

Airbus UK

PROCESS SPECIFICATION

ABP 8-1294

PAGE 1 OF 9

ISSUE 6

TITLE:

SOLVENT CLEANING AND DEGREASING OF MATERIALS

NOTES:

- (A) Reference in this specification to any other document shall be to the latest issue of that document unless specifically stated otherwise.
- (B) For definitions and procedures relating to the use of ABP specifications refer to AMCD 01 and ABP 0-0001.
- (C) This specification does not necessarily detail all the precautions necessary to meet the requirements of health and safety.

It is the responsibility of the user of this specification to consult and establish appropriate Health and Safety precautions and the method should be operated only by trained personnel.

KEY WORDS:

**SOLVENT
CLEANING
DEGREASING**

AUTHORISED (SIGNED) DR R DIGBY

DATE MARCH 2006

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1. SCOPE

This specification defines the procedure for degreasing of material surfaces with cleaning solvents.

2. INVOKED DOCUMENTS

- AIMS 09-03-001 Liquid non-aqueous cleaning agents.
- ABP 8-1290 Cleaning and Degreasing of Metallic Materials (Alkaline)
- ABP 8-1293 Cleaning of Pipes
- ABR 9-0140 General purpose cleaning solvent.

3. APPLICABILITY, LIMITATIONS AND DEFINITIONS

3.1 Applicability

- 3.1.1 This specification covers the cleaning / degreasing of materials:
 - (a) In tanks or baths by vapour degreasing, immersion (with or without agitation) and spray.
 - (b) Using pressure flush cleaning – mainly for the bores of pipes.
 - (c) Local hand application cold cleaning including cloths, wipes, brush and swab.
- 3.1.2 Approved materials and their application uses are listed in Appendix A.
- 3.1.3 Materials qualified in accordance with ABR 9-0140 and / or AIMS 09-03-001 are permitted as alternatives to those listed in Appendix A when used within the applicability and limitations of their respective specifications.
- 3.1.4 Local cold cleaning is applicable to the removal of contaminants for which it is not practical or economic to use immersion or other cleaning processes.
- 3.1.5 The main content of Appendix B from previous issues of this specification have been incorporated into the main text as paragraph on “Hand Cleaning and Degreasing”.

3.2 Limitations

- 3.2.1 This list does not include cleaning materials that may be referenced in relevant NDT specifications or specialist materials such as those recommended for removing cured sealant.
- 3.2.2 All solvents used for cleaning / degreasing non-metallic materials shall be qualified against that material group either as Type 2 or Type 3 solvents in Appendix A or to ABR 9-0140 or to AIMS 09-03-001.

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- 3.2.3 Where local cold cleaning is used in areas containing elastomeric materials care shall be taken to avoid prolonged contact with the elastomeric materials and also avoid entrapment of solvent.
- 3.2.4 The total immersion time in any one vapour degreasing operation for titanium items shall not exceed 10 minutes.
- 3.2.5 Titanium items shall not be degreased in any halogenated solvents other than those listed in Appendix A.
- 3.2.6 Titanium parts fabricated using Ti-5Al-2.5Sn alloys, by forming or welding, without subsequent stress relief heat treatment, shall not be degreased in any halogenated solvents.
- 3.2.7 Vapour degreasing shall not be used for items or sub-assemblies containing joints with inter-fay sealing, painted parts, plastics or rubber.
- 3.2.8 Vapour degreasing may not be effective for items containing deep recesses; such items should be degreased in accordance with ABP 8-1290.
- 3.2.9 Cleaning and degreasing to ABP 8-1290 may be used as an alternative to ABP 8-1294 when permitted by an ABP and chosen as an option by production planning.
- 3.2.10 The only cleaning materials, when used for immersion / spray cleaning, that may be heated above ambient temperature are those also specified for vapour degreasing.
- 3.2.11 Vapour degreasing and / or heated immersion / spray cleaning is not permitted on non-metallic materials.

3.3 Definitions

None

4. PROCESS QUALIFICATION

- 4.1. Qualification of alternative processes is not permitted within this specification. The only process to be used is that declared in paragraph 5.

5. DECLARED PROCESS

- 5.1 **Pre-cleaning – General as required** (applicable to all subsequent cleaning processes to reduce contamination of cleaning solvents).

Note: Use either a pre-cleaning solvent or a cold cleaning solvent - see Appendix A.

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- 5.1.1 Remove any loose foreign materials (metallic particles, swarf, loose soil etc.) by vacuum or brush.
- 5.1.2 Remove excess grease, oil, or any other form of excessive contamination by wiping, scrubbing or other physical means. Care shall be taken to avoid damage to the substrate surface. Care shall be taken to avoid smearing the contaminant over a larger surface than necessary.
- 5.1.3 Clean the surface by one or more of the following methods, repeating as necessary.
- (a) Wet the surface with solvent and wipe or scrub the surface.
 - (b) Immerse the item in solvent and allow the contamination to soak. If necessary scrub the surface.
 - (c) Spray or flow the solvent on the surface to assist in cleaning or rinsing.
- 5.1.4 Dry.

5.2 Vapour Degreasing

- 5.2.1 Vapour degreasing operates by immersion of the part in a hot solvent vapour, which condenses on the surface of the part and dissolves and / or rinses away dirt and grease.
- 5.2.2 Preparation
- 5.2.2.1 Fill the tank to the required level as specified by the supplier of the tank.
- 5.2.2.2 Care shall be taken to ensure that items, particularly those with complex joints, are not water wet when immersed in the vapour-degreasing bath.
- 5.2.3 Operation
- 5.2.3.1 Place the items in a suitable basket (or attach to wires for handling) in such a way as to minimise the entrapment of liquid solvent in hollows in the items. Lower the items into the vapour with the minimum disturbance of the vapour level.
- 5.2.3.2 The degreasing time will vary with the size of the item but results may be judged visually. Vapour will cease to condense on the surface of the item when the item reaches the temperature of the vapour. The item should then be removed, as effective degreasing will have finished.
- 5.2.3.3 Visually inspect to determine if the items are clean and free from contamination. If not, the items shall be cleaned by multiple immersions.

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Multiple immersions after cooling to ambient temperature in between each immersion may be necessary for satisfactory cleaning.

5.2.3.4 Lance spraying with the hot liquid solvent during vapour degreasing will assist in the removal of tenacious deposits.

5.3 Flush Cleaning / Final Cleaning of pipe bores

5.3.1 All component testing of pipes must have been completed and the pipes completely dry before the final cleaning operation.

5.3.2 Re-circulated filtered and/or distilled cleaning fluid is forced under pressure through the bore of a pipe.

Note: Flush cleaning may also be used to clean the exterior of the pipe.

5.3.3 Details on the final cleaning of pipe bores is given in ABP 8-1293. The solvent used shall be a flush cleaning solvent as listed in Appendix A.

5.4 Immersion / Spray Cleaning

5.4.1 Cleaning with solvents in bath systems (Immersion cleaning) can be combined with a spraying facility.

5.4.2 Spray cleaning may also be used whereby the cleaning agent is atomised through nozzles and sprayed over the entire component. Non-soluble contaminants can be rinsed off by this mechanical process.

5.4.3 When using Immersion / Spray cleaning facilities where contaminants are retained in solution, it is necessary to perform an additional cleaning operation in less contaminated solvent.

5.5 Hand Cleaning and Degreasing

5.5.1 Cold swab cleaning - Form pad with a clean piece of cloth and wet with an approved solvent. It is essential that the solvent used is not contaminated e.g. dispensed from a wash bottle. Do not apply excessive solvent such that the cloth is dripping. Use of pre-wetted cloth systems can avoid the use of excessive solvent and avoid contamination. When used with the selected approved solvent the cloth shall not deposit contamination or particulates detrimental to subsequent processing.

5.5.2 Wipe the area to be cleaned / degreased with the wetted cloth. Re-wet the cloth as required, ensuring that the solvent supply is not contaminated. The object is not to clean but to apply solvent to the area to be cleaned so as to suspend or dissolve the surface contamination.

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5.5.3 Wipe off the solvent and suspended / dissolved contaminant with a clean dry cloth.

5.5.4 Visually inspect wipe-off cloth and repeat operations above, as required, until wipe-off cloth appears clean.

5.5.5 The solvent may be applied by means of a brush. Contaminants, which have been partially dissolved by the brushing / solvent action, are subsequently wiped off with a cloth.

5.6 Post Cleaning

5.6.1 Handling with bare hands shall be avoided. Cleaned items shall only be handled using clean cotton gloves or equivalent or by using mechanical aids to prevent subsequent contamination.

5.6.2 Before the next operation ensure that the items are dry both of water and solvent.

5.6.3 Care shall be taken after degreasing to ensure that the next operation is carried out with the least possible delay, otherwise store in a clean dry area. The formation of condensation shall be avoided.

Note: Ferrous items, after degreasing, are particularly susceptible to corrosion.

6. QUALITY CONTROL

6.1 The Inspection function shall ensure that only approved solvents are used within the applicability and limitations of the relevant qualification.

6.2 Monitoring and control of the cleaning solvent and process shall be the responsibility of the inspection function.

6.3 At a frequency determined by use and experience, the solvent of all stabilised vapour degreasers shall be tested for the presence of an adequate level of stabiliser. A visual examination of the solvent to check that there is no water or excessive grease or oil in the plant.

Alternatively the boiling point of the sump liquor may be monitored, the elevation of which gives a measure of the contamination level.

6.4 Visual Inspection of the surface

6.4.1 The surface shall be visibly clean and free of solid or liquid contamination.

6.4.2 When the surface is wiped with a clean white cloth; there shall be no visible contamination or discolouration to the cloth attributable to contamination.

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APPENDIX A

Note: The use of halogenated cleaners is approved if compliant with prevailing local and international health, safety and environmental regulations.

× Denotes materials containing halogenated material

MANUFACTURER	PRODUCT NAME	VAPOUR DEGREASING	FLUSH CLEANING	IMMERSION OR SPRAYING	PRE-CLEANING SOLVENT	COLD CLEANING SOLVENT IMMERSION OR SWAB / WIPE		
					COLD IMMERSION OR COLD WIPE	TYPE 1	TYPE 2	TYPE 3
General Chemicals no Specified Supplier	Trichloroethylene ×	✓	✓	✓				
	Perchloroethylene × SEE NOTE BELOW	✓						
	Methyl ethyl ketone				✓ - TYPE 3			✓
	Acetone				✓ - TYPE 3			✓
	Paraffin				✓ - TYPE 3			
	White Spirit				✓ - TYPE 3			
	IMS (ethanol)				✓ - TYPE 2		✓	
	50/50 water/propan-2-ol				✓ - TYPE 2		✓	
	Propan-2-ol		✓	✓	✓ - TYPE 2		✓	
A	Amity Leksol ×	✓	✓	✓				✓
A	Amity Leksol AL ×	✓	✓	✓				✓
A	Amity Marthene E							✓
A	Amity Prothene							✓
A	Amity Toxfree						✓	
B	Applied 8-000						✓	
C	Arrow Lotoxane						✓	
D	Ashland Diacetone Alcohol							✓
D	Ashland TA 42A sold as N-717							✓
D	Ashland TA 50							✓
D	Ashland TA 51('Arcosolv')							✓
E	Elixair Sky Wash (Non-Lanolin)							✓
E	*Elixair Sky Wipes (Non-Lanolin)							✓*
F	Enviro EnSolv ×	✓	✓	✓				✓
G	Ely Sursolve SW5							✓
H	LPS F104					✓		
I	Occidental Oxsol 100 ×							✓
I	Occidental Oxsol 1000 ×							✓
J	PRC T 708					✓		
K	PT Technologies PF-SR						✓	✓
L	Purac Purasolve ELS or ELECT							✓
TYPE 1	General purpose cleaning solvent - for cleaning general particulates and contaminants from bare metallic materials or painted surfaces - shall not be used on bare non-metallic materials.							
TYPE 2	General purpose cleaning solvent = for cleaning general particulates and contaminants from metallic and non-metallic materials, either bare or painted. Can be allowed in short term contact with acrylic and polycarbonate surfaces.							
TYPE 3	Heavy duty cleaning solvent - for cleaning general particulates and contaminants from metallic and non-metallic materials either bare or painted. Shall be capable of removing more difficult contamination such as uncured adhesive and sealant. Shall not be allowed to contact acrylic and polycarbonate surfaces.							

*Elixair Sky Wipes are for hand application uses only

Perchloroethylene: is included as an alternative in existing trichloroethylene vapour degreasing only.

LIST OF APPROVED SOLVENT CLEANING MATERIALS

Suggested Initial Contacts

A	Amity (UK) Limited	E	Elixair International Limited	I	Occidental Chemical Corporation
	Dodworth Business Park		Roman Hill Trading Estate		5005 L.B.J. Freeway
	Dodworth		Broadmayne		Dallas
	Barnsley S75 3SP		Dorchester DT2 8LY		TX 75380-9050
	England		England		USA
	Tel +44 (0) 1226 770757		Tel +44 (0) 1305 853019		
B	Gramos - Applied	F	Enviro Tech International, Inc	J	PPG Industries (UK) Ltd.
	Spring Road		2525 West Le Moyne		Shildon
	Smethwick		Melrose Park		County Durham
	West Midlands B66 1PG		Il 60160		DL4 2QP
	England		USA		England
	Tel +44 (0) 121 525 4000		Tel (0708) 343 6641		Tel +44 (0) 1388 770212
C	Arrow Chemicals Limited	G	Ely Chemical Co. Limited.	K	PT Technologies Europe
	Stanhope Road		Lisle Lane		Meenane
	Swadlincote		Ely Chemical Co. Limited.		Watergrasshill
	Derbyshire DE11 9BE		Cambridgeshire CB7 4AS		Co. Cork
	England		England		Ireland
	Tel 01283 221044		Tel 01353 665881		Tel +353-21-4889922
D	Ashland Chemicals	H	LPS Laboratories Inc.	L	Purac Biochem bv
	2315 Clifton Avenue		P.O. Box 105052		Arkelsedijk 46
	Nashville		Tucker GA 3085-5052		PO Box 21
	TN 37209		770-934-7800		4200 AA Gorinchem
	USA		USA		Holland
					Tel +31 (1830) 41729

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