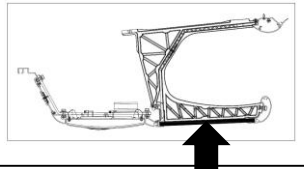
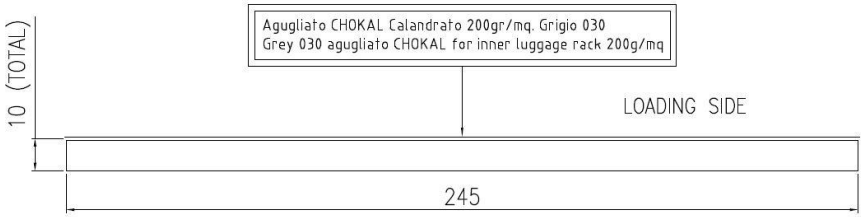
The purpose of this presentation is to describe how Ellamp intends to replace some parts with others, so that the Mars Norway luggage will be complies to the R118.02 regulation annexes 6,7or 7,8 (where applicable).
Below are the characteristics of the current items and new parts that Ellamp offers, in order to fulfill Merkavim's request and homologation constraints.

1. LOADING PANEL
Code A70200381SA13 (P702000022-01).
Drawing A70200381S013



Current Solution

Bubble BGB Panel 10mm thickness supplied with fitted carpet on internal side.
Merkavim has to glue fabric only on the external side.

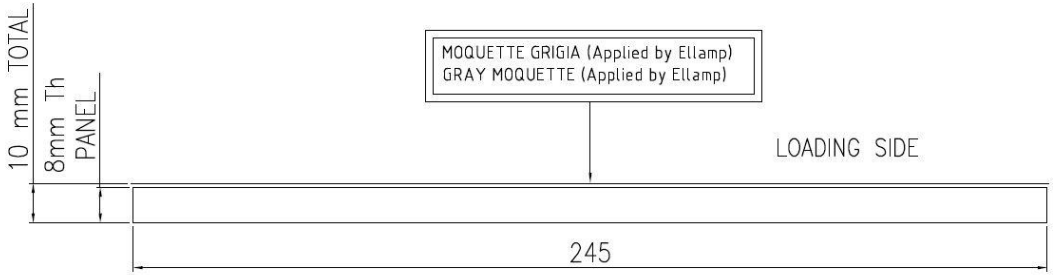


Materiale omologato alla direttiva europea 95/28/CE relativamente agli allegati IV e V.
Material approved by Dir 95/28/CE annex IV and V

TIPOLOGIA PANNELLO BUBBLE / Bubble panel TIPOLOGIA PANNELLO BUBBLE / Bubble panel					
DIAMETRO CELLA Cell diameter mm	g / mq	SPESSORE Thickness mm	COMPOSIZIONE STRATI Layers Lower	middle	upper
12	3000	10 Totale	–	BGB	AGU

Proposal Solution

Honeycomb polycarbonate Panel 8mm thickness supplied with grey moquette on internal side.
Merkavim has to glue fabric on the external side

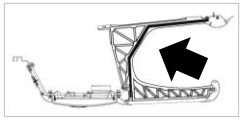


Comportamento alla combustione secondo regolamento ECE ONU R118.02 allegati 6 e 7.
Regulatory combustibility test following regulation ECE ONU R118.02 attachments 6 and 7.

PANNELLO ALVEOLARE Honeycomb panel	8mm	SPESSORE Thickness mm

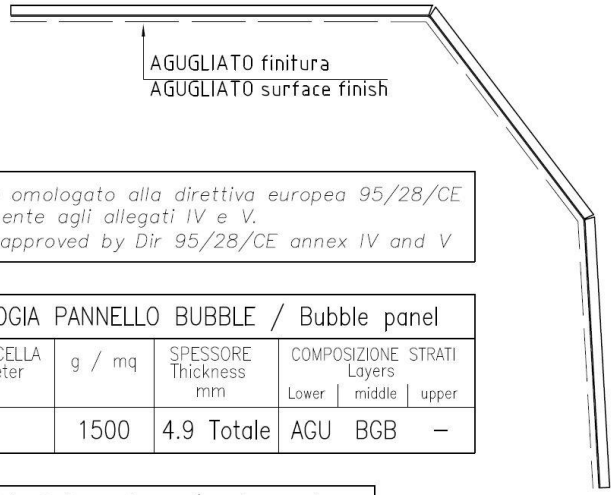
2. INTERNAL PANEL

Code A70200380SA13 (P702000013-01).
Drawing A70200380S013



Current Solution

Bubble BGB Panel 4,9mm thickness supplied with fitted carpet on internal side.



Materiale omologato alla direttiva europea 95/28/CE relativamente agli allegati IV e V.
Material approved by Dir 95/28/CE annex IV and V

TIPOLOGIA PANNELLO BUBBLE / Bubble panel					
DIAMETRO CELLA Cell diameter mm	g / mq	SPESSORE Thickness mm	COMPOSIZIONE STRATI Layers		
			Lower	middle	upper
8	1500	4.9 Totale	AGU	BGB	–

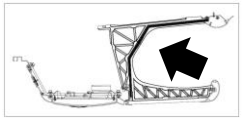
Material: Polipropilene / polypropylene

Proposal Solution

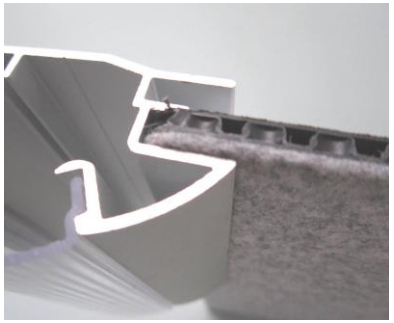
Polypropylene Panel with fitted carpet on internal side (5,7mm total thickness).

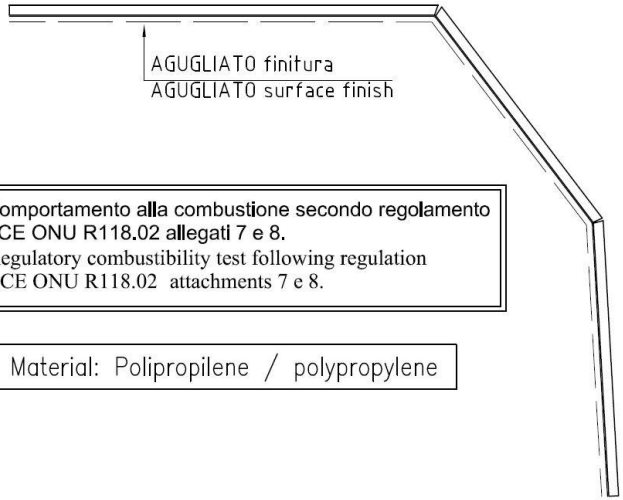
2. INTERNAL PANEL

Code A70200380SA13 (P702000013-01).
Drawing A70200380S013



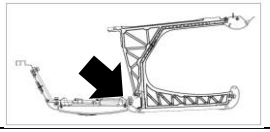
Proposal Solution





3. ANTICONDENSATE PANEL

Code P650000060-04.
40mm th=3mm L=50mt



Current Solution

Descrizione del materiale: *General description:*	PE RETICOLATO ESPANSO CL1
Peso totale g/m²: (minimo / massimo) *Weight minimum – maximum*	2,7 mm 90 g/m² ± 10% 5,5 mm 165 g/m² ± 10% *from to:*
Densità PE: *Density*	30 ± 10% kg/m³
Spessore totale mm: (minimo / massimo) *Thickness minimum – maximum:*	2,7 mm -5,5 mm *from to*
Materiale (natura dei componenti): *Details of all components chemical class:*	PE reticolato espanso *Crosslinked polyethylene*

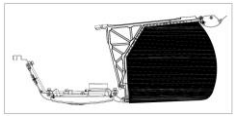
Proposal Solution

THE SAME PE 3mm panel, fitted aluminum sheet metal **+**

COMPLAINED TO **R118.02 ATTACHMENT 7 and 8**

DESCRIZIONE *DESCRIPTION*	Nastro di Alluminio monolucido ricotto di spessore 40 µm *Soft aluminium foil double-rolled, thickness 40 µm*					
PROPRIETA' ALLUMINIO *ALUMINIUM PROPERTIES*	Lega	*Alloy*	1200			
	Stato	*Temper*	O			
			Metodi di prova/ Testing Methods	Valore nominale Nominal Value	Tolleranza Tolerance	U.M.
CARATTERISTICHE DIMENSIONALI *DIMENSIONAL PROPERTIES*	Spessore puntuale	*Point thickness*	EN 546-3	40	3,2	µm
	Spessore medio	*Average thickness*	EN 546-3	40	2,4	µm
	Grammatura	*Weight*	EN 546-3	108,4	8,67	g/m²
CARATTERISTICHE MECCANICHE *MECHANICAL PROPERTIES*	Carico a rottura	*Tensile Strength*	EN 546-2	50 ÷ 105		N/mm²
	Allumgamento	*Elongation*	EN 546-2	≥ 3		%
	Pressione di scoppio (*)	*Burst strength*	EN 546-4	≥ 190		kPa
	Altezza calotta (*)	*Dome height*	EN 546-4	≥ 6,3		mm
CARATTERISTICHE PARTICOLARI *SPECIAL PROPERTIES*	Porosità	*Porosity*	EN 546-4	≤ 0,5		-/m²
	Bagnabilità	*Wettability*	EN 546-4	A ÷ C		grade
	Svolgibilità	*Stickiness*	EN 546-4	≤ 2		mm
	Eccentricità	*Eccentricity*	IQD70CQ Al12 (**)	≤ 5		mm
	Telescopicità	*Telescoping*	IQD70CQ Al12 (**)	≤ 2		mm
	Disallineamento spire	*Telescoping between layers*	IQD70CQ Al12 (**)	≤ 1		mm

(*) Area Calotta/Clamping Device Area: 10 cm² (**) Metodo interno/Internal Method

4.	REAR HEADER Code G81500616-001. 639x278mm	
5.	REAR HEADER Code G81500616-001. 292x253mm	

Current Solution

Material :
Wood medium density 6mm tichness

Proposal Solution

Material :
Wood medium density 6mm tichness + FR

COMPLAINED TO **R118.02**
ATTACHMENT 7 and 8

Product type :	MDF Fibreboard
Reference standard :	Wood Based Panel - EN13986:2004+A1:2015 Annex A Table A.9
CE Class :	MDF.LA FR
Field of application :	Internal use as structural component in dry conditions
AVCP Class :	1
Certification number:	1161-CPR-1221 [6-12mm] ; 1161-CPR-0190 [12-30mm]
Produced at:	Rue de la Forêt 2, B-6690 Vielsalm

Merkavim Mars Norway luggage rack - Adaptation to R118 certified material

Proposal Solution

Essential Characteristic	Unit	Reference	Thickness range (mm)			
			6	>6 - 9	>9 - 12	>=12-19
Bending strength	N/mm²	EN 622-5	29	29	27	25
Modulus of elasticity in bending	N/mm²	EN 622-5	3000	3000	2800	2500
Internal bond	N/mm²	EN 622-5	0,70	0,70	0,65	0,60
Swelling in thickness, 24h	%	EN 622-5	30	17	15	12
Moisture resistance OPTION 1 : Internal bond	N/mm²	EN 622-5	NPD	NPD	NPD	NPD
Moisture resistance OPTION 1 : Swelling in thickness	%	EN 622-5	NPD	NPD	NPD	NPD
Surface Soundness	N/mm²	EN 622-5	NPD	NPD	NPD	NPD
Formaldehyde class	Class	EN 13986-table B1	E1	E1	E1	E1
Reaction to fire	Class	EN 13501-1	B-s2d0	B-s2d0	B-s2d0	B-s1d0
Water vapour permeability μ	wet	EN 13986 - table 9	20	20	20	20
	dry		12	12	12	12
Airborne sound insulation	dB	EN 13986-5.10	NPD	NPD	NPD	NPD
Sound absorption α		EN 13986 - table 10	0,10/0,20	0,10/0,20	0,10/0,20	0,10/0,20
Thermal conductivity λ	W/m.K	EN 13986 - table 11	0,1	0,1	0,1	0,1
Strength - tension ft	N/mm²	EN 12369-1	13	13	13	12,5
Strength - compression fc	N/mm²	EN 12369-1	13	13	13	12,5
Strength - bending f_m	N/mm²	EN 12369-1	21	21	21	21
Strength - panel shear f_v	N/mm²	EN 12369-1	6,5	6,5	6,5	6,5
Strength - planar shear f_r	N/mm²	EN 12369-1	NPD	NPD	NPD	NPD
Stifness - tension E_t	N/mm²	EN 12369-1	2900	2900	2900	2700
Stifness - compression E_c	N/mm²	EN 12369-1	2900	2900	2900	2700
Stifness - bending E_m	N/mm²	EN 12369-1	3700	3700	3700	3000
Stifness - panel shear G_v	N/mm²	EN 12369-1	800	800	800	800
Impact resistance	Class	EN 12871	NPD	NPD	NPD	NPD
Punshing shear strength R_{mean}	N/mm²	EN 1195	NPD	NPD	NPD	NPD
Punshing shear strength $F_{ser,k}$	N/mm²	EN 1195	NPD	NPD	NPD	NPD
Punshing shear strength $F_{max,k}$	N/mm²	EN 1195	NPD	NPD	NPD	NPD
Linear expansion δl_{30-85}	mm/m	EN 318	NPD	NPD	NPD	NPD
Mechanical durability (kmod; kdef)		Shall be taken from :	NPD	NPD	NPD	NPD
Biological durability	Service Class	EN 335	1	1	1	1
Content of PCP	ppm	EN 13986-5.18	<5	<5	<5	<5

Informative Characteristic	Unit	Reference	Thickness range (mm)
			6 >6 - 9 >9 - 12 >=12-19
Formaldehyde class	Class	ASTM E1333	CARB 2 < 0.11 ppm [6 -> 30mm]
Formaldehyde class	Class	ASTM E1333	TSCA Title VI (EPA) < 0.11 ppm [6 -> 30mm]
Reaction to fire	Class	ASTM E84	Class 1/A [6 -> 30mm]