

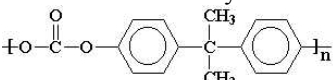
MATERIAL SAFETY DATA SHEET RIGID POLYCARBONATE SHEETS

DATE OF ISSUE: 25 December 2000
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This Safety Data Sheet conforms to EC Directive 91/155/EEC

PALRAM urges the recipient of this Material Safety Data Sheet to study it carefully to become aware of hazards, if any, of the product involved. In the interest of safety it is recommended (1) notify your employees, agents and contractors of the relevant information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your customers to inform their employees and customers as well.

1. IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY

1.1. IDENTIFICATION OF THE SUBSTANCE OR PREPARATION

PALTUF, PALSUN, PALSUN+, DYNAGLAS, SUNTUF, SUNTUF+, SUNSKY, SUNLITE	:	TRADE NAMES
Rigid Polycarbonate sheets	:	PRODUCT NAME
Polycarbonate Homopolymer	:	CHEMICAL NAME
Polycarbonate	:	CHEMICAL FAMILY
	:	FORMULA
25307-45-0	:	CAS number
None	:	UN number
X1017917-2	:	ACX number
not listed	:	RTECS
PC, Bisphenol-A-Polycarbonate, Poly(Bisphenol-A carbonate)	:	SYNONIMS
HEALTH=0, FIRE=1, REACTIVITY=0	:	NFPA RATINGS

1.2. COMPANY IDENTIFICATION

PALRAM INDUSTRIES (1990) LTD.
Ramat Yohanan
30035, ISRAEL
Fax: 972 4 8444 012 Tel: 972 4 8459 900

1.3. EMERGENCY TELEPHONE NUMBERS

E-mail: AlexM@paltough.com Fax: 972 4 8459 910 Tel: 972 4 8459 993 ISRAEL:
call your nearest poison control center. Local:

2. COMPOSITION / INFORMATION OF INGREDIENTS

Main polymer: Poly (Bisphenol-A-carbonate) – approximately 100 wt%.
Pigments and additives used to enhance specific properties are encapsulated in the polymer resin matter.
No cadmium, or other heavy metals based pigments or stabilizers used. This product does not contain reportable hazardous ingredients as defined by OSHA Hazard Communication Standard.

3. HAZARDS IDENTIFICATION

No particular hazards known.

3.1. HEALTH HAZARD DATA



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3.1.1 EFFECTS OF A SINGLE OVEREXPOSURE

non-relevant	:	Swallowing
non-relevant	:	Skin absorption
non-relevant	:	Inhalation
exposure is not expected to cause adverse health effects	:	Skin contact
non-relevant	:	Eye contact

None currently known
None currently known
None currently known

3.1.2 EFFECTS OF A REPEATED OVEREXPOSURE -

3.1.3 MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE -

3.1.4 OTHER EFFECTS OF OVEREXPOSURE -

4. FIRST AID MEASURES

In general handling the material will not cause accidents.

4.1. INHALATION

Route of entry – inhalation: No

If exposed to combustion fumes in high concentration - bring victim to fresh air. Medical attention needed.

4.2. INGESTION

Route of entry – ingestion: No

4.3. SKIN CONTACT

Burns resulting from accidental contact with molten material must be flushed immediately with cold water. Do not remove the polymer from the skin. Do not use solvent for removal. Medical attention needed.

4.4. SKIN ABSORPTION

Route of entry – skin: No

4.5. EYE CONTACT

Like any foreign body, can cause mechanical irritation. Remove contact lenses at once. Immediately flush eyes well with copious quantities of water or normal saline for at least 20-30 minutes. If irritation persists, consult physician.

4.6. NOTES FOR PHYSICIAN

There are no specific notes.

5. FIRE FIGHTING MEASURES

This material burns with difficulty and generally requires a continuous external flame source to sustain combustion. Without flashover fire conditions it will tend to extinguish it. When forced to burn it will produce a sooty fire.

Main products of combustion are carbon dioxide and carbon monoxide. Some flame-retardant grades will evolve trace quantities of hydrogen bromide on combustion.

Combustion products have been found in independent tests to be essentially non-corrosive.



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5.1. EXTINGUISHING MEDIA

Water spray or foam. CO₂ is less recommended due to lack of cooling capacity.

5.2. EXTINGUISHING MEDIA TO AVOID

No information currently available.

5.3. SPECIAL FIRE FIGHTING PROCEDURES

Personnel without suitable respiratory apparatus should leave the affected area to prevent exposure to toxic or combustible gases.

5.4. SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Positive-pressure self-contained breathing apparatus, protective clothing, gas mask approved for acid vapours.

5.5. UNUSUAL FIRE AND EXPLOSION HAZARDS

Hazardous combustion products may include intense heat, dense black smoke, carbon dioxide, carbon monoxide and hydrocarbon fragments. Combustion products/processing fumes may include trace levels of phenol, alkylphenols, and diarylcarbonates.

Soot emitted when PC is forced to burn may obscure visibility.

During combustion the base resin does **not** produce hydrogen cyanide, phosgene, acrolein, hydrogen chloride or sulfur dioxide.

The material is not sensitive to static discharge.

Static electricity discharge sparks possible at handling – avoid vicinity of static discharge sensitive materials.

6. ACCIDENTAL RELEASE MEASURES

No special precautions and no personal protective equipment needed. Collect mechanically for disposal.

7. HANDLING AND STORAGE

7.1. HANDLING

General handling precautions

Avoid mechanical contact with eyes. Use good industrial hygiene practices. Provide adequate ventilation. Secondary operations such as grinding, sanding or sawing may produce a dust explosion hazard. Use aggressive housekeeping activities to prevent dust accumulation; employ bonding, grounding, venting and explosion relief provisions in accordance with accepted engineering practices.

Ventilation

General (mechanical) room ventilation is expected to be satisfactory where this product is stored and handled.

Other precautions

No explosion hazard. In the event of fire, cool and overlap product with water.

The material is not sensitive to static discharge. Static electricity discharge sparks possible during handling. Avoid contact or vicinity of flammable materials.



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7.2. STORAGE

Store in a cool shady area. No special technical protective measures required.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. EXPOSURE LIMITS

No occupational exposure limits established by OSHA, ACGIH, or NIOSH.

8.2. PERSONAL PROTECTION

	No special protection needed	Respiratory protection
Hand protection / protection gloves	: No special protection needed	
Eye protection	: No special protection needed	
Other protective equipment/measures	: No special protection needed	

9. PHYSICAL AND CHEMICAL PROPERTIES

flat or corrugated plastic sheets	:	APPEARANCE
solid	:	PHYSICAL STATE
clear or coloured	:	COLOUR
none	:	ODOR
1.2 gr/cm ³	:	DENSITY
T _g =140-150°C, DSC according to ASTM D 792	:	CHANGE IN STATE
none	:	BOILING POINT, 760 Hg
not relevant	:	VISCOSITY
none	:	SOLUBILITY IN WATER:
not relevant	:	pH VALUE
>450°C ASTM D 1929	:	FLASH POINT
>650°C ASTM D 1921	:	AUTOIGNITION TEMP.
none	:	FLAMMABILITY LIMIT
none	:	EXPLOSION LIMITS
not relevant	:	EVAPORATION RATE
not relevant	:	PERCENT VOLATILES

10. STABILITY AND REACTIVITY

10.1. STABILITY

Stable.

Conditions to avoid

Excessive heat, or open flame.

Incompatible materials

Oxidizing agents or strong mineral acids can cause reaction.

Thermal decomposition



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Caused by fire or overheating during improper processing. Fumes damaging to health may be released.

Hazardous decomposition products

- Carbon monoxide (CO) - is highly toxic if inhaled, present in combustion fumes of all organic materials;
- Carbon dioxide (CO₂) - in sufficient concentrations can act as an asphyxiant, present in combustion fumes of all organic materials;

10.2. REACTIVITY

- Will not occur : **Hazardous polymerization**
- None. : **Hazardous reactions**

11. TOXICOLOGICAL INFORMATION

Independent testing and many years of experience confirm that this material has very low toxicity. The International Agency for Research on Cancer does not list this material as a confirmed or suspected carcinogen. In rats an acute LD₅₀ > 5 gr/kg of body weight. Industrial hygiene studies have shown that under normal and expected conditions of use of PC materials, exposures are well below applicable limits.

11.1. ACUTE TOXICOLOGICAL INFORMATION

- oral LD₅₀ (rat) > 5g/kg, estimated. : **Acute oral toxicity**
- processing fumes from similar products are not considered toxic. In acute : **Acute vapour exposure**
- inhalation tests, laboratory rats were exposed to processing fumes at concentrations exaggerating those that would likely occur in workplace situations. No death or signs of toxicity, except transient irritancy in some cases, were noted during the 6-hour fume exposure tests. There were no distinct or consistent treatment related tissue or organ changes noted in gross necropsies.
- product not considered primary skin irritant. Draize Skin Primary Irritation : **Primary skin irritation**
- Score (rabbit) for similar products, in finely divided form, for a 24-hour exposure is 0.
- product not considered primary irritant. When similar products, in finely : **Eye irritation**
- divided form, were placed into the eyes of rabbits, slight transient redness or discharge occurred – consistent with the expected slightly abrasive nature of product.
- Not expected to be a skin sensitized based on results of Modified Buehler : **Sensitization**
- Guinea Pig Sensitization Test from similar products. Dermal LD₅₀ (rabbit) > 2g/kg, estimate.
- in sub-chronic testing, the base resin was considered physiologically inert : **Chronic effects**
- when fed to rats for 8 weeks at a dietary level of 6%.
- not tested : - NTP **Carcinogenicity**
- not listed : - IARC
- not regulated : - OSHA

11.2. OTHER TOXICOLOGICAL INFORMATION



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No known toxicological effects with normal use. For heating see section 10.

11.3. ADDITIONAL INFORMATION

No additional toxicity information currently available.

12. ECOLOGICAL INFORMATION

12.1. PERSISTANCE AND DEGRADABILITY

Detailed studies have not been conducted concerning the environmental fate of the product. According to present knowledge no unfavorable ecological effects are to be expected. Not generally hazardous to water. Insoluble in water, non-toxic solid.

No information currently available : **Mobility**
Biodegradation period - tens of years. : **Persistence and biodegradability**
No information currently available. : **Bioaccumulative potential**

12.2. ENVIRONMENTAL RISCS

No hazard expectation to terrestrial or aquatic flora and fauna.

: LD₅₀ (rats) > 5 gr/kg **Ecotoxicity**
: IC₅₀ (bacterial inhibition) - no data available
: LC₅₀ (daphnia magna) - no data available **Aquatic toxicity**
: LC₅₀ (fathead minnow – fish) - no data available

12.3. OTHER INFORMATION

All available ecological data have been taken into account for the development of the hazard and precautionary information contained in this safety data.

13. DISPOSAL CONSIDERATIONS

The product is not considered hazardous under current EPA hazardous waste regulations.

Recycling is the preferred method of disposal.

Alternatively, the product may be disposed of in an approved landfill.

Incineration in accordance with federal, state and local regulations – collected processing fume condensates and incinerator ash should be tested to determine waste classification.

All wastes should be evaluated in conjunction with applicable solid and hazardous waste regulations, Toxicity Characteristic Leaching Procedures (TCLP), and disposed of as appropriate.

This product does not contain any cadmium or other heavy metal pigments or stabilizers.

It is the user's responsibility to dispose of all wastes in accordance with all national and local regulations at properly permitted or authorized facilities.

14. TRANSPORT INFORMATION

: ZZZ **DOT PSN Code**
: Not regulated by this mode of transportation **DOT Proper Shipping Name**
: ZZZ **IMO PSN Code**



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	: Not regulated by this mode of transportation	IMO Proper Shipping Name
	: ZZZ	IATA PSN Code
	: Not regulated by this mode of transportation	IATA Proper Shipping Name
	: ZZZ	AFI PSN Code
	: Not regulated by this mode of transportation	AFI Proper Shipping Name
	: Not currently regulated under Department of Transportation regulations	Additional transportation data
Labeling	: No labeling is required in accordance with the EEC directives	
Placarding	: No placarding is required in accordance with the EEC directives	
Special transport requirements	: None	
Packaging	: Avoid dark-colored packaging to prevent heat distortion	

The product is classified as a non-hazardous material in the meaning of transport regulations.

15. REGULATORY INFORMATION

With regards to dust formed as a consequence of mechanical treatments, the appropriate regulations value limits for fine dust must be observed: MAC value (fine dust) – 5mg/m³.

16. OTHER INFORMATION

RECOMMENDED USES AND RESTRICTIONS

Please consult the relevant product and/or application information for this product.

FURTHER INFORMATION

Additional information on this product may be obtained by calling your PALRAM Sales or Customer Service Contact.

THE ABOVE INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY IN REGARD TO THE PRODUCT PROPERTIES, NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.



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