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MATERIAL SAFETY DATA SHEET
(EUROPEAN ACCORDING TO 2001/58/EC)

MSDS NUMBER: INTUM2-5
DATE OF ISSUE: APRIL 2004

REVISION:
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FIREFLY INTUMESCENT PRODUCTS
(GRADES 102, 102B, 104, 104B, 105)

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1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY

1.1 CHEMICAL PRODUCT	TYPE 102, 102B INTUMESCENT SHEET TYPE 104 INTUMESCENT PAPER TYPE 104B INTUMESCENT PAPER TYPE 105 INTUMESCENT GRILLE
1.2 APPLICATION	EXPANDS WHEN HEATED. USED MAINLY IN FIRE PROTECTION AS A FIRE STOPPER.
1.3 COMPANY IDENTIFICATION	NORSEAL LTD NORSEAL HOUSE, REGENTS DRIVE PRUDHOE NORTHUMBERLAND, NE42 6PX, UK
1.4 EMERGENCY TELEPHONE NUMBER	+44 (0)1661 830088

2. COMPOSITION/INFORMATION ON INGREDIENTS

2.1 CHEMICAL DESCRIPTION	EXONERATED MINERAL FIBRE AND ORGANIC FIBRE WITH INTERCALATED GRAPHITE AND ORGANIC BINDER (LATEX).		
2.2 HAZARDOUS INGREDIENTS	<u>INGREDIENT</u>	<u>CAS NO</u>	<u>WT %</u>
	BALL CLAY (QUARTZ)	14808-60-7	28-44 Depending on Grade

3. HAZARD IDENTIFICATION

“CONTAINS RESPIRABLE FIBRES. CAN CAUSE SKIN IRRITATION”. HIGH DUST LEVELS MAY IRRITATE THE THROAT AND EYES.

4. FIRST AID MEASURES

4.1 EYE CONTACT	GENTLY IRRIGATE WITH CLEAN WATER FOR AT LEAST 15 MINUTES. MOVE EYEBALL AND KEEP EYELIDS WIDE OPEN AND APART WHILST IRRIGATING. OBTAIN MEDICAL ATTENTION IMMEDIATELY.
4.2 SKIN CONTACT	IF POSSIBLE VACUUM EXCESSIVE DUST FROM CLOTHES AS WELL AS SKIN, HAIR ETC. WASH AND CLEAN CONTAMINATED SKIN WITH SOAP AND CLEAN WATER.
4.3 INGESTION	IT IS NOT NORMALLY CONSIDERED THAT MINERAL FIBRE PRODUCTS WILL BE INGESTED, BUT IF SMALL QUANTITIES ARE INGESTED SEEK MEDICAL ADVICE.
4.4 INHALATION	AVOID BREATHING DUST. IF BREATHING DIFFICULTIES EXPERIENCED WHILST MACHINING, REMOVE TO FRESH AIR AND SEEK MEDICAL ADVICE

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5. FIRE FIGHTING MEASURES

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| 5.1 EXTINGUISHING MEDIA | IS NOT FLAMMABLE THEREFORE NOT APPLICABLE. |
| 5.2 FIRE AND EXPLOSION HAZARD | NOT APPLICABLE. |
| 5.3 PROTECTION MEASURES | NOT APPLICABLE. |
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6. ACCIDENTIAL RELEASE MEASURES

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| 6.1 PERSONAL PRECAUTIONS | PROTECTIVE CLOTHING SHOULD BE PROVIDED FOR WORKERS WHEN A SIGNIFICANT QUANTITY OF FIBRES ARE LIABLE TO BE DEPOSITED ON THEIR CLOTHING. CLOTHES SHOULD BE CLEANED BY A SUITABLE ORGANISATION. |
| 6.2 ENVIRONMENTAL | DUST FROM INTUMESCENT PRODUCTS SHOULD BE REMOVED BY VACUUM, IN A DIRECTION AWAY FROM THE OPERATOR, AT FREQUENT INTERVALS DURING WORK TO PREVENT THE ACCUMULATION OF DUST. WHERE VACUUMING IS NOT POSSIBLE THEN THE DUST MUST BE DAMPENED AND COLLECTED WHILST STILL DAMP. ALL DUST AND HARD WASTE SHOULD BE PLACED IN DOUBLE IMPERMEABLE, HEAVY GAUGE POLYTHENE SACKS OR BAGS WHICH SHOULD THEN BE SEALED. SUCH WASTE MUST BE DISPOSED OF AT AN AUTHORISED WASTE DISPOSAL SITE. OFF-CUTS SHOULD BE DISPOSED OF IN THE SAME MANNER. |
| 6.3 CLEANING UP | SEE SECTION 6.2. INDUSTRIAL TYPE VACUUM CLEANERS FITTED WITH 'H' TYPE FILTERS AND SUITBLE BAGS MUST BE USED. |
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7. STORAGE AND HANDLING

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| 7.1 STORAGE | BOTH MACHINED OR UNMACHINED ITEMS SHOULD BE PACKED TO PREVENT MOVEMENT AND ABRASION DURING TRANSIT AND ABSORPTION OF WATER. OTHERWISE NORMAL SAFE PRECAUTIONS FOR HANDLING CAN BE EMPLOYED. TO AVOID DAMAGE AND DISTORTION, STORE ON A SMOOTH LEVEL FOUNDATION. STORE FULLY SUPPORTED OFF THE GROUND IN A COOL DRY PLACE. PROTECT FROM EXCESSIVE HEAT. |
| 7.2 RECOMMENDED SHELF LIFE | LIKELY TO BE INDEFINITE UNDER NORMAL STORAGE CONDITIONS. |
| 7.3 HANDLING | NO SPECIAL PROTECTIVE MEASURES ARE NORMALLY REQUIRED. CARE SHOULD BE TAKEN NOT TO EXCEED THE SAFE WORKING LOADS OF LIFTING GEAR, HOISTS, STACKER TRUCKS, TRUCKS, SHELVING OR FLOORS. |
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 OCCUPATIONAL EXPOSURE LIMITS	<u>CHEMICAL</u>	<u>MEL/OES</u>
	EXONERATED MINERAL FIBRE	5 mg/m ³ inhalable, 2 f/ml airborne fibre limit 8 hour TWA (MEL)
	BALL CLAY (QUARTZ)	0.3 mg/m ³ (MEL)
8.2 ENGINEERING MEASURES	FIT AND USE APPROVED EXTRACTION SYSTEMS. LOCAL VENTILATION FOR MACHINING AREAS. IF DUST LEVELS ARE LIKELY TO EXCEED ACTION LIMITS, APPROVED RESPIRATORS MUST BE USED.	
8.3 PERSONAL PROTECTIVE	RESPIRATORY PROTECTION - SEE 8.2. HAND PROTECTION - GLOVES CAN BE USED IF DESIRED BUT THEY SHOULD NOT BE USED WITH ROTATING EQUIPMENT. BARRIER CREAM CAN BE USED. EYE PROTECTION - USE APPROVED EYE PROTECTION WHILST MACHINING. SKIN PROTECTION - NOT APPLICABLE, HOWEVER TO AID PERSONAL HYGIENE SUITABLE OVERALLS CAN BE WORN.	

9. PHYSICAL/CHEMICAL PROPERTIES

9.1 APPEARANCE	FIREFLY 102, 102B, ARE RIGID BEIGE/BLACK IN COLOUR FIREFLY 104 IS A PAPER, DARK GREY IN COLOUR. FIREFLY 104B IS A PAPER DARK GREY IN COLOUR. FIREFLY 105 IS A CORRUGATED CONSTRUCTION BEIGE/BLACK IN COLOUR.
9.2 ODOUR	N/A
9.3 PH	N/A
9.4 VISCOSITY	N/A
9.5 FREEZING POINT	N/A
9.6 FREEZE THAW RECOVERY	N/A
9.7 BOILING POINT	N/A
9.8 MELTING POINT	N/A BUT SEE MAXIMUM WORKING TEMPERATURE IN TENMAT'S TECHNICAL BROCHURES.
9.9 FLASH POINT	N/A
9.10 AUTO-FLAMMABILITY	N/A
9.11 EXPLOSIVE PROPERTIES	N/A
9.12 VAPOUR PRESSURE	N/A
9.13 VAPOUR DENSITY	N/A
9.14 RELATIVE DENSITY	800 kg/m ³ (FF104, 104B) 900 kg/m ³ (FF102, 102B), 850 kg/m ³ (105)
9.15 SOLUBILITY	N/A
9.16 PARTITION COEFFICIENT	N/A

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10. STABILITY AND REACTIVITY

10.1 STABILITY	CONSIDERED STABLE UNDER RELATIVELY HIGH TEMPERATURES AND PRESSURE, CONSULT TENMAT FOR APPLICATION SUITABILITY BEFORE USE. IF EXPOSED TO OTHER CHEMICALS REACTIVITY MUST BE CHECKED BEFORE USE.
10.2 CONDITIONS TO AVOID	INCOMPATIBLE CHEMICALS.
10.3 MATERIALS TO AVOID	CONSULT TENMAT.
10.4 RECOMMENDED MATERIALS FOR EQUIPMENT	NO SPECIAL REQUIREMENTS.
10.5 HAZARDOUS DECOMPOSITION PRODUCTS	RESIDUE WILL CONTAIN QUARTZ.

11. TOXICOLOGICAL INFORMATION

11.1 SHORT TERM EFFECTS	EYE CONTACT - SKIN CONTACT -	IRRITATION WHILST MOST PEOPLES SKIN BECOMES RESISTANT AFTER A PERIOD OF EXPOSURE, SOME NEED TO TAKE PRECAUTIONS TO PROTECT THEIR SKIN AND A SMALL NUMBER MAY HAVE TO MOVE TO OTHER WORK
	INGESTION - INHALATION -	N/A NOSE AND THROAT IRRITATION.
11.2 CHRONIC EFFECTS		AS MINERAL FIBRES ARE RESPIRABLE AND MAY BE RETAINED IN THE LUNGS, THERE IS THE POSSIBILITY OF LONG TERM DAMAGE FROM EXPOSURE TO HIGH LEVELS OF DUST. HOWEVER EXONERATED MINERAL FIBRES ARE MUCH MORE BIOSOLUBLE AND WILL DISAPPEAR EVEN MORE RAPIDLY THAN THE TRADITIONAL TYPES.

12. ECOLOGICAL INFORMATION

12.1 LC50	N/A.
12.2 COD	N/A.
12.3 BOD	N/A
12.4 OTHER	WILL ENDURE IN THE GROUND.

13. DISPOSAL CONSIDERATIONS

ALL INTUMESCENT PRODUCTS WASTE MUST BE DISPOSED OF AT AN AUTHORISED SITE SUITABLY PACKED AND LABELLED AS ALREADY INDICATED IN SECTION 6.2

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14. TRANSPORT INFORMATION

14.1 PACKAGING	PACK TO PREVENT ABRASION AND LIBERATION OF DUST.	
14.2 FREIGHT CLASSIFICATION	UN NUMBER -	N/A
	ADR NUMBER -	N/A
	IMDG CODE -	N/A
	PACKING GROUP -	N/A
	TREM CARD -	N/A

15. REGULATORY INFORMATION

15.1 C.P.L CLASSIFICATION	NONE (AS SUPPLIED CONDITION). RISK PHRASES - NONE. SAFETY PHRASES - NONE.
15.2 OTHER LEGISLATION	HEALTH & SAFETY AT WORK ACT 1974.
15.3 ADDITIONAL GUIDANCE	IF YOU PLAN TO CARRY OUT ANY CUTTING, SAWING, DRILLING, MACHINING OR SIMILAR ACTIVITIES PLEASE REFER TO SECTION 8 EXPOSURE CONTROL/PERSONAL PROTECTION.

16. OTHER INFORMATION

ALL GRADES CONTAIN GRAPHITE WHICH IS NOT RECOMMENDED FOR ELECTRICAL PURPOSES. NOTE THAT DUST FROM THESE PRODUCTS MAY COMPROMISE THE INTEGRITY OF ELECTRICAL/ELECTRONIC EQUIPMENT.

PRODUCTS WHICH HAVE BEEN USED AT ELEVATED TEMPERATURES (GREATER THAN 900°C) MAY UNDERGO PARTIAL CONVERSION TO CRISTOBALITE, A FORM OF CRYSTALLINE SILICA. THE MAXIMUM EXPOSURE LIMIT (MEL) FOR MINERAL DUSTS CONTAINING CRISTOBALITE IS 0.3 mg/m³.
