Product Change Notification

TE Connectivity

Product Change Notification: P-22-023667 **PCN Date:** 21-NOV-22

TE would like to inform you of the following change(s) to the listed TE Connectivity Product. In case of any further questions about this change(s), please contact your TE Connectivity Sales Engineer. Affected part, drawing and/or specification numbers are listed on the attached sheet(s).

General Product Description:
CAF7037 Counpound formulation change

Description of Changes
Supplier HEMKEL informed TE that CAF 7037 is no longer available with the current formulation. HEMKEL proposed the new formulation CAF7037 MF, this new formulation is Methyl Ethyl Ketoxime (MEKO) free. MEK is a solvent with health impact, considered as carcinogenic. Methyl ethyl ketoxime (MEKO) is a high-efficiency anti-skinning agent used for air-drying paints, inks and coatings. It is also used to improve the shelf life of silicone adhesives and sealants. It is also used as a curing agent for silicon rubber due to its outstanding water and heat resistance **Other attachments:** DDP 827-023_A Conpound CAF7037 replaced by CAF7037 MF

Reason for Changes:	
New specification.New specification.TE Evreux is facing an issue with the Silicon compound CAF 7037 (STD 400.1.07). upplier HEMKEL informed TE that CAF 7037 is no longer available with the current formulation.	
Estimated Dates:	
Last Order Date (Obsolete Parts Only):	**First Date To Ship** (Changed Parts Only):
	24-OCT-2022
Last Ship Date (Obsolete Parts Only):	**Last Date for Mixed Shipments:** (Changed Parts Only):
	No Mixed Shipments

Part Number(s) being Modified:

Part Number	Part Discontinued per PCN	Customer Drawing	Customer Part Number	Alias Part Number(s)	Substitute Part Number	Substitute Alias Part Number(s)	Description Of Difference
ZPF000000000201013	NO			"DBAS 979G 17-35 SN 1A"			

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ZPF000000000201013	NO			"DBAS 979G 17-35 SN 1A"			

DECLARATION DESIGN PERFORMANCES

DDP 827-023

Compound CAF7037 replaced by CAF7037 MF

Objet / *Subject* :

CAF7037 replacement

Auteur / *Author* : Date de création / *Date of creation* : 23/09/2022

Approbations / *Approvals* (Dernier indice / *Last issue*)

Fonction / *Position*	Nom / *Name*	Date	Visa / *Signature*
Mgr R&D/Product DVL Engineering	M.BRUNET	18/11/2022	Martin BRUNET
Sr Qlty & Reliability Engineer	C. LOBERT	18/11/2022	

Evolutions / *Revisions*

Indice/ *Issue*	Nature des évolutions / *Description of evolution*	Page	Date	Auteur / *Author*
Ø	Creation of document	all	23/09/2022	V.Pellegrini
A	§1.3 Outgassing standard updated §4.2 outgassing requirement added, PVE added	4 10	28/10/2022	V.Pellegrini

CONTENTS

1 GENERAL INFORMATION

1.1 Manufacturer:

Name : Connecteurs Electriques DEUTSCH
Address : 17, rue Lavoisier – Zone Industrielle n° 2
27000 Evreux

1.2 Equipment :

See §2

1.3 Standard:

STD 400.1.07	Compound Silicone CAF 7037 (04/1996)
ESCC3401	ESCC Generic specification
ESCC3401/008	ESCC detail specification
ECSS-Q-ST-70-02	Thermal Vacuum Test for the Screening of Space Materials

1.4 Test sequence:

SE 827-010

2 COMPLIANCE MATRIX

2.1 Introduction

TE Evreux is facing an issue with the Silicon compound CAF 7037 (STD 400.1.07).

CAF 7037 is a one component, flowing silicone elastomer, which cures at room temperature simply in contact with air humidity. Supplier HEMKEL informed TE that CAF 7037 is no longer available with the current formulation.
HEMKEL proposed the new formulation “CAF7037 MF”, this new formulation is Methyl Ethyl Ketoxime (“MEKO”) free.
MEK is a solvent with health impact, considered as carcinogenic.
“*Methyl ethyl ketoxime (MEKO) is a high-efficiency anti-skinning agent used for air-drying paints, inks and coatings. It is also used to improve the shelf life of silicone adhesives and sealants.*
It is also used as a curing agent for silicon rubber due to its outstanding water and heat resistance“.

2.2 Purpose of this document

Objective of this document is to ensure that we have no performance regression by using the new formulation.
Comparative test will be done with old and new formulation., whenever necessary.

2.3 Functions

2.3.1 POTTING FILLING

Principle Function of the compound is to insure tightness between the insert Sub Assembly and the connector's shell ,(called "potting filling ") to guarantee the following requirement :

Sealing : Less than 16cm3/hour under a 2,1 bar differential pressure

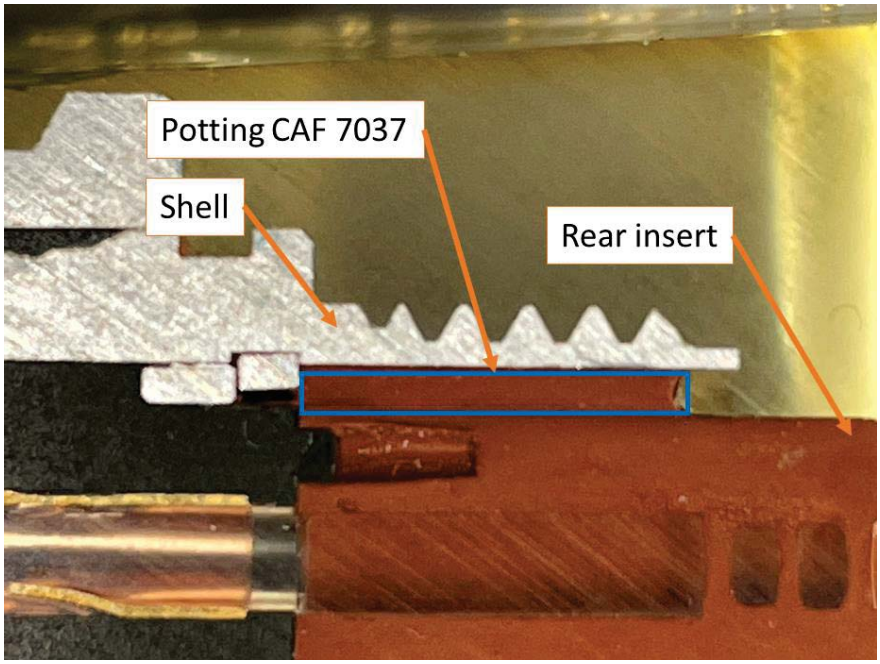

Figure 1: Airtightness

Principle of potting filling is massively used on practically all circular , non-removable inserts connectors (EN 2997, EN 3646, EN 3645 (Mil-dtl-38999,) , ..but not with the same compound . If historically , CAF7037 was used for these families , it has been substituted by other compounds (RTV 116, ..) for manufacturability purposes .

CAF 7037 was not substituted on product families managed by the Value stream Specific- Special connectors because :

- ✓ of the configuration management issues
- ✓ of the fact that most are issued or using push-pull DBAS family components , on which CAF 7037 is used, and used on space -grade versions (DBAS SCC).

2.3.2 INTERFACIAL SEAL GLUING

CAF 7037 is used to glue the interfacial seal on DBAS plugs

Material of the front seal is the same as the gromet , therefor , checking the adherence of the new formulation of the potting will qualify the interfacial seal gluing .

2.3.3 RECEPTACLE ENVIRONMENTAL PROTECTION

The other application is the filling at rear of PCB receptacles connectors as shown on example below :

Function in this case is to protect the electrical circuits of humidity migration, which could cause failures in terms of dielectric withstanding or insulation.

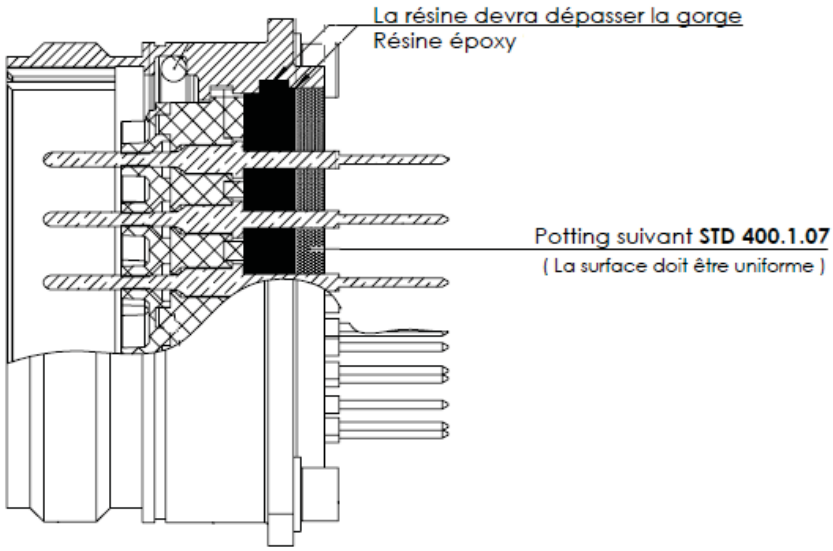

Figure 2: insulation resistance

And in those cases, potting is in contacts with the electrical circuits
It shall adhere on the shell surface (either metallic or plastic) , and have dielectric and insulation properties compatible with the connector's requirements .

2.3.4 COMPONENTS ENCAPSULATION

This application is used to protect components PCB by encapsulation (PCB). It shall adhere on material in contact, and have dielectric and insulation properties, compatible with the connectors requirements

Detailed impacted product families are listed in §3.

2.4 CAF 7037 & CAF 7037 MF technical data

Characteristics	**CAF 7037**	**CAF 7037 MF**
Properties before curing		
Appearance	Fluid paste	Fluid paste
Colour	Brick red	Brick red
Cure type	Oximic	Oximic (MEKO free)
Density (at 25°C)	1,10	1,10
Viscosity Brooksfiels mPa.s	50 000	50 000
Curing		
Skin formation time (min)	30	25-30
Cured thickness after 24h (mm)	3,5 mm	4 mm
Curing time for 2mm thickness	6h	No data*
Properties after curing		
Hardness Shore A	22	24
Modulus at 100% elongation	0,5	0,5
Tensile strength (Mpa)	2,0	2,1
Elongation (%)	300	400
Tear strength (kN/m)	3,3	5,0
Dielectric properties		
Dielectric strength (kV/mm)	20	No data
Dielectric constant at 1 MHz	2,5	No data
Dielectric dissipation factor	7.10^{-3}	No data
Volume resistivity (Ω.cm)	1.10^{15}	No data
Thermal properties		
Temperature limit for use in continuous operating	-60°C to + 225°C	-60°C to + 225°C
Maximum peak temperature in use	+250°C	+250°C

(*) see annex 1 : Supplier comparison of performances.

3 CAF 7037 USE CASE

Families	CAF 7037 function	Insert retention (in shell)	Tightness	Adhesion	Outgassing	Insulation	Fluids immersion
130 084 , 087 167, 178 183, 622 661, 662, 663, 719	Potting filling Interfacial seal gluing	X	X	X	N/A	N/A	N/A
025	Potting filling Interfacial seal gluing	X	X	X	X	N/A	N/A
098, 131 696, 750, 763	Receptacle environmental protection	N/A	X	X	N/A	X	N/A
187 (*)	Encapsulation	N/A	X	X	N/A	X	N/A

187 (*) : Quoted here , but object of a separate DDP

4 VALIDATION TEST REQUIREMENTS

4.1 Samples and configurations:

	CAF7037	CAF7037 MF
DBAS size3	3 receptacles	3 receptacles
DBAS size 19	3 plugs	3 plugs
DBAS size 61	2 receptacles 1 plug	2 receptacles 1 plug
ADJS	3 Fourreaux	3 Fourreaux

Table 1: Samples for tests

4.1.1 INSERT RETENTION (IN SHELL)

According to SAE-AS 81703, inserts shall not be dislocated from the specified insert position when an effective pressure differential of 75 ft-lb/in2 (i.e. 5.27 kg/cm2) is applied.

Samples configuration:
Insert sub assembly shall be mounted in the shells without the insert to shell retaining clip.

	Ø (cm)	Surface (cm^2)	Load (kg)
Size 3	0,874	0,60	3,2
Size 19	2	3,14	16,5
Size 61	3,226	8,17	43,1

Table 2: insert retention load

After this test, if insert not dislodged from their normal position in the shell, continue to apply load up to dislodgment of the insert.

4.2 Test requirements

Test	Norm	Requirement §	TE Comment	TE answer
Insulation resistance	EN2591-206	N/A	5000 MΩ ay ambient temperature	PVE 827-286 VA
Air Tightness	EN2591-312	5.2.2	Method B except 750 & 696 (§2.3.3)	PVE 827-286 VA
Outgassing	ESCC3401	ECSS-Q-ST-70-02	Only for DBAS SCC connectors TBC with ESA	DE 2443
Insert retention (in shell)	ESCC 3401/008 AS81703	§4.3.6 § 3.6.16	No dislodgment of the insert (see table 2)	PVE 827-286 VA
Compound adhesion	N/A	N/A	Test on connector assembly without clip. Comparison between CAF7037 & CAF7037MF.	PVE 827-286 VA

5 CONCLUSION

A Test sequence shall be established in accordance with the test requirements define in §4.
Air tightness can be done with size 61 & size 3.

Annex 1: Comparison of performances CAF 730 and CAF 730 MF, CAF 7037 and CAF 7037 MF

SIL21-0614_Comparison CAF 730-CAF 7037