Rec. 24.05.07.

APOLLO

Polychloroprene	SPRAYABLE, HEAT RESISTANT CONTACT ADHESIVE	A.3416

20 ± 2%	DESCRIPTION Apollo A3416 is a sprayable, high heat resistant contact adhesive exhibiting fast solvent flash off and a long open tack time.
100 – 200 cP at 20°C	It demonstrates excellent adhesion to a wide range of substrates such as wood, decorative laminates, polyurethane foam, elastomers, plastics and metals.
Neutral or tinted	In particular, the excellent hot bond strength of Apollo A3416 makes it suitable for the postforming of decorative laminates onto chipboard and MDF cores, using a wide range of static and continuous post-forming equipment e.g. Evans Rotork, Brandt Static, Bonding Systems.
2 – 8 mins	APPLICATION Surfaces to be bonded should be clean, dry and free from loose particles dust and grease. Apollo A3416 may be sprayed hot or cold. Hot spraying gives better atomization, better coverage and faster solvent evaporation. In conditions of high humidity, hot spraying will prevent a 'bloom' forming on the adhesive surface which would lead to poor bonds being made.
8 – 10m²/ltr	Apollo A3416 may be sprayed through most equipment, but for best results a Devilbiss JGV-562 gun fitted with FX fluid tip and needle, and a 777 air-cap is recommended. Atomising pressures of 70-90 psi and fluid pressures of 10-15 psi are required.
Solvent 1	Apply an even coat of adhesive to both surfaces to be bonded. Allow a minimum of 2 minutes before mating surfaces.
-18°C	
6 months @ 4 - 25°C	

Ensure intimate contact and coalescence of the adhesive films by passing the laminate through nip rollers or by platen pressing, using as much pressure as possible without crushing the components. Sustained pressure is not necessary. The high initial strength of the adhesive allows panels to be handled immediately.

SPECIAL COMMENTS

1. A.3416 is normally tinted red for easy observation of coverage but can be supplied in neutral or tinted in other colours on request.

2. Bonds are resistant to moisture, dilute acids and alkalis, and many oils (non aromatic types).

3. Store at temperatures above 4°C (40°F). Prolonged storage at lower temperatures may cause the formation of a 'gel' which will then necessitate re-processing.

4. A.3416 should only be sprayed on to polystyrene foam when adequate air is available (volumes of 23 c.f.m. and pressures of at least 70 p.s.i.) or when hot sprayed through recommended equipment.

5. In conditions of high humidity a 'bloom' may form on the surface which reduces tack and coalescence. Bonds should not be made when this occurs.

Ref : A.3416 Date : 07/07/2004

The above figures do not constitute a specification. They represent typical values obtained for this product.

Before using this product please ensure that you have been supplied with and have read carefully the following information:

1. The hazard labels (complying with CHIP 3 Regs 2002 and CDG/CPL Regs).

2. Apollo Material Safety Data Sheet A.3416

SAFETY DATA SHEET

A3416

Issued: 20/09/05

Revision No: 5

Sent to: ALANSONS INDUSTRIAL SUPPLIES

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product name: A3416

Use / description of product: Adhesive

Company name: Apollo Chemicals Limited
Sandy Way
Amington Industrial Estate
Tamworth
Staffordshire
B77 4DS
United Kingdom
Tel: +44 (0) 1827 54 281
Fax: +44 (0) 1827 53 030
Emergency tel: +44 (0) 1827 69 662

2. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous ingredients: ACETONE 10-30%
EINECS: 200-662-2 CAS: 67-64-1
[F] R11; [Xi] R36; [Xi] R66; [-] R67

- TOLUENE 1-10%
  EINECS: 203-625-9 CAS: 108-88-3
  [F] R11; [Xi] R38; [Xn] R48/20; [Xn] R63; [Xn] R65; [-] R67
- METHYL ETHYL KETONE 10-30%
- MIXED ALIPHATIC HYDROCARBONS 30-50%
  [F] R11; [Xi] R38; [N] R51/53; [-] R67

3. HAZARDS IDENTIFICATION

Main hazards: Highly flammable. Irritating to skin. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Possible risk of harm to the unborn child. Vapours may cause drowsiness and dizziness.

Other hazards: In use, may form flammable / explosive vapour-air mixture.

4. FIRST AID MEASURES (SYMPTOMS)

Skin contact: There may be irritation and redness at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: Nausea and stomach pain may occur. There may be vomiting.

Inhalation: Exposure may cause coughing or wheezing. Narcotic effect.

cont...

4. FIRST AID MEASURES (ACTION)

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Wash the affected area thoroughly with soap and water and rinse thoroughly. Seek medical help if symptoms persist

Eye contact: Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination.

Ingestion: Do not induce vomiting. If conscious, give half a litre of water to drink immediately. Transfer to hospital as soon as possible.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. Obtain medical help if there is difficulty breathing Consult a doctor if symptoms persist.

5. FIRE-FIGHTING MEASURES

Extinguishing media: Carbon dioxide. Alcohol or polymer foam. Dry chemical powder.

Exposure hazards: Highly flammable. In combustion emits toxic fumes.

Protection of fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Eliminate all sources of ignition. Mark out the contaminated area with signs and prevent access to unauthorised personnel. Turn leaking containers leak-side up to prevent the escape of liquid.

Environmental precautions: Do not discharge into drains or rivers. Contain the spillage using bunding.

Clean-up procedures: Absorb into dry earth or sand.

7. HANDLING AND STORAGE

Handling requirements: Ensure there is sufficient ventilation of the area. Smoking is forbidden. Avoid direct contact with the substance. Use non-sparking tools.

Storage conditions: Store in cool, well ventilated area. Keep away from sources of ignition. Keep container tightly closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Workplace exposure limits

WEL (8 hr exposure limit): 191mg/m3

WEL (15 min exposure limit): 574mg/m3

Hazardous ingredients: ACETONE

WEL (8 hr exposure limit): 1210 mg/m3 WEL (15 min exposure limit): 3620 mg/m3

- TOLUENE

WEL (8 hr exposure limit): 191 mg/m3 WEL (15 min exposure limit): 574 mg/m3

- MIXED ALIPHATIC HYDROCARBONS

WEL (8 hr exposure limit): 1000mg/m3 WEL (15 min exposure limit): 1000MG/M3

Engineering measures: Ensure there is sufficient ventilation of the area. Ensure lighting and electrical equipment are not a source of ignition.

cont...

Respiratory protection: In case of insufficient ventilation wear suitable respiratory equipment. If exposure levels are likely to be exceeded, use a full face mask fitted with an organic AXP3 filter for short term low level exposures. For long term or high level exposures, or when spraying, compressed airline breathing apparatus should be used.

Hand protection: Avoid skin contact. For repeated exposure use Viton or 4H chemical gloves.

Eye protection: Safety goggles.

Skin protection: Wear protective work clothing sufficient to avoid skin contact. Wash hands regularly, before breaks and at the end of the working day.

9. PHYSICAL AND CHEMICAL PROPERTIES

State: Liquid

Colour: Gold-brown

Odour: Characteristic odour

Evaporation rate: Fast

Oxidising: Non-oxidising (by EC criteria)

Solubility in water: Insoluble

Viscosity: Non-viscous

Boiling point/range°C: 56

Flammability limits %: lower: 0.6

upper: 13

Flash point°C: -35

Autoflammability°C: 200

Relative density: 0.79

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.

Conditions to avoid: Sources of ignition.

Materials to avoid: Oxidising agents.

Haz. decomp. products: In combustion emits toxic fumes.

11. TOXICOLOGICAL INFORMATION

Hazardous ingredients: ACETONE

IVN RAT LD50 5500 mg/kg

ORL MUS LD50 3 gm/kg

ORL RAT LD50 5800 mg/kg

- TOLUENE

IVN RAT LD50 1960 mg/kg

ORL MUS LD50 2 gm/kg

ORL RAT LD50 6900 mg/kg

cont...]

- METHYL ETHYL KETONE

  IPR RAT LD50 607 mg/kg

  ORL MUS LD50 4050 mg/kg

  ORL RAT LD50 2737 mg/kg
- MIXED ALIPHATIC HYDROCARBONS

  ORL RAT LD50 >5000 mg/kg

Chronic toxicity: Danger of serious damage to health by prolonged exposure through inhalation.

12. ECOLOGICAL INFORMATION

Mobility: Volatile.

Persistence and degradability: Biodegradable in part only.

Bioaccumulative potential: No data available.

13. DISPOSAL CONSIDERATIONS

Disposal operations: Arrange for disposal by a licenced waste disposal company

Disposal of packaging: Arrange for disposal by a licenced waste disposal company

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

14. TRANSPORT INFORMATION

ADR / RID

UN no: 1133 **ADR Class:** 3

Packing group: II **Classification code:** F1

Shipping name: ADHESIVES

Labelling: 3 **Hazard ID no:** 33

IMDG / IMO

UN no: 1133 **Class:** 3

Packing group: II **EmS:** F-E,S-D

Marine pollutant: . **Labelling:** 3

IATA / ICAO

UN no: 1133 **Class:** 3

Packing group: II **Packing instructions:** 305(P&CA); 307(CAO)

Labelling: 3

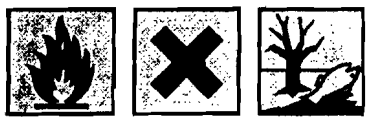
cont...|

15. REGULATORY INFORMATION

Hazard symbols: Highly flammable.

Harmful.

Dangerous for the environment.



Risk phrases: R11: Highly flammable.

R38: Irritating to skin.

R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation.

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R63: Possible risk of harm to the unborn child.

R67: Vapours may cause drowsiness and dizziness.

Safety phrases: S16: Keep away from sources of ignition - No smoking.

S23: Do not breathe vapour.

S38: In case of insufficient ventilation, wear suitable respiratory equipment.

S33: Take precautionary measures against static discharges.

S36/37: Wear suitable protective clothing and gloves.

S61: Avoid release to the environment. Refer to special instructions / safety data sheets.

S62: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Precautionary phrases: Restricted to professional users.

Note: The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

Risk phrases used in s.2: R11: Highly flammable.

R36: Irritating to eyes.

R66: Repeated exposure may cause skin dryness or cracking.

R67: Vapours may cause drowsiness and dizziness.

R38: Irritating to skin.

R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation.

R63: Possible risk of harm to the unborn child.

[cont...]

R65: Harmful: may cause lung damage if swallowed.

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

Technical characteristics compact

	Grade	Standard	Fire retardant M1	Postforming	Standard
	Classification	CGS	CGF	CGS	
	Thickness in mm	4 - 6 - 8 - 10 - 12.5	4 - 6 - 8 - 10 - 12.5	4 - 6 - 8 - 10 - 12.5	4 - 6 - 8 - 10 - 12.5
EN 438-2-4	Characteristics				
	Thickness tolerance in mm				
	4 mm	± 7 %	± 7 %	± 7 %	± 7 %
	6 to 12.5 mm	± 5 %	± 5 %	± 5 %	± 5 %
	Length/width tolerance				
	on length and width in mm	- 0 /+ 10	- 0 /+ 10	- 0 /+ 10	- 0 /+ 10
	squareness mm/m	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
	straightness mm/m	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
EN 438-2-5	Surface defects				
	spots in mm²/m²	≤ 1	≤ 1	≤ 1	≤ 1
	linear in mm/m²	≤ 10	≤ 10	≤ 10	≤ 10
EN 438-2-6	Abrasion resistance (nr of revolutions)				
	without structure	≥ 350	≥ 350	≥ 350	≥ 350
	with structure	150	150		
	pearlescent ✦	50	50	50	
EN 438-2-7	Resistance to boiling water				
	mass	2 %	2 %	2 %	2.6 %
	thickness	2 %	2 %	2 %	2 %
	appearance	Class 4	Class 4	Class 4	Class 3
EN 438-2-8	Superficial heat resistance 180 °C	Class 4	Class 4	Class 4	
EN 438-2-9	Dimensional Stability				
	longitudinal in %	< 0.25	< 0.25	< 0.25	< 0.25
	transverse in %	< 0.55	< 0.55	< 0.55	< 0.65
EN 438-2-12	Impact resistance (large ball) in N				
	diameter of imprint (in mm)	< 10	< 10	< 10	< 10
	height of fall (in m)	≤ 6 mm : 1.40 8 to 12.5 mm : 1.80	≤ 6 mm : 1.40 8 to 12.5 mm : 1.80	≤ 6 mm : 1.40 8 to 12.5 mm : 1.80	≤ 6 mm : 1.2 8 to 12.5 mm : 1.7
EN 438-2-13	Resistance to cracking	Class 4	Class 4	Class 4	
EN 438-2-14	Resistance to scratching in N	Non pearlescent ≥ 2 Pearlescent ✦ ≥ 1.75	Non pearlescent ≥ 2 Pearlescent ✦ ≥ 1.75	Non pearlescent ≥ 2 Pearlescent ✦ ≥ 1.75	≥ 2
EN 438-2-15	Resistance to stains				
	groups 1 and 2	Class 5	Class 5	Class 5	Class 5
	groups 3 and 4	Class 4	Class 4	Class 4	Class 4
EN 438-2-16	Colour fastness under artificial light	≥ 6	≥ 6	≥ 6	≥ 3
EN 438-2-18	Resistance to cigarette burns	Class 3	Class 3	Class 3	Class 3
EN 438-2-24	Resistance to steam	Class 4	Class 4	Class 4	Class 4
EN 438-2-27	Resistance to humidity	Class 4	Class 4	Class 4	Class 4
	Postforming radius in mm	No	No	minimum radius 15 mm	No
	Fire rating	Class 2	< 6 mm M1 (Class 1) ≥ 8 mm M1 (Class 0)	M3	M4
	Density	1.4	1.4	1.4	1.3 (depending on species)
	Thermal conductibility λ in Kcal/m.h.°C	0.1 to 0.5	0.1 to 0.5	0.1 to 0.5	0.1 to 0.5
ISO 178	Modulus of elasticity in Mpa	≥ 10 000	≥ 9 000	≥ 9 000	≥ 10 000
ISO 178	Bending strength in Mpa	≥ 100	≥ 80	≥ 80	≥ 100
ISO R527	Tensile strength in Mpa	≥ 70	≥ 60	≥ 60	≥ 70
	Chlorine content in %	0	0	0	0
	Nitrogen content (depending on decors in g/m)	100 to 200	100 to 200	100 to 200	100 to 200
	Hygienic surface	authorised	authorised	authorised	authorised (no certificate)

Placage Compact M1 fire retardant grade: contact Polyrey.

HEALTH & SAFETY INFORMATION
POLYREY DECORATIVE LAMINATES

This information outlines the precautions which should be taken in the handling, processing, and fabrication of decorative laminates. It has been prepared in accordance with the format developed by the British Plastics Federation to comply with Section 6 of the Health & Safety at Work Act, and with reference to Guidance Note G.S.8. -"Articles and Substances for use at Work".

1. Products

The materials referred to are melamine surfaced high pressure decorative laminates. They are supplied in sheet form in a variety of sizes, thicknesses, and surface finishes. Laminates basically consist of paper and thermo-hardening synthetic resins. Irreversible chemical bonds are formed between resin molecules in the constituent layers of paper during the curing process which occurs under conditions of high pressure and temperature. The resins used are the reaction products of phenol and formaldehyde, urea and formaldehyde, and melamine and formaldehyde, and are controlled to impart the required characteristics of wear, stain, impact, and fire resistance, and mechanical strength and formability in the finished laminate.

Decorative laminates are essentially for surfacing and may be bonded to almost any substrate, the most common being chipboard, plywood, hardboard, aluminium, and mineral based.

Polyrey laminates do not contain asbestos.

2. Handling and Storage

Laminates are chemically stable at normal temperatures and are no hazard under normal storage conditions. They are usually delivered banded on pallets which are suitable for transporting the load to and from stores by fork lift truck. Normal precautions should be taken to avoid injuries in transport and handling from unstable stacks and loads, incorrect lifting methods, and driving practices. The weight of a pallet depends on the size, number of sheets, and grade, but a useful guide in the calculation of a load is half a lb. per sq. ft. for a 1.3 mm laminate.

All laminates have a hard surface, (some may be smooth), and precautions (e.g. strapping) should be taken to avoid accidental slippage of stacked material in storage or transport.

Precautions should be taken to avoid cut injuries caused by sharp and burred edges. Broken laminates are particularly dangerous in this respect, and the danger can be lessened by taping the break. Gloves should always be worn when handling laminates. Displaced sheets in a stack are also hazardous, particularly at face level, and they should be picked up as they are very slippery when face down on a concrete floor.

3. Fire Precautions

Laminates are difficult to ignite and are not hazardous as a potential source of ignition, but in a conflagration, they will contribute to the fire. The hazard relating to smoke obscuration and noxious gases from a fire derives mainly from the flame in the room which will ignite first and burn vigorously. Items which are difficult to ignite and which have a low surface spread of flame will contribute much less to the smoke obscuration and noxious gas hazard. All organic products, whether synthetically produced - like plastics, or naturally occurring - such as wood or wool, will produce gases of varying composition, depending on the conditions under which burning takes place. The toxic gas most commonly found in fire gases from organic materials is carbon monoxide. The presence of elements other than carbon, hydrogen and oxygen in plastics can result in the production of other toxic gases. In the case of high pressure decorative laminates, if any other gases are released, the amounts will be extremely small, and the effects of carbon monoxide and oxygen depletion will far outweigh the dangers from such trace quantities.

Normal fire fighting procedures should be followed, including the wearing of breathing apparatus. Water and dry powder extinguishants are particularly suitable but CO_2 and Halon can also be used, the choice depending on the circumstances.

Finely divided dust arising from the fabrication of laminates (i.e. sanding or sawing) are a potential source of explosion and combustion, and the propagation of flame in dust clouds and accumulations is very rapid.

Care must be taken in the design and servicing of pneumatic handling and extraction systems to avoid explosive conditions. Explosion relief and isolation should be provided and potential ignition sources eliminated.

In all cases, expert advice should be obtained. A very useful reference on this subject is booklet No.22 in the Health & Safety at Work series - "Dust Explosions in Factories" obtainable from HM Stationary Office.

4. Machining and Fabrication

Machining of laminates by sawing or grinding may generate dust and noise. Local exhaust ventilation should be provided at points where excessive dust occurs and the comments made in paragraph 3 noted in the design of such systems. The properties of substrates to which the laminate may be bonded must also be taken into consideration when assessing machining hazards. The working of aluminium/laminate composite board requires particular care, as any fine dust generated is highly explosive and requires special precautions. It should not be fed into central dust collecting systems with other materials.

Care should be taken to protect the eyes from splinters and dust and cuts, and the "Protection of Eyes Regulations" must be met.

Excessive noise is likely to occur during grinding and sawing and suitable precautions (i.e. screens and ear protection) should be taken. Reference should be made to the publication "Code of Practice for reducing the exposure of Employed Persons to Noise", which is available from HM Stationary Office.

5. Health & Environmental Aspects

Decorative laminates are fully cured and chemically inert. They are not classified as toxic or harmful. If finely ground during fabrication, the accidental inhalation of small quantities of dust need not be cause for concern, but in all cases where the machining generates large scale airborne dust particles, dust masks and local exhaust ventilation should be provided to ensure dust is directed away from the breathing zone of the operator.

Most powders can cause irritation with persistent direct contact with the skin. The sensitivity of individuals varies considerably, but a few may develop non-infective industrial dermatitis. Problems of this nature can invariably be avoided by simple basic precautions, such as the use of dust masks, gloves, overalls, and care with personal hygiene. Properly dispensed pre-work barrier creams, soaps, washing facilities, and after-work conditioning creams will prove effective. In the exceptional case of a person with an allergic sensitivity to the dust, the only remedy is to avoid all contact at any level of exposure. Professional medical advice should be obtained in such cases.

There is no measurable fume or reactive constituent in the laminate.

6. Product Information

Technical literature is available describing the properties and characteristics of each grade of laminate and the applications and recommended fabrication methods. Users should be familiar with the contents of this literature. If there is any doubt, further information and advice should be requested.

7. Waste Disposal

Much of the content and recommendations in sections 3 to 6 apply equally to waste disposal.

In general, waste may be disposed of by controlled incineration or burial, but the requirements of the "Control of Pollution Act" should be observed.

The material is not classified as a "notifiable" waste