

## Atlan' tol NUCLEAR



NON - FOAMING  
 NO FLASH POINT FREEZING  
 POINT - 52° C pH: = 6,5  
 CHLORIDE: 15 to 20 ppm  
 (~ No trace)  
 Formulation Cloud Point: 35°C



NUCLEAR CLEANING AND DECONTAMINATION LIQUID, especially devised for the cleaning of several parts and for the maintenance in the " HOT AREA " of nuclear power stations. It is the SOLUTION to problems caused during the recuperation of waste waters.

An oil and grease DISPERSANT , excellent concentrated cleaner, on a tension-active biodegradable basis following the OCDE standards, which does not contain hydrocarbons nor chlorides.

Meets the REQUIREMENTS for HOT AREA, in the cleaning and decontamination of walls, floors, windows, basins, containers, several machinery and parts , ensuring an appreciable result. Evacuates the superficial radioactivity from all surfaces.

Officially reknowned as valuable nuclear decontaminating agent by " A.E.A. " technology decommissioning and Waste Management ( Winfrith-Dorchester -UK ) (see enclosures).

- perfect SOIL DEGREASER, eliminating the danger of sliding and falling;
- POWERFUL CLEANER of atmospheric dusts with evacuation of nuclear residues (isotopes);
- EVACUATION of rinsing waters to the waste water, without any foam problems;
- TOTALLY NON FLAMMABLE, avoiding therefore fire or explosion danger during the evaporation process of the waste water and the gas recuperation when isolating;
- highly ECOLOGICAL liquid :
  - biodegradable
  - non corrosive
  - non toxic
  - colourless
  - without danger (skin contact) ( unless for allergic people )
  - without danger to use in close areas
  - stable in storage

### USE :

Either pure, by pulverisation onto the object or place to be decontaminated or cleaned, or in dilution ( 1 part of product to 10 parts water ). May also be used in premixing with water for projection by means of firehouse for inst. or mechanical cleaners.

The emulsion of oil and grease happens in a few seconds (splitting of the molecular mass) The result is perfectly biodegradable and fully absorbed by micro-organisms; it may be disposed of through the normal channels (drains, gutters, etc...) for so far the treated residues allow it ( per example cleaning in non contaminated areas ).

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 These information are based on our present state of knowledge and are intended to provide general and advisory notes on our products and their uses without undertaking any liability. It should not therefore be construed as guaranteeing specific properties of the products described or their suitability for a particular application. If necessary the recommendations regarding the use of our products should be modified to conform with local work and hygiene conditions as well as with materials employed. Before utilisation, users have to make self all needed trial testing. Any existing industrial property rights must be observed. The quality of our products is guaranteed under our General conditions of Sale.  
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## Atlan' tol NUCLEAR

<u>Density</u>	<i>0,9871 (ASTMD 1298-67)</i>
<u>Flash point</u>	<i>None (ASTM 56-64)</i>
<u>Viscosity</u>	<i>40 to 50 cp.at 20°C (ASTM 445-74 :63,6SUS)</i>
<u>Freezing point</u>	<i>-60° C (ASTM D 97-68)</i>
<u>pH</u>	<i>6 to 6,5 (ASTM D1293-65)-</i>
<u>Chloride</u>	<i>15 to 20 ppm ( ~no trace )</i>
<u>Packaging</u>	<i>plastic cans of 25 and 200 litres</i>



### References and Testing

- " A.E.A. " Technology Decommissioning and Waste Management (Winfrith – Dorchester – UK ).
- **Atlan' tol NUCLEAR** has passed with success the tests made early 1986 by the Laboratories of the Nuclear Power Station of Doel (Belgium). Formulated in our Laboratories in Gent (Belgium).
- DECONTAMINATION (BARC and MAPS tests)  
factor 10
- CORROSION ON METALS (BARCC and MAPS tests) :  
corrosion after soaking in a bath during 27 hours at a temperature of 32° C and a dilution of 10% **Atlan' tol NUCLEAR** in demineralized water :  
STAINLESS STEEL : 0,0011 gr.  
CARBONE STEEL : 0,0125 gr.

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### COMPLEMENTARY NOTE FOR USE

Concerning the recuperation of waste and contaminated waters, for :

1. Cleaning, degreasing and decontamination of all mechanical parts or other ( either charged in isotopes or not ).

**Atlan' tol NUCLEAR** will remove the *superficial radioactive charge* and will allow reutilization of the parts or their take out in total security outside the primary Area.

**Atlan' tol NUCLEAR** will be useful in the decontamination by immersion of heavy radioactive parts.

Added to the immersion bath at a ratio of 0,5 to 1% ( see system " Nuclear services " ) the product will avoid the *recontamination during* the take out of the bath : by destroying all particles ( grease, silicone, etc...) Floating at the surface and keep them in suspension.

2. The cleaning, degreasing and the decontamination of floors, windows, basins, containers, etc.. of the primary Area.  
Avoiding toxic products such as acetone.

3. Outside the primary Area, **Atlan' tol NUCLEAR** has proven its excellent action in turbines cleaning.

Its efficiency and non toxicity make it a particularly appreciated agent whereas maintenance works are concerned.

## Atlan' tol NUCLEAR

### DECONTAMINATION TESTS

1. on " 2PHT pump – mechanical seal of U "

before decontamination : between 5 and 20 mr/hr  
soaking during 24 hours in a 10% solution of

**Atlan'tol NUCLEAR** at a temperature of 32 °C.

after-decontamination : between 1 and 2 mr/hr factor of  
decontamination rate : approximately 10

2. on " Ram-head of fuelling machine (SS-17-7 pH )  
same results.

### METAL CORROSION TESTS

Stainless steel and carbon steel

Loss of weight in gr. after 27 hours

Rate of corrosion in mm/ year

solution at 10% **Atlan'tol NUCLEAR** on demineralized water

room temperature : 32° C.

Type of steel	Rate of corrosion in mm/year	Loss of weight in gr.
stainless steel	0,01540	0,0011
carbon steel	0,10560	0,0125

These results show an extremely low corrosion rate.

### IMPORTANT REMARK

#### CHLORIDES TEST METHOD

The titration of chlorides by Mohr's or by Mercuric Thiocyanate Method usually gives disparate or non representative results.

This is due to interference's caused by the liquid..

We strongly advice Ion Chromatography Method which will certainly be valuable and representative

# Atlan' tol NUCLEAR



## 1. Chemical and physical specifications

<u>Freezing point</u> :	- 52 °C (ASTM D 97-68)
<u>Flash point</u> :	non - constant temperature at 96° C (ASTM 56-64)
<u>Viscosity</u> :	63,6 SUS at 37° C (ASTM 445-74)
<u>Specific weight</u> :	0,9871 (ASTM D 1298-67)
<u>pH</u> :	approx. 6,5 (ASTM D 1293-65)
<u>Mixibility</u> :	- at 25° C : perfect (Fed.Reg.US Vol. 40 N° 28-2003,3-4,15) - at 0° C : perfect (idem)

Analysis	Unit	Result	Method
AS	mg/l	> 0,100	HN03-HC104 spectrophotometry
CD	"	0,005	spectrophotometry
total CR	"	0,010	spectrophotometry
CU	"	0,040	spectrophotometry
HG	"	> 0,010	HN03 - HC 104 spectrophotometry
PB	"	0,130	spectrophotometry
NI	"	0,040	spectrophotometry
ZN	"	1,500	spectrophotometry
CN	"	> 0,100	distillation and colourmetry

## Atlan' tol NUCLEAR



### 2. Toxicity

Types	Mixture and dilution *	Results
PIMEPHALES PROMELAS FINDULUS HETEROCLITUS	1 : 10 1 : 10	TL 50(96h) : 209ppm TL 50(96h) : 264ppm
* mixture of 1 part of <b>Atlan'tol NUCLEAR</b> and 10 parts of crude oil.		

#### Property of the crude oil sample :

gravity	35,1
sulphur	0,03
carbon	0,0034
ash	-
sediments	-
water	-
viscosity CS 50C	2,64
flash point PMCC	84° C
freeze point	- 28° C

### 3. Chlorides by Ion Chromatography

#### A. PRINCIPLE:

Procedure for obtaining representative sample:

- 1) Wash the sample bottle with ultra pure water.
- 2) Rinse 2 times this sample bottle with ultra pure water.
- 3) Take the sample in the bottle.

Procedure for IC analysis:

- 1) Rinse the IC sample bottle with ultra pure water.
- 2) Rinse the same bottle 2 times with sample.
- 3) Connect the sample bottle to iron chromatograph auto-sampler.
- 4) Check the chloride content as shown by IC chromatogram.

Result: Expected chloride content a less than 20 ppm



## Atlan' tol NUCLEAR



<u>Components</u> :	tension-active non ionic
<u>Odour</u> :	detergent
<u>Colour</u> :	clear
<u>Storage</u> :	unlimited preferably within limits of 50° C, until 80 to 90° in closed tanks.
<u>Gas forming</u> :	no
<u>Oxidation</u> :	no

## Atlan' tol NUCLEAR



<u>Explosion :</u>	none
<u>Inflammability :</u>	none
<u>Pathology :</u>	without pathological reaction ( skin, eyes respiratory tract, blood cells )
<u>Narcotic effect :</u>	none
<u>Value TLV50 :</u>	264 ppm
<u>First aid :</u>	breathing : – eye contact : rinse with water skin contact : rinse with water swallowing : call for a physician
<u>Prevention :</u>	no special measures, the product reacts like an ordinary detergent.
<u>Labelling :</u>	normal ( see attached )
<u>Packaging :</u>	plastic drums of 200 and 25 litres.
<u>Handling :</u>	normal, cleaning with water if leaking on the floors, with evacuation by normal channels ( drain or gutter ) biodegradable product.