 5050	Coefficient de teinte (CT) =			
	Classe de sévérité (CS) =			
D25 1413	3.3 MESURE DU BRILLANT SPECULAIRE A 20°	UB		
D25 5105	3.4 TENDU DE SURFACE			
	Procédé A	Cotation		
	Procédé B	Cotation		
D29 5287	3.5 EVALUATION DE L'ASPECT PAR DISTINCTION D'IMAGE	DI		
D24 1312	3.6 RESISTANCE AU GRAVILLONNAGE			
	- Après essai	Cotation		
	- Nombre d'impacts à la tôle	Nombre		
D27 1571	3.7 CLOQUAGE A L'HUMIDITE (96 HEURES)	Cotation		
D55 1303	3.8 POUVOIR COUVRANT DU FEUIL SEC	µm		

4.0 SUPPORT DE REFERENCE

Référence de la tôle, nature du traitement de surface, référence des peintures cataphorèse et intermédiaire, et éventuellement le vernis utilisé ainsi que les conditions de cuisson.

5.0 NOTA

Toutes les autres caractéristiques du produit doivent satisfaire les normes B15 5050 et B72 7210 (famille...).

OR JJ/MM/AAAA

REPRODUCTION INTERDITE

APPENDIX 2

EXAMPLE OF TEST REPORT

TEST REPORT			
DATE	FINISH PAINT	NORME : B72 7210	
ISSUER	COLOUR :	FAMILY : CODE :	
DEPARTMENT	SUPPLIER :	REFERENCE :	
	QUALITY (RESIN) :		

1.0 PAINT CHARACTERISTICS

DOCUMENTS	CHARACTERISTICS		EXPRESSION OF RESULTS	REQUIREMENTS	RESULTS
BEFORE APPLICATION					
D55 1016	PRODUCT CONSISTENCY				
	- CONCENTRATED	CUP :	S	*	
		TEMPERATURE :			
	- DILUTED	CUP :	S	*	
		TEMPERATURE :			
D55 1339	DILUTION RATE		%	*	
-	DILUTION SOLVENT USED		-	*	
D55 1017 C	PROPORTION OF PRODUCT DRY EXTRACT				
	- CONCENTRATED		%		
	- DILUTED		%		
D55 1018	PRODUCT DENSITY				
	- CONCENTRATED		g/ml		
	- DILUTED		g/ml		
	OTHER TEST METHODS ACCORDING TO TECHNICAL REQUIREMENTS				
DURING APPLICATION					
D55 1303	COVERING CAPACITY OF DRY FILM		µm	≥	
D55 1346	RUN LIMIT		µm	≥	
D55 1353	PITTING LIMIT		µm	≥	
	OTHER TEST METHODS ACCORDING TO TECHNICAL REQUIREMENTS				

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2.0 CHARACTERISTICS OF THE COATING

ADDITIONAL INFORMATION									
SUBSTRATE : SHEET METAL XES NORME B53 3053									
COATINGS	PHOSPHATING :		REF. :	SUPPLIER :	BOOTH TREATMENT :				
	RECOVERABLE PRIMER :		REF. :	SUPPLIER :	Thickness :	µm	STOVING :	min at	°C
	INTERMEDIATE PAINT :		REF. :	SUPPLIER :	Thickness :	µm	STOVING :	min at	°C
	FINISH PAINT TO BE TESTED :		REF. :	SUPPLIER :	Thickness :	µm			
	FINISH VARNISH :		REF. :	SUPPLIER :	TOTAL thickness :	µm			
DOCUMENTS	CHARACTERISTICS			EXPRESSION OF RESULTS	REQUIREMENTS (1)	RESULTS			
						STOVING Min.	STOVING Max.		
D27 1327	Resistance to immersion in water (500 h)			Grading	0				
D27 1571	Blistering from humidity (96 h)			Grading	0				
D24 1312	Resistance to chipping		Note on appearance	Grading	≤ 3				
			Number of impacts		≥ 100				
D25 5105	Surface tension	on horizontal areas	Process A	Grading	*				
			Process B	Grading	*				
		on vertical areas	Process A	Grading	*				
			Process B	Grading	*				
D29 5287	Evaluation of aspect by image distinction	on areas	Horizontal	Grading	*				
			Vertical	Grading	*				
D25 1413	Specular gloss (20°)	Multi-layers		%	≥				
		Paint applied to glass		%	*				
D27 1389	Artificial ageing (Range No.2)	Gloss variation		%	≤				
		Colour variation		ΔE	≤				
D27 1526	Natural ageing (ALES 12 min)	Gloss variation		%	≤				
		Colour variation		ΔE	≤				
D27 5144	Staining	Xylene softening		min.	≥ 3				
		Cleaning solvents		Grading	≤ 1				
		Petroleum		Grading	0				
		Diesel		Grading	0				
		Others		Grading	0				
D27 1433	Resistance to diluted sulphuric acid			Grading	≤ 2				
D25 1075	Cross hatch test			Grading	A or B				
D15 1211	Sensitivity to scratching			g	≥ 300				
D25 1298	Hardness test			s	≥ 150				
D25 1297	Bending over a cylindrical mandrel (Ø 14)			Note	Good				
D25 1342	ERICHSEN cupping			mm	≥ 3				
OTHER TESTS (2)									
D15 1343	Visual examination of colour			Note	Conforming				
D15 5083	Measurement of colours		X	-	-				
			Y	-	-				
			Z	-	-				
			C*	-	-				
			L	-	-				
D15 5084	Colorimetric variations/Standard			ΔE	-				

CONCLUSIONS	COLOUR	CONFORMING NON CONFORMING	
	COATING	CONFORMING NON CONFORMING	WITH LEVEL OF REQUIREMENT
DECISION	ACCEPTED	OBSERVATIONS :	
	REFUSED		
	FOR RE-SUBMISSION		

* Conforming to the value stated on the corresponding SPA.

(1) Requirements conforming to norme B15 5050 (according to the level of requirement).

(2) Other applicable test methods according to technical specifications.

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10. RECORDS AND REFERENCE DOCUMENTS

10.1. RECORDS

10.1.1. CREATION

- OR : 01/10/1991 – CREATION OF THE NORME.

10.1.2. SUBJECT OF THE MODIFICATION

- A : 15/05/1997 – INTRODUCED INTO IDEM (*French only*).
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10.2 REFERENCE DOCUMENTS

10.2.1. PSA DOCUMENTS

10.2.1.1 Normes

B14 0100, B14 0110, B15 5050, B20 0150, B72 0030, B72 0100, D15 1211, D15 1343, D15 5080, D15 5083, D15 5230, D25 1075, D25 1298, D25 1351, D25 1379, D25 1413, D27 1352, D27 5144, D50 1593, D55 1016, D55 1017, D55 1018, D55 1101, D55 1303, D55 1304, D55 1321, D55 1326, D55 1339, D55 1344, D55 1346.

10.2.1.2. Others

D55 1353, D55 1453, D60 5060, D65 5032.

10.2.2. EXTERNAL DOCUMENTS

10.3. EQUIVALENT TO :

10.4. CONFORMS TO :

10.5. KEY-WORDS