SYNERGY
INNOVATIVE DIVING EQUIPMENT TRADING LLC
INSPIRING • ENGINEERING • INNOVATION
UAE • UK • INDIA • AZERBAIJAN

ISO 45001:2018 OHSMS

SOFNOLIME-SODASORB

Medical-grade SODASORB® (soda lime USP-NF) is designed to provide CO2 absorption, color indication contrast, and resistance to dusting. SODASORB® is specially designed to provide exceptional CO2 absorption performance, superior color indication contrast, and optimal resistance to dusting. SODASORB® absorbent is intended for use in anesthesia circle systems and respiratory therapy equipment for the purpose of removing exhaled carbon dioxide.

SOFNOLIME-SODASORB

T E C H N I C A L D A T A S H E E T

Carbon Dioxide Absorption

Sofnolime® for Commercial and Leisure Diving

Commercial and leisure diving grade Sofnolime® is a carbon dioxide absorbent, optimised for the removal of carbon dioxide from breathable gas in diving rebreathers.

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Applications

Diving grade Sofnolime® absorbs carbon dioxide ensuring a breathable atmosphere is maintained. It is optimised for the removal of carbon dioxide from recirculated air/ nitrox/heliox in rebreathers and saturation dive systems.

- Commercial and leisure diving rebreathers
- Dive chamber / bell scrubbers / gas reclaim systems
- Dive gas conditioning units

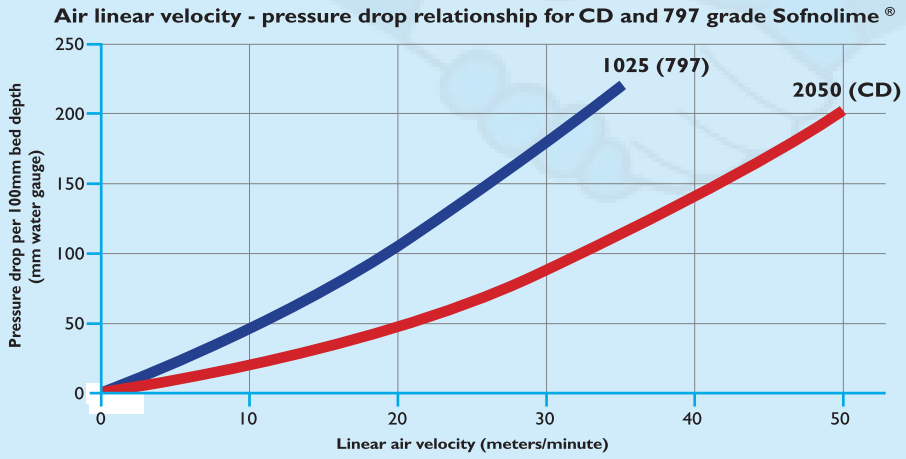
Properties

- High intrinsic carbon dioxide capacity
- Available with white to violet indicator
- Irregular shaped/sized granules for optimum packing
- High attrition resistance (low dust formation)

Product Details

Two grades are available, 797 Grade and CD Grade. The main differences between the two grades are particle size and shape. CD Grade is a 2.0mm to 5.0mm extrudate with a D-shaped cross-section. The 797 Grade has a smaller particle size (1.0mm to 2.5mm) and has a triangular shaped cross-section, which combine to give a higher CO_2 absorption capacity compared with CD Grade.

Typical Performance - Pressure Drop



These are typical values and can vary depending on the way the material is packed into the canister

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Carbon Dioxide Absorption

Specification

Sofnolime®	797 Grade Shape ▲			CD Grade Shape D		
	Particle size	Specification	Typical Results	Particle size	Specification	Typical Results
Characteristics		1.0-2.5mm			2.0-5.0mm	
	>2.80mm	1% Max	Zero	>5.60mm	1% Max	Zero
	2.00-2.80mm	30.0% Max	9%	4.75-5.60mm	7.0%	Zero
	1.40-2.00mm	Balance	83%	2.00-4.75mm	Balance	94%
	0.60-1.40mm	20.0% Max	7%	0.60-2.00mm	15.0% Max	6%
	<0.60mm	1.0% Max	0.2%	<0.60mm	1.0% Max	0.2%
Moisture		16-20%	NA		16-20%	NA
Hardness		>80%	>90%		>80%	>95%
Typical Usable Capacity			150 litres/kg			110 litres/kg

How it works

Sofnolime® removes carbon dioxide (and other acidic contaminants) from gas streams via an exothermic, water facilitated, base catalysed chemical reaction. The Sofnolime® contains a carefully controlled level of water which aids the reaction. Water is also formed as a by-product of the reaction. The reaction proceeds in 3 stages:-

(i) Reaction at aqueous layer

$CO_{2(gas)} + H_2O \longrightarrow CO_{2\ (In\ solution)}$

(ii) Bicarbonate formation

$CO_{2(aqua)} + NaOH \longrightarrow NaHCO_3$

(iii) Decomposition/regeneration of NaOH catalyst

$NaHCO_3 + Ca(OH)_2 \longrightarrow CaCO_3 + NaOH + H_2O$

The overall balanced equation being :-

$$CO_{2(g)} + Ca(OH)_{2(s)} \xrightarrow{H_2O\ /\ NaOH} CaCO_{3(s)} + H_2O_{(l)}$$

Additional information

Pack Size	Number of packs/ drums on pallet	Net weight of pallet (kg)	Gross weight of pallet (kg)	Dimensions of fully laden pallet (W x D x H)cm
9.0kg twinpack (2x4.5kg)	60	540	625	120 x 100 x 105
20kg keg	32	640	705	120 x 100 x 110

Quality

Molecular Products Ltd's aim is to manufacture chemical products which satisfy completely the needs of our customers. All products are rigorously tested to ensure conformance to the specification. Our activities comply to the requirements of ISO9001:2008.

Sofnolime® grades without indicator passes testing based on NATO standard STANAG 1411.

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Safety Data Sheet

Product name:	Safety Data Ref: 23
Sofnolime®	Initial issue date: 09 March 2012 Revision date: 01 October 2018 Version number: 20

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Section 1	IDENTIFICATION OF SUBSTANCE / PREPARATION AND OF THE COMPANY	
1.1	Product identifier	Soda Lime (Sofnolime, Medisorb, Soda Lime, Soda Lime HC, Easysorb, CHIRAlime, Limepak, Medisize, Limedic, Aneslime, Vetsorb, SodaSthesia, Leonsorb plus)
1.2	Relevant use(s) / misuse(s)	As an absorbent for carbon dioxide and other acidic gases
1.3	SDS supplier	Molecular Products Ltd, Parkway, Harlow Business Park, Harlow, Essex, CM19 5FR, UK
1.4	Emergency contact (global)	Office hours: +44 (0) 1279 445111 (09:00- 17:00, UK time) / +44 (0) 1865 407333 (out of hours) sds@molprod.com (email)
1.4.1	Emergency contact (other)	China +86 512 8090 3042, China (NRCC): +86 532 8388 9090, Mexico: +52 555 004 8763, Chile: +56 225 829 336, Brazil: +55 11 3197 5891

Section 2	HAZARDS IDENTIFICATION			
2.1	Classification of the substance or mixture (i.e. Sofnolime)			
2.1.1	Classification according to Regulation (EC) No 1272/2008 (CLP/GHS) – see section 11			
	H314	Skin Corr. 1B		
2.1.2	See section 16 for full text of H statements			
2.2	Labelling elements			
2.2.1	Labelling in accordance with EC Regulation No 1272/2008 (CLP/GHS)			
	Pictogram		Signal word	DANGER
	Hazard statements			
	H314	Causes severe skin burns and eye damage		
	Precautionary statements			
	P260	Do not breathe dust/fume/gas/mist/vapours/spray		
	P264	Wash hands thoroughly after handling		
	P280	Wear protective gloves/protective clothing/eye protection/face protection		
	P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower		
	P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing		
	P310	Immediately call a POISON CENTER or doctor / physician		
2.3	Other hazards			
	None known			

Section 3	COMPOSITION / INFORMATION ON INGREDIENTS				
	Chemical characterisation	Solid bases plus additives – see section 16 The CLP classifications required in this section are related to that of the product supplied. To comply with the legislation the classification of the relevant ingredients of the product, as if they were present at 100%, must be outlined. Where ingredients are present in the product at very low concentrations the level of risk to the user is reduced, hence the reason that the classifications for the individual components and the product are different. NOTE: The classification of calcium hydroxide is that of a powdered/granular form. In Sofnolime it is contained in a pellet and the probability of inhalation is negligible. Therefore, the classification of H335, STOT SE 3 which is applied to the powder/granular form of calcium hydroxide does not appear for Sofnolime.			
	Chemical name	CAS-No	EINECS/ELINCS	Classification	Concentration
	Calcium Hydroxide	1305-62-0	215-137-3	Skin Irrit. 2 H315 Eye Damage 1 H318 STOT SE 3 H335 WEL assigned	>75%
	Sodium Hydroxide	1310-73-2	215-185-5	Skin Corr. 1; H314	<4%

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Section 4	FIRST AID MEASURES	
4.1	Description of measures	
	Inhalation	Remove casualty to fresh air and provide warmth and rest. Seek medical attention
	Skin contact	Clean areas of skin affected immediately with soap and plenty of water. Seek medical advice
	Eye contact	Immediately wash out eye thoroughly with plenty of water until irritation subsides; consult an eye specialist/ophthalmologist
	Ingestion	Unlikely route of exposure. But if product is swallowed, do not induce vomiting. Drink plenty of water and seek medical advice
4.2	Most important effects/symptoms	If skin irritation occurs after washing, seek medical attention
4.3	Immediate/special treatment	Treatment as described above

Section 5	FIRE FIGHTING MEASURES	
5.1	Extinguishing media	To suit local surroundings (e.g. chemical powder, carbon dioxide, dry sand, water)
5.2	Special hazards	None known
5.3	Advice for fire fighters	Self-contained breathing apparatus may be required

Section 6	ACCIDENTAL RELEASE MEASURES	
6.1	Personal precautions	Adhere to personal protective measures
6.2	Environmental precautions	Do not allow to get into waste water or waterways; if this occurs, inform the relevant water authority at once
6.3	Methods and materials for cleaning up	In the event of spillage, take up mechanically (e.g. sweep or vacuum up) into tightly closed containers. Adhere to personal protective measures. Flush any remainder with plenty of water. Label container and dispose of as prescribed
6.4	Reference to other sections	See section 8 for personal protective equipment

Section 7	HANDLING AND STORAGE	
7.1	Precautions for safe handling	Handle in accordance with good hygiene and safety practice. Avoid the raising and deposition of dust
7.2	Conditions for safe storage	Ensure adequate ventilation of the storage area. Keep containers tightly closed, cool (0-35°C) and dry, avoiding direct sunlight
7.3	Specific end use(s)	As an absorbing agent

Section 8	EXPOSURE CONTROLS / PERSONAL PROTECTION				
8.1	Workplace Exposure Limits (WELs) have been assigned by the HSE (EH40/2005)				
	STEL (15 mins)	ppm	2	mg/m^3	Data for sodium hydroxide
	LTEL (8 hour TWA)	ppm	5	mg/m^3	Data for calcium hydroxide
8.2	Exposure controls				
	Engineering controls	Provide adequate ventilation (e.g. local exhaust ventilation)			
	Personal protection	Observe normal standards for handling chemicals Wash hands before breaks and after work Avoid inhalation of dust if raised Wear personal protective equipment appropriate to the task (see below)			
	Eye protection	Safety goggles if risk of eye contamination			
	Skin protection	Suitable gloves (consider your own risk assessment; e.g. breakthrough times, rates of diffusion and degradation, tasks undertaken)			
	Respiratory protection	Approved dust mask or respirator (e.g. EN 149:2001 FFP3) for dust if ventilation is insufficient			
	Other protection	Protective overalls			

Section 9	PHYSICAL AND CHEMICAL PROPERTIES			
9.1	Physical form	Solid	Colour	White or coloured
	Odour	Odourless	pH	12-14
	Boiling pt / range	Not determined	Melting pt / range	Not determined
	Flash point	Not applicable	Relative density	~ $0.9 g/cm^3$
	Water solubility	Slight	Odour threshold	Not applicable
	Evaporation rate	Not applicable	Flammability	Not applicable
	Explosion limits	Not applicable	Vapour pressure	Not applicable
	Vapour density	Not applicable	Partition coeff. Log Poct /water	Not applicable
	Auto-ignition temperature	Not applicable	Viscosity	Not applicable

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	Explosive properties	Not determined	Oxidising properties	Not determined
	Decomposition temperature	Not determined		
9.2	Other information	None known		

Section 10	STABILITY AND REACTIVITY	
10.1	Reactivity	Heat is generated if exposed to acids
10.2	Chemical stability	Stable under normal conditions of handling
10.3	Hazardous reactions	Hazardous polymerisation will not occur
10.4	Conditions to avoid	Contact with air – formation of calcium and sodium carbonate
10.5	Incompatible material	Chloroform, trichloroethylene
10.6	Hazardous decomposition products	None

Section 11	TOXICOLOGICAL INFORMATION			
11.1	Information on toxicological effects			
	Acute toxicity	LD (lo) rabbit (oral)	500 mg/kg	Data for sodium hydroxide
		LD_{50} rat (oral)	>7000 mg/kg	Data for calcium hydroxide
	Dermal compatibility	No data available		
	Mucous membrane	No data available		

Section 12	ECOLOGICAL INFORMATION					
12.1	Toxicity	LC_{50}	Aquatic organisms		mg/l	No data available
12.2	Degradability	Not determined	12.3	Bio-accumulative potential	Not determined	
12.4	Mobility in soil	Not determined	12.5	PBT/vPvB assessment	Not applicable	
12.6	Other adverse effects	WGK (German Water Hazard class): 1				

Section 13	DISPOSAL CONSIDERATIONS	
13.1	Advice on disposal	If possible, recycle to supplier or approved recycling company. If not (e.g. designated as waste), dispose of in accordance with national and local authority regulations, e.g. The Hazardous Waste (England & Wales) Regulations 2005
13.2	Contaminated packaging	Treat empty containers in the same way as the product. If possible wash out thoroughly and recycle

Section 14	TRANSPORT INFORMATION				
14.1	United Nations number (ADR, IMDG, IATA)	*None	14.2	Proper shipping name (ADR, IMDG, IATA)	*None
14.3	Transport class(s) (ADR, IMDG, IATA)	*Exempt under special provision 62 & A16	14.4	Packing group (ADR, IMDG, IATA)	*None
14.5	Environmental hazards (ADR, IMDG, IATA)	The product should not be marked as a marine pollutant	14.6	Special procedures (ADR, IMDG, IATA)	*Exempt under special provision 62 & A16
14.7	Transport in bulk	Not applicable			
14.8	*Special provision 62 in the transport regulations (IMDG Code/RID/ADR/ADN) applies to UN 1907. This special provision clearly states that soda lime is not considered to be dangerous goods for transport when in concentrations below 4%.				
14.9	*This substance contains less than 4 % sodium hydroxide and is not subject to IATA under special provision A16				

Section 15	REGULATORY INFORMATION	
15.1	Safety, health and environmental regulations	The product is classified in accordance with EC Regulation 1272/2008 (CLP)
15.2	Chemical safety assessment	Not applicable

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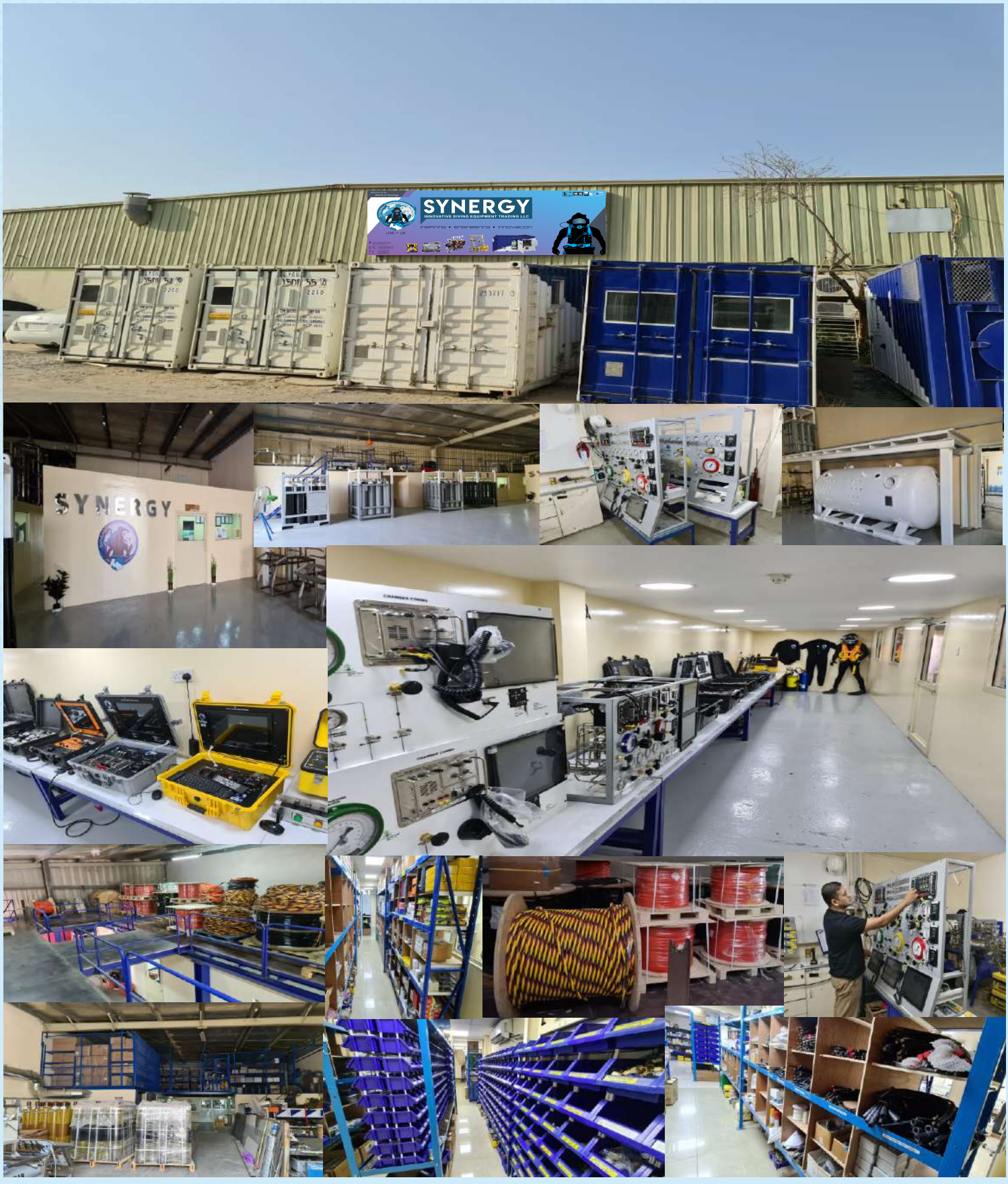
Section 16	OTHER INFORMATION			
	Further information	The SDS has been revised in accordance with EC Regulation 1272/2008 (CLP) and in response to a change of classification in the calcium hydroxide dossier of 29 May 2017		
		Comply with COSHH Regulations		
	Hazard statements referred to in sections 2/3			
	H314	Causes severe skin burns and eye damage	H335	May cause respiratory irritation
	H315	Causes skin irritation	H318	Causes serious eye damage
	Sources of data	Other suppliers' safety data sheets, Annex VI of the CLP Regulation (EC) No 1272/2008, EH40 (2011) OECD 431, 2004 Testing of chemicals, in-vitro skin corrosion, human skin test model. ECHA website		
	Prepared by	Dr Patricia Wormald, Molecular Products, PW@molprod.com		
	Date of issue	01 October 2018		
	This information is based on our present state of knowledge and is intended to describe our products from the point of view of the safety requirements. It should not be construed as guaranteeing specific problems			

SYNERGY INFRASTRUCTURE



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Contact us

29th Street, Amman Road, Behind Al Huraiz Est. For Industry,
Al Qusais, Industrial Area – 1,
Dubai, United Arab Emirates

Tel : 009714 2580533
Fax : 009714 2580534
UAE : 00971505648178
UK : 00447951966260

Website : www.synergyequipment.com
Email : ram@synergyequipment.com
For Sale : info@synergyequipment.com