



SAFETY DATA SHEET

| | |
|---|---|
| 1. Identification of Article and the Company/Undertaking | |
| Article names: | DuPont para-aramid products - including those licensed under the KEVLAR [®] brand name |
| Supplier: | Du Pont de Nemours International S.A., 2, Chemin du Pavillon, P.O. Box 50, CH-1218, Le Grand Saconnex, Geneva / Switzerland (+41) - 22 - 717 51 11 |
| 2. Composition/Information on Ingredients | |
| Presentation: | para-aramid (AR) fibre and derived products |
| Chemical nature of product: | poly-(paraphenylene-terephthalamide) CAS number: 26125-61-1 (with finish and traces of water) |
| 3. Hazards Identification | |
| Most important hazards: | None |
| Specific hazards (<i>processing</i>): | Vigorous abrasion of para-aramid products can yield microscopic fibrous dust particles. Prolonged inhalation of fine fibrous dust at high concentrations may cause lung damage. |
| 4. First Aid Measures | |
| General advice: | Treat eye damage, cuts, burns, skin irritation and other skin lesions symptomatically - like other injuries of the same kind. |
| Inhalation (<i>fine fibrous dust</i>): | Move subject into fresh air. |
| Ingestion: | No medical treatment required. |
| 5. Fire-Fighting Measures | |
| Suitable extinguishing media: | All usual fire extinguishing media are suitable. |
| Specific hazards: | None: material is flame resistant (LOI = 29%) |
| Special protective equipment for fire-fighters: | Autonomous respiratory protection to avoid inhalation of fumes in poorly ventilated areas. |
| Special methods: | None |
| 6. Accidental Release Measures | |
| Personal precautions: | None |
| Environmental precautions: | None |

**7. Handling and Storage**

| | |
|---------------------------------|--|
| Handling: | No particular measures are required. |
| Technical measures/Precautions: | Fibre dust and fly should be removed with approved industrial vacuum cleaning equipment. Compressed air cleaning increases airborne dust levels and must be avoided. |
| Storage: | The moisture content of pulp products must be maintained during storage. DuPont's other para-aramid products require no particular storage precautions. |

8. Exposure Controls/Personal Protection

| | |
|--------------------------------|--|
| Engineering measures: | Use proper workplace ventilation. Avoid accumulation and discharges of static electricity in the presence of flammable/explosive materials. |
| Control parameters: | See local regulations. In their absence, it is recommended that the average concentration of respirable fibre-shaped particles (RFP's) derived from para-aramid products be maintained below 2 fibrils per ml of work place air. |
| Personal protection equipment: | |
| Respiratory protection: | Respirators - only if control limits are exceeded and processing conditions require it (poor ventilation, copious abrasion-induced fine dust) |
| Hand protection: | Gloves - if processing conditions require |
| Eye protection: | Goggles with side shields - if processing conditions require |
| Hygiene measures: | None |

9. Physical and Chemical Properties

| | |
|---------------------------------|---|
| Form: | Multi-filament yarn, staple fibre, fabrics, floc and/or pulp. |
| Colour: | Golden yellow |
| Odour: | None |
| Melting point/range: | Does not melt |
| Decomposition temperature: | Carbonisation/pyrolysis start above 300-350 °C |
| Solubility in water: | Not soluble |
| Solubility in organic solvents: | Not soluble |
| Solvent content: | None |
| Relative density: | 1.44-1.45 g/cm ³ (@ 20 °C) |

**10. Stability and Reactivity**

| | |
|-----------------------------------|---|
| Stability: | DuPont para-aramid products are highly resistant to chemicals and heat. |
| Conditions to avoid: | Strong acids/bases |
| Hazardous decomposition products: | Small quantities of carbon monoxide, ev. also traces of nitrogen oxides and hydrocyanic acid. |

11. Toxicological Information

| | |
|-------------------|---|
| Acute Toxicity: | LD ₅₀ > 7500 mg/kg orally in the rat. |
| Sensitization: | None |
| Chronic Toxicity: | A 2-year inhalation study with rats using specially prepared respirable fibrous dust did not result in any lung damage at 2.5 respirable fibre-shaped particles (RFP)/ml. The onset of fibrotic changes in the lung were barely detectable at concentrations of 25 RFP/ml. At extremely high concentrations (100 and 400 RFP/ml) the rats developed unequivocal signs of lung overloading and fibroses. At these concentrations some of the female rats (but none of the males) also developed benign proliferative keratin (horn) cysts, in addition to fibroses, in the lung. |
| Human experience: | Airborne coarse para-aramid fibre dust can cause a transitory, mild irritation of the skin, the mucosa and/or the eyes. There are no other known negative effects on man. |

12. Ecological Information

| | |
|--------------------------------|---|
| Mobility: | Not applicable |
| Persistence and degradability: | Para-aramid products are stable, persistent and resist bacterial degradation. |
| Bioaccumulation: | Not applicable |
| Ecotoxicity effects: | None |

13. Disposal Considerations

| | |
|-------------------------|---|
| Uncontaminated product: | Can be disposed of as solid waste or incinerated in a suitable installation - subject to local regulations. |
|-------------------------|---|



14. Transport Information

DuPont para-aramid products (articles) are **not dangerous** in terms of national and international transportation regulations.

15. Regulatory Information

These products are not regulated by EU Directive 67/548, as amended, nor by 1999/45/EG, nor by any derived national statutes and they do not need to be labelled.

In some countries the workplace exposure to respirable fibre-shaped particles (RFP's) - that can be formed during abrasive processing of para-aramid products - is regulated. In France, Spain and the Netherlands the concentration of these RFP's should not exceed an average of 1 fibril/ml during an 8-hour day, in the UK an OES of 0.5 fibril/ml is applicable.

16. Other Information

A special safety information bulletin for DuPont para-aramid products is available on request. This bulletin goes into more detail - particularly on the inhalation toxicology research that has been carried out - and is regularly updated. References are given.

Note that some para-aramid products may be blended with DuPont's meta-aramid products or other materials to optimise performance in specific applications. It is recommended that the corresponding Safety Data Sheets for these materials are also consulted.

Finish is applied to most fibres and yarns as a processing aid. This finish and most overlay finishes, sizes, or waxes can be removed in an aqueous medium if this becomes necessary. The fibre manufacturer's recommendations for processing and use should be followed.

It is recommended that additional information be requested if an unusual application of synthetic fibres is intended.

The information given here is the best available on the date of issue. It relates only to the specific products referred to herein and may not be applicable to blended or processed product, nor does it constitute a contractual description of product properties.

Do not use commercial grades of DuPont's fibres in medical applications involving permanent or temporary implantation in the human body or contact with internal body fluids or tissues without documented authorisation by DuPont.

Telephone Numbers of DuPont Emergency Response Centres:

| | |
|-----------------|----------------------------------|
| Dansk: | +46 - (0) 8 - 454 22 22 |
| Deutsch: | +49 - (0) 6102 -17 777 |
| English: | +44 - (0) 2871 - 86 13 13 |
| Español: | +34 - 985 124 395 |
| Français: | +33 - (0) 328 273 700 |
| Italiano: | +39 - 0471 - 20 25 71 |
| Nederlands: | +31 - (0) 78 - 630 18 99 |
| Norsk: | +46 - (0) 8 - 454 22 22 |
| Russian: | + 7 - 095 - 937 6450 |
| Suomi/Svenska: | +46 - (0) 8 - 454 22 22 |