Safety Data Sheet

according to 29 CFR 1910.1200(g)

DINITROL 538 PLUS

1. Identification

Product identifier

DINITROL 538 PLUS

Recommended use of the chemical and restrictions on use

Use of the substance/mixture

Adhesion promoter

Details of the supplier of the safety data sheet

Manufacturer

Company name:	DINOL GmbH	
Street:	Pyrmonter Strasse 76	
Place:	D-32676 Luegde	
Telephone:	+ 49 (0) 5281 982980	Telefax: + 49 (0) 5281 9829860
E-mail:	msds@dinol.com	
Contact person:	Labor	
Responsible Department:	msds@dinol.com	

Supplier

Company name:	DINOL U.S. Inc.	
Street:	8500 Cotter Street, Lewis Center	
Place:	USA-43035 Ohio	
Telephone:	740-548-1656	Telefax: 740-548-1657
E-mail:	info@dinolus.com	
Internet:	www.dinol.com	

Emergency phone number: 3E Company Emergency +1-866-404-4230

2. Hazard(s) identification

Classification of the chemical

29 CFR Part 1910.1200

Flammable liquids: Flam. Liq. 2
Serious eye damage/eye irritation: Eye Irrit. 2A
Respiratory or skin sensitization: Resp. Sens. 1
Respiratory or skin sensitization: Skin Sens. 1
Carcinogenicity: Carc. 2
Specific target organ toxicity single exposure: STOT SE 3 (narcotic effects)

Label elements

29 CFR Part 1910.1200

Signal word: Danger

Pictograms:

Hazard statements

Highly flammable liquid and vapor
May cause an allergic skin reaction
Causes serious eye irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause drowsiness or dizziness
Suspected of causing cancer

Precautionary statements

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/fume/gas/mist/vapors/spray.
Wash hands thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
Wear respiratory protection.
If on skin: Wash with plenty of water.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms: Call a poison center/doctor.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
If eye irritation persists: Get medical advice/attention.
If exposed or concerned: Get medical advice/attention.
In case of fire: Use Water spray jet, Extinguishing powder, Carbon dioxide (CO2) to extinguish.
Store in a well-ventilated place. Keep cool.
Store locked up.

Hazards not otherwise classified

Endocrine disrupting properties: butanone; ethyl methyl ketone.
No information available.

3. Composition/information on ingredients

Mixtures

Hazardous components

CAS No	Components	Quantity
78-93-3	butanone; ethyl methyl ketone	65 %
108-65-6	2-methoxy-1-methylethyl acetate	7.5 %
28182-81-2	Hexamethylene diisocyanate, oligomers	7.5 %
1333-86-4	Carbon Black	5 %
123-86-4	n-butyl acetate	1.5 %
1330-20-7	xylene	1.5 %
100-41-4	ethylbenzene	0.9 %
9016-87-9	Diphenylmethanediisocyanate, isomeres and homologues	0.9 %

Further Information

Full text of H statements: see section 16.

4. First-aid measures

Description of first aid measures

General information

In all cases of doubt, or when symptoms persist, seek medical advice.

Never give anything by mouth to an unconscious person or a person with cramps.
If unconscious but breathing normally, place in recovery position and seek medical advice.

After inhalation

Remove casualty to fresh air and keep warm and at rest.

After contact with skin

Change contaminated clothing.
After contact with skin, wash immediately with plenty of water and soap.

After contact with eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing. Seek medical advice immediately.

After ingestion

If swallowed, rinse mouth with water (only if the person is conscious).
Do NOT induce vomiting.
Call a physician immediately.
Put victim at rest, cover with a blanket and keep warm.

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO2), Extinguishing powder. Water spray jet
In case of major fire and large quantities: Water spray jet, alcohol resistant foam.

Unsuitable extinguishing media

High power water jet.

Specific hazards arising from the chemical

No further relevant information available.

Special protective equipment and precautions for fire-fighters

No special measures are necessary.

Additional information

Use water spray/stream to protect personnel and to cool endangered containers. Supress gases/vapors/mists with water spray jet.
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

General advice

Provide adequate ventilation.
Wear personal protection equipment.
Avoid contact with skin, eyes and clothes.
Avoid breathing dust/fume/gas/mist/vapors/spray.

For emergency responders

For further specification, refer to section 8 of the SDS.

Environmental precautions

Do not allow uncontrolled discharge of product into the environment.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Methods and material for containment and cleaning up

For containment

Prevent spread over a wide area (e.g. by containment or oil barriers).
Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).
Treat the recovered material as prescribed in the section on waste disposal.

For cleaning up

Provide adequate ventilation.
Clear contaminated areas thoroughly.
Do not rinse down with water.

Other information

No information available.

Reference to other sections

Safe handling: see section 7
Personal protection equipment (PPE): see section 8
Disposal: see section 13

7. Handling and storage

Precautions for safe handling

Advice on safe handling

If handled uncovered, arrangements with local exhaust ventilation have to be used.
If local exhaust ventilation is not possible or not sufficient, the entire working area should be ventilated by technical means.

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking.
Take precautionary measures against static discharges.

Advice on general occupational hygiene

The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from food, drink and animal feedingstuffs. Remove contaminated, saturated clothing immediately.
Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink.

Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed.
Provide adequate ventilation as well as local exhaustion at critical locations. Keep in a cool, well-ventilated place. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hints on joint storage

No special measures are necessary.

Further information on storage conditions

maximum storage temperature: < 40°C
minimum storage temperature: > 4°C
storage temperature: 4 - 40°C

8. Exposure controls/personal protection

Control parameters

Exposure limits

CAS No	Substance	ppm	mg/m³	f/cc	Category	Origin
78-93-3	2-Butanone (Methyl ethyl ketone)	200	590		TWA (8 h)	PEL
78-93-3	2-Butanone	200	590		TWA (8 h)	REL
		300	885		STEL (15 min)	REL
1333-86-4	Carbon black (in presence of polycyclic aromatic hydrocarbons (PAHs)) (as PAHs)	-	0.1		TWA (8 h)	REL
1333-86-4	Carbon black (inhalable fraction)		3		TWA (8 h)	ACGIH-2024
1333-86-4	Carbon black	-	3.5		TWA (8 h)	PEL
100-41-4	Ethyl benzene	100	435		TWA (8 h)	PEL
		100	435		TWA (8 h)	REL
		125	545		STEL (15 min)	REL
100-41-4	Ethyl benzene	20			TWA (8 h)	ACGIH-2024
78-93-3	Methyl ethyl ketone	75			TWA (8 h)	ACGIH-2024
		150			STEL (15 min)	ACGIH-2024
123-86-4	n-Butyl acetate	150	710		TWA (8 h)	REL
		200	950		STEL (15 min)	REL
123-86-4	n-Butyl acetate	50	238		TWA (8 h)	ACGIH-2024
		150	712		STEL (15 min)	ACGIH-2024
123-86-4	n-Butyl-acetate	150	710		TWA (8 h)	PEL
1330-20-7	Xylene: mixed isomers	20			TWA (8 h)	ACGIH-2024
1330-20-7	Xylenes (o-,m-,p-isomers)	100	435		TWA (8 h)	PEL

Biological Exposure Indices (BEI-ACGIH)

CAS No	Substance	Determinant	Value	Test material	Sampling time
78-93-3	METHYL ETHYL KETONE	Methyl ethyl ketone	2 mg/L	urine	End of shift
1330-20-7	XYLENES (technical or commercial grade)	Methylhippuric acids (creatinine)	0.3 g/g	urine	End of shift
100-41-4	ETHYLBENZENE	Sum of mandelic acid and phenylglyoxylic acid (creatinine)	0.15 g/g	urine	End of shift

Exposure controls

Appropriate engineering controls

Provide adequate ventilation.

If handled uncovered, arrangements with local exhaust ventilation should be used if possible.

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.

Individual protection measures, such as personal protective equipment

Eye/face protection

Eye glasses with side protection (DIN EN 166)

Hand protection

Tested protective gloves must be worn (EN ISO 374):
FKM (fluoro rubber) penetration time (maximum wearing period): 480 min.
NBR (Nitrile rubber) penetration time (maximum wearing period): 480 min.
For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.
Protective gloves have to be replaced at the first sign of deterioration.
Protect skin by using skin protective cream.

Skin protection

Wear anti-static footwear and clothing

Respiratory protection

Work in well-ventilated zones or use proper respiratory protection.
gas filtering equipment (EN 141)., Filter material/medium: A

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state:	Liquid	
Color:	black	
Odor:	characteristic	
Odour threshold:	not determined	
Melting point/freezing point:		not determined
Boiling point or initial boiling point and boiling range:		79 - 80,5 °C
Flammability:		Highly flammable liquid and vapor.
Lower explosion limits:		1,8 vol. %
Upper explosion limits:		11,5 vol. %
Flash point:		- 4 °C
Auto-ignition temperature:		> 300 °C
Decomposition temperature:		not determined
pH-Value:		not determined
Viscosity / kinematic:		not determined
Water solubility:		Immiscible
Solubility in other solvents		
not determined		
Partition coefficient n-octanol/water:		not determined
Vapor pressure: (at 20 °C)		105 hPa
Density (at 20 °C):		0,92 - 0,93 g/cm³
Relative vapour density:		not determined
Particle characteristics:		not applicable

Other information

Information with regard to physical hazard classes

Explosive properties

The product is: not explosive. In use, may form flammable/explosive vapor-air mixture.

Self-ignition temperature

Solid:	not applicable
Gas:	not applicable

Oxidizing properties

not determined

Other safety characteristics

Evaporation rate:	not determined

Solvent content:	72,3 %
Softening point:	not determined
Viscosity / dynamic:	not determined

Further Information

No information available.

10. Stability and reactivity

Reactivity

No further relevant information available.

Chemical stability

Stability: Stable

No hazardous reaction when handled and stored according to provisions.

Possibility of hazardous reactions

Hazardous reactions: Will not occur

No known hazardous reactions.

Conditions to avoid

No further relevant information available.

Incompatible materials

No further relevant information available.

Hazardous decomposition products

No known hazardous decomposition products.

11. Toxicological information

Route(s) of Entry

No information available.

Information on toxicological effects

Acute toxicity

Based on available data, the classification criteria are not met.

ATEmix tested

	Dose	Species	Source
LD50, dermal	150638 mg/kg	Rabbit	
LC50, inhalation (vapor) (4 h)	130 mg/l		

ATEmix calculated

ATE (oral) > 5000 mg/kg; ATE (inhalation dust/mist) > 12,5 mg/l

CAS No	Components					
	Exposure route	Dose		Species	Source	Method
78-93-3	butanone; ethyl methyl ketone					
	oral	LD50 mg/kg	3300	Rat		
	dermal	LD50 mg/kg	5000	Rabbit		
	inhalation (4 h) vapour	LC50	12 mg/l	Rat		
108-65-6	2-methoxy-1-methylethyl acetate					
	oral	LD50 mg/kg	8500	Rat		
	inhalation (4 h) vapour	LC50	35,7 mg/l	Rat		
28182-81-2	Hexamethylene diisocyanate, oligomers					
	oral	LD50 mg/kg	>5000	Rat		
	inhalation (4 h) vapour	LC50	11 mg/l			
	inhalation dust/mist	ATE	1,5 mg/l			
1333-86-4	Carbon Black					
	oral	LD50 mg/kg	> 15400	Rat	GESTIS	
	dermal	LD50 mg/kg	> 3000	Rabbit	GESTIS	
123-86-4	n-butyl acetate					
	oral	LD50 mg/kg	10760	Rat		
	dermal	LD50 mg/kg	> 14112	Rabbit		
	inhalation vapour	LC50	> 21 mg/l	Rat		
	inhalation (4 h) dust/mist	LC50	>21 mg/l	Rat		
1330-20-7	xylene					
	dermal	ATE mg/kg	1100			
	inhalation vapour	ATE	11 mg/l			
	inhalation dust/mist	ATE	1,5 mg/l			
100-41-4	ethylbenzene					
	oral	LD50 mg/kg	3500	Rat	GESTIS	
	dermal	LD50 mg/kg	15400	Rabbit	GESTIS	
	inhalation (4 h) vapour	LC50	17,2 mg/l	Rat		
	inhalation dust/mist	ATE	1,5 mg/l			
9016-87-9	Diphenylmethanediisocyanate, isomeres and homologues					
	oral	LD50 mg/kg	>10000	Rat		
	dermal	LD50 mg/kg	>9400	Rabbit		
	inhalation vapour	ATE	11 mg/l			
	inhalation dust/mist	ATE	1,5 mg/l			

Irritation and corrosivity

Serious eye damage/eye irritation: Causes serious eye irritation

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Sensitizing effects

May cause allergy or asthma symptoms or breathing difficulties if inhaled (Diphenylmethanediisocyanate, isomeres and homologues)

May cause an allergic skin reaction (Hexamethylene diisocyanate, oligomers; Diphenylmethanediisocyanate, isomeres and homologues)

Carcinogenic/mutagenic/toxic effects for reproduction

Suspected of causing cancer (Carbon Black; ethylbenzene; Diphenylmethanediisocyanate, isomeres and homologues)

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) - single exposure

May cause drowsiness or dizziness (butanone; ethyl methyl ketone)

Specific target organ toxicity (STOT) - repeated exposure

Based on available data, the classification criteria are not met.

Carcinogenicity (OSHA):	No ingredient of this mixture is listed.
Carcinogenicity (IARC):	Carbon black (CAS 1333-86-4) is listed in group 2B. Xylenes (CAS 1330-20-7) is listed in group 3. Ethylbenzene (CAS 100-41-4) is listed in group 2B. Polymethylene polyphenyl isocyanate (CAS 9016-87-9) is listed in group 3.
Carcinogenicity (NTP):	No ingredient of this mixture is listed.

Aspiration hazard

Based on available data, the classification criteria are not met.

Specific effects in experiment on an animal

No information available.

Additional information on tests

No information available.

Practical experience

No information available.

Information on other hazards

Endocrine disrupting properties

Endocrine disrupting properties: butanone; ethyl methyl ketone.

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Further information

There are no data available on the preparation/mixture itself.

12. Ecological information

Persistence and degradability

No further relevant information available.

Bioaccumulative potential

No further relevant information available.

Mobility in soil

No further relevant information available.

Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

Other adverse effects

No further relevant information available.

Further information

There are no data available on the mixture itself.

13. Disposal considerations

Waste treatment methods

Disposal recommendations

Dispose of waste according to applicable legislation. Do not mix with other wastes.

RCRA Hazardous wastes (Resource Conservation and Recovery Act)

None

Contaminated packaging

Remove according to the regulations.

14. Transport information

U.S. DOT 49 CFR 172.101

UN number or ID number:	UN 1866
Proper shipping name:	Resin solution
Transport hazard class(es):	3
Packing group:	II
Hazard label:	3

Marine transport (IMDG)

UN number or ID number:	UN 1866
UN proper shipping name:	RESIN SOLUTION
Transport hazard class(es):	3
Packing group:	II
Hazard label:	3

Marine pollutant:	no
Special Provisions:	-
Limited quantity:	5 L
Excepted quantity:	E2
EmS:	F-E, S-E

Air transport (ICAO-TI/IATA-DGR)

UN number or ID number:	UN 1866
UN proper shipping name:	RESIN SOLUTION
Transport hazard class(es):	3
Packing group:	II
Hazard label:	3

Special Provisions:	A3
Limited quantity Passenger:	1 L
Passenger LQ:	Y341
Excepted quantity:	E2

IATA-packing instructions - Passenger:	353
IATA-max. quantity - Passenger:	5 L
IATA-packing instructions - Cargo:	364
IATA-max. quantity - Cargo:	60 L

Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

Special precautions for user

No information available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

not applicable

15. Regulatory information

U.S. Regulations

National Inventory TSCA

Substance/product listed in the following inventories: TSCA

National regulatory information

SARA Section 304 CERCLA:

Methyl ethyl ketone (78-93-3): Reportable quantity = 5,000 (2270) lbs. (kg)
Butyl acetate (123-86-4): Reportable quantity = 5,000 (2270) lbs. (kg)
Xylene (mixed isomers) (1330-20-7): Reportable quantity = 100 (45.4) lbs. (kg)
Ethylbenzene (100-41-4): Reportable quantity = 1,000 (454) lbs. (kg)

SARA Section 311/312 Hazards:

Methyl ethyl ketone (78-93-3): Fire hazard, Immediate (acute) health hazard
2-methoxy-1-methylethyl acetate (108-65-6): Fire hazard, Immediate (acute) health hazard
Hexamethylene diisocyanate, oligomers (28182-81-2): Immediate (acute) health hazard
Carbon Black (1333-86-4): Delayed (chronic) health hazard
Butyl acetate (123-86-4): Fire hazard, Immediate (acute) health hazard
Xylene (mixed isomers) (1330-20-7): Fire hazard, Immediate (acute) health hazard
Ethylbenzene (100-41-4): Fire hazard, Delayed (chronic) health hazard, Immediate (acute) health hazard
Polymeric diphenylmethane diisocyanate (9016-87-9): Delayed (chronic) health hazard, Immediate (acute) health hazard

SARA Section 313 Toxic release inventory:

Xylene (mixed isomers) (1330-20-7): De minimis limit = 1.0 %, Reportable threshold = Standard
Ethylbenzene (100-41-4): De minimis limit = 0.1 %, Reportable threshold = Standard
Polymeric diphenylmethane diisocyanate (9016-87-9): De minimis limit = 1.0 %, Reportable threshold = Standard

Clean Air Act Section 112(b):

Methyl ethyl ketone (78-93-3), Xylene (mixed isomers) (1330-20-7), Ethylbenzene (100-41-4)

State Regulations

Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, State of California)

WARNING: This product can expose you to chemicals including Carbon black (airborne, unbound particles of respirable size) (cancer); Ethylbenzene (cancer), which are known to the State of California to cause cancer, birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Directive 2004/42/EC on VOC in paints and varnishes:	72,34 % 665,5 - 672,8 g/l

This mixture contains the following substances of very high concern (SVHC) which are included in the Candidate List according to Article 59 of REACH: none

16. Other information

Hazardous Materials Identification System (HMIS)

Health: 2

Flammability:	3
Physical Hazard:	0

NFPA Hazard Ratings

Health:	2
Flammability:	3
Reactivity:	0
Unique Hazard:	none

Changes

Revision date:	01/13/2025
Revision No:	1,4

This data sheet contains changes from the previous version in section(s): 2,3,7,8,9,11,16.

Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route
(European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%

Other data

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the relevant ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)