

Section 3.1 Unequivocal
Identification of the
substances

Section 3.2 Chemical and Physical
Properties of the
substances

This section of the application provides identification information and the chemical and physical properties of 1080 and the 1080 formulations (mixtures) that are being reassessed. These are listed in Table 1.

Table 1| **List Of 1080 Formulations Being Reassessed**

A	Sodium Fluoroacetate (Technical Grade Active)
B	Stock solution (soluble concentrate) 200 g/L 1080
C	Pellets containing 0.4 – 0.8 g/kg 1080
D	Pellets containing 1.0 g/kg 1080
E	Pellets containing 1.5 – 2.0 g/kg 1080
F	Pastes containing 0.6 – 0.8 g/kg 1080
G	Pastes containing 1.5 g/kg 1080
H	Pastes containing 10 g/kg 1080
I	Gel containing 1.5 g/kg 1080
J	Gels containing 50 g/kg 1080
K	Gels containing 100 g/kg 1080

As 1080 pesticide formulations are proprietary formulations, only very general information is provided on non-active ingredients in this section. Each proprietary ingredient is identified with a unique number in brackets in the following tables and detailed information of those ingredients has been provided to ERMA in confidence as Appendix B of this application.

A. Technical Grade Active

Sodium fluoroacetate is a sodium salt of fluoroacetic acid. Technical grade 1080, which is more than 90% pure, is manufactured by Tull Chemical Co. Inc. in Alabama in the USA. Tull is the only US manufacturer. Technical grade 1080 is imported into New Zealand as a powder in 10 kg polyethylene pails (typically 500 kg shipments), for formulation into baits.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate
Common name	Sodium fluoroacetate
Synonyms	1080, compound 1080
Trade names	None known
CAS registry number	62-74-8
UN number	2629
Proper shipping name and classification for transport	Sodium fluoroacetate Class 6.1 PG I Hazchem code 2X
HSNO Approval Number	HSR002771
Molecular formula	F-CH ₂ -C-O ₂ -Na
Molecular weight	100.03
Composition (% w/w)	<i>Technical grade purity (manufacturer's data):</i>
Active ingredient	Sodium monofluoroacetate 90% (w/w) min.*
Significant impurities	Potassium fluoride 1% max. Ethyl chloroacetate 1% max. Sodium hydroxide 0.5% max. Methanol 0.5% max. Water 6.9% max. *Assays by ACP show purity of imported product to be in the range 95 – 98.5%.

3.2 Chemical and physical properties

Appearance	White powder – like “damp sand” Odourless and almost tasteless
PH	Approx. 6.5 for 20% solution
Bulk density	Not known
Vapour pressure	Non-volatile, non-flammable
Melting point / thermal stability	Becomes unstable at 110°C and decomposes at 200°C. Main decomposition products include: Carbon monoxide, carbon dioxide, formaldehyde, silicon tetrafluoride, and fluoroacetyl fluoride.
Solubility	Very hygroscopic Very soluble in water (110g per 100 ml at 25°C) Practically insoluble in all non-polar solvents
Stability	Stable in sunlight at 54°C
NZ Workplace exposure standard (WES)	TWA 0.05 mg/m ³

B. Stock Solution (Soluble Concentrate) 200 g/L 1080

Stock solution containing 20% 1080 (by weight) is prepared by dissolving technical grade active in water. A dye (usually purple-black) is also added. Stock solution is distributed in 5-litre PE screw-top containers. The solution is used at different dilutions in the field for coating carrot, apple and oat baits used in both aerial and ground application.

1080 pesticide formulations (pellets, pastes and gels) are prepared using stock solution (rather than technical grade active 1080 powder).

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	Stock solution, 20% solution
CAS registry number	62-74-8 (active ingredient)
UN number	2902
Proper shipping name and classification	Pesticide, liquid, toxic, N.O.S. Class 6.1 PG I Hazchem code 2X
HSNO Approval Number	HSR002427
Pesticide registrations	V002189
Target pest	Dilutions for various baits and targets – see below
Composition (%w/w)	
Active ingredient	20.0
Colourant	0.003 (5)
Balance	Water
Specified dilutions (per the above registration)	Carrot bait: Rabbits – 0.02% 1080 Possums – 0.08, 0.1 & 0.15% Deer and wallabies – 0.15% Oat bait: Rabbits – 0.04% Apple bait: Possums – 0.8 & 0.15%

(5) refer to confidential section for details of proprietary colourant used.

3.2 Chemical and physical properties

Appearance	Purple-black liquid, non-viscous Odourless and almost tasteless
pH	6.5 approx.
Bulk Density	1150 kg/m ³
Vapour pressure	Non-volatile, non-flammable
Boiling point / thermal stability	Solution is 80% water and boils at around 100°C. Active ingredient becomes unstable at 110°C and decomposes at 200°C.
Solubility	n/a
Stability	Solution is stable and non-reactive under normal storage and use conditions.

C. Pellets Containing 0.4 – 0.8 g/kg 1080

Pellets containing 0.04 – 0.08% 1080 are used for control of rabbits, rodents and possums. Pellets are manufactured in fast and slow breakdown formulations and contain cereals, apple pastes, sweeteners and lure oils and are dyed green to discourage birds. They are used for both ground and aerial application.

Pellets are produced in a range of sizes, typically 2, 4 and 6g (12, 16 and 20mm diameter) and supplied in 25kg multiwall paper bags.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	1080 rabbit pellets, 0.04% 1080 rabbit/possum pellets, 0.06% 1080 rodent pellets., 0.08% 1080 possum pellets, 0.08%
CAS registry number	62-74-8 (active ingredient)
UN number	n/a – see below
Proper shipping name and classification	Pellets containing < 0.1% 1080 are not classified as Dangerous Goods for the purposes of transport.

HSNO Approval Number	HSR002422			
Pesticide registrations	V003785	V000825	V009015	V002829
Target pest	Rabbits	Possums and rabbits	Rodents	Possums
Composition (% w/w)				
Active ingredient	0.04	0.06	0.08	0.08
Food bases	87.1	64.75	80.0	88.0
Sweetener	3.9	18.75	4.0	4.0
Preservative	0.14 (1)	0.15 (1)	0.14 (2)	0.14 (1)
Colourant	0.04 (3)	0.04 (3)	0.04 (3)	0.03 (3)
Spreaders	3.8	16.26	10.74	2.75
Binders	5.0 (7)		5.0 (7)	5.0 (7)

(1), (2), (3), (7) refer to confidential section for proprietary ingredients.

3.2 Chemical and physical properties

Appearance	Green pellets 12 – 16 mm diameter
pH	Approx. 6.5
Bulk density	Not known - baits heavier than water
Vapour pressure	Non-volatile, non-flammable. Pellets may burn but combustibility unknown.
Boiling point / thermal stability	n/a
Solubility	Pellets disintegrate over time when wet or if dropped into water. Solubility as for technical grade 1080.
Stability/shelf life	3 – 6 months

D. Pellets Containing 1 g/kg 1080

Pellets containing 0.1% 1080 are used for control of feral cats in bait stations. Pellets contain fishmeal and other food bases, attractants and are dyed green to discourage birds. Pellets are produced in 2g size only (10 mm diameter) and supplied in 10 kg multiwall PE-lined bags.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	0.1% 1080 feral cat bait
CAS registry number	62-74-8 (active ingredient)
UN number	2588
Proper shipping name and classification	Pesticide, solid, toxic, N.O.S. Class 6.1 PG II Hazchem code 2X
HSNO Approval Number	HSR002423
Pesticide registration	V004107
Composition (% w/w)	
Active ingredient	0.1
Food bases (fish meal, fish oil etc.)	84.3
Sweetener	n/a
Preservative	0.2 (1)
Colourant	0.1 (4)
Binders	14.9 (6), 0.4 (other)

(1), (4), (6) refer to confidential section for proprietary ingredients.

3.2 Chemical and physical properties

Appearance	Green pellets 10 mm diameter
pH	Approx. 6
Bulk density	Not known - pellets heavier than water.
Vapour pressure	Non-volatile, non-flammable. May be combustible in fire – as fishmeal contains fish oils, but no combustibility data available.
Boiling point / thermal stability	n/a
Solubility	Pellets disintegrate over time when wet or if dropped into water. Solubility as for technical grade 1080.
Stability/shelf life	3 – 6 months

E. Pellets Containing 1.5 – 2.0 g/kg 1080

Pellets containing 0.15 – 0.2 % 1080 are used for control of possums and wallabies. Pellets are manufactured in fast and slow breakdown formulations and contain cereals, apple pastes, sweeteners and lure oils and are dyed green to discourage birds. They are used for both ground and aerial application. Pellets are produced in a range of sizes, typically 2, 4 and 6g (12, 16 and 20 mm diameter).

0.15% pellets are packed in 25 kg multiwall paper bags, 0.2% pellets in 25kg woven PE bags with plastic liners.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	0.15% 1080 pellets 0.2% 1080 pellets
CAS registry number	62-74-8 (active ingredient)
UN number	2588
Proper shipping name and classification	Pesticide, solid, toxic, N.O.S. Class 6.1 PG III Hazchem code 2X

HSNO Approval Number	HSR002424	
Pesticide registration	V002848	V002538
Target	Possums	Wallabies
Active ingredient	0.15	0.20
Food bases	88.0	42.2
Sweetener	4.0	42.2
Preservative	0.14 (1)	0.14 (1)
Colourant	0.03 (3)	0.04 (3)
Spreaders	2.7	15.3
Binders	5.0 (7)	

(1), (3), (7) refer to confidential section for proprietary ingredients.

3.2 Chemical and physical properties

Appearance	Green pellets 12 – 20 mm diameter
pH	n/a
Bulk density	Not known - pellets heavier than water.
Vapour pressure	Non-volatile, non-flammable. Pellets may burn but combustibility unknown.
Boiling point / thermal stability	n/a
Solubility	Pellets disintegrate over time when wet or if dropped into water. Solubility as for technical grade 1080.
Stability/shelf life	3 – 6 months

F. Pastes Containing 0.6 – 0.8 g/kg 1080

Pastes containing 0.06 – 0.08 % 1080 are used for control of possums and rabbits. Pastes contain apple pastes, sweeteners, thickeners for consistency, lure oils and dyes. A small quantity of paste is applied to overturned sods, or into a weatherproof pot or tin lid using either a spatula or paste gun. Pastes are supplied in 20 kg PE pails or 500 kg PE tubes.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	Pestoff Professional 1080 Possum and Rabbit Paste 0.06% Pestoff Professional 1080 Possum Paste 0.08%
CAS registry number	62-74-8 (active ingredient)
UN number	2902
Proper shipping name and classification	Pesticide, liquid, toxic, N.O.S. Class 6.1 PG III Hazchem code 2X Currently labelled as Dangerous Goods but does not trigger threshold for the purposes of transport (contains < 0.1% 1080).

HSNO Approval Number	HSR002420	
Pesticide registration	V004811	V004812
Target	Possums and rabbits	Possums
Composition (% w/w)		
Active ingredient	0.06	0.08
Food bases	66.3	66.3
Sweetener	30.0 (12)	30.0 (12)
Preservative	1.5 (2)	1.5 (2)
Colourant	0.03 (3)	0.03 (3)
Emulsifier	1.0	1.0
Attractant	0.1 (11)	0.1 (11)
Thickener	1.0 (10)	1.0 (10)

(2), (3), (10), (11), (12) refer to confidential section for proprietary ingredients.

3.2 Chemical and physical properties

Appearance	Green opaque paste
Odour/taste	May have an odour of cinammon, fruit flavouring or other attractant such as cinnamon.
pH	Approx. 5.5, slightly corrosive.
Bulk density	Not known
Vapour pressure	Non-volatile, non-flammable.
Boiling point / thermal stability	n/a
Solubility	Paste will slowly break down in water. Solubility as for technical grade 1080.
Stability/shelf life	> 12 months in cool storage. Palatability in the field 48 – 72 hours.

G. Pastes Containing 1.5 g/kg 1080

Fruit-based pastes containing 0.15 % 1080 are used for control of possums. Pastes contain apple pastes, sweeteners, thickeners for consistency, lure oils and dyes. A small quantity of paste is applied to overturned sods, or into a weatherproof pot or tin lid using either a spatula or paste gun. Pastes are supplied in 20 kg PE pails or 500 kg PE tubes.

Peanut butter - based paste containing 0.15% 1080 is used for control of possums.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	Pestoff Professional 1080 Possum Paste 0.15% (P004918) Pestoff Exterminator Paste 0.15% (Peanut Paste) (A009174)
CAS registry number	62-74-8 (active ingredient)
UN number	2902
Proper shipping name and classification	Pesticide, liquid, toxic, N.O.S. Class 6.1 PG III Hazchem code 2X

HSNO Approval Number	HSR002421	
Pesticide registration	V004918	V009174
Target	Possums	Possums
Composition (% w/w)		
Active ingredient	0.15	0.15
Food bases	66.2	10.0
Sweetener	30.0 (12)	10.0
Preservative	1.5 (2)	
Colourant	0.03 (3)	0.2 (3)
Flavour enhancers		
Spreaders		
Emulsifier	1.0	
Attractant	0.1 (11)	
Thickener	1.0 (10)	
Peanut butter		79.7

(2), (3), (10), (11), (12) refer to confidential section for proprietary ingredients used.

3.2 Chemical and physical properties

Appearance	Green opaque paste (1080 paste) Green, thick peanut butter mixture (1080 peanut paste)
Odour/taste	May have an odour of cinamon, fruit flavouring or other attractant such as cinnamon, or peanut butter.
pH	Approx. 4.5 - 5.5, slightly corrosive.
Bulk density	Heavier than water.
Vapour pressure	Non-volatile, non-flammable.
Boiling point / thermal stability	n/a
Solubility	Pastes will eventually disintegrate in water after several hours. Solubility as for technical grade 1080.
Stability/shelf life	> 12 months in cool storage. Palatability in the field 48 – 72 hours

H. Pastes Containing 10 g/kg 1080

Pastes containing 1.0 % 1080 are used for control of wasps. Pastes contain fish-based pet food and 1080 and are packaged in tubes and stored frozen until use.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	1% 1080 Wasp Paste (P003660)
CAS registry number	62-74-8 (active ingredient)
UN number	2902
Proper shipping name and classification	Pesticide, liquid, toxic, N.O.S. Class 6.1 PG III Hazchem code 2X
HSNO Approval Number	HSR002425
Pesticide registration	P003660
Target	Wasps
Composition (% w/w)	
Active ingredient	1.0
Fish-based food base	Balance

3.2 Chemical and physical properties

Appearance	Lumpy paste
Odour/taste	Odour of fish
PH	Neutral
Bulk density	Not known
Vapour pressure	Non-volatile/non-flammable
Boiling point / thermal stability	n/a
Solubility	n/a
Stability/shelf life	3-4 months

I. Gel Containing 1.5 g/kg 1080

This product is referred to as gel bait block. It is used as a long-life product for possum control. This is a green, translucent solid gel available in 200g and 500g blocks for use in a purpose-designed bait station, which has a field life of 3 to 4 months. The gel also contains sugars and an attractant, stabilisers and preservative, as well as a bittering agent.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	No Possums 1080 Gel Bait
CAS registry number	62-74-8 (active ingredient)
UN number	2588
Proper shipping name and classification	Pesticide, solid, toxic, N.O.S. Class 6.1 PG I Hazchem code 2X
HSNO Approval Number	HSR002419
Pesticide registration	V005377
Target	Possums
Composition (% w/w)	
Active ingredient	1.5
Gel Base	Gelling system is based on food-grade hydrocolloids and carbohydrates. Actual formulation is protected by NZ and global patents, as well as the Data Protection Provisions of the ACVM and HSNO Acts. Information on proprietary ingredients is held by ERMA.

3.2 Chemical and physical properties

Appearance	Solid green gel-like material
Odour/taste	Orange, sweet
pH	Approx 9
Bulk density	Approx. 1.2
Vapour pressure	Non-volatile, non-flammable
Boiling point / thermal stability	Highly thermostable, boiling point > 100°C
Solubility	Very slightly soluble in water
Stability/shelf life	Minimum 24 months

J. Gels Containing 50 g/kg 1080

Gels containing 5% 1080 are used for control of wallabies. Gels are applied to the underside of foliage of palatable vegetation which is cut down and left within the browse range of target pests. Gels contain gelling polymers, dye and stabilisers in aqueous base. It is supplied in 500g PE tubes.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	5% 1080 gel (P003623)
CAS registry number	62-74-8 (active ingredient)
UN number	2588
Proper shipping name and classification	Pesticide, solid, toxic, N.O.S. Class 6.1 PG I Hazchem code 2X
HSNO Approval Number	HSR002418
Pesticide registration	V003623
Target	Wallabies
Composition (% w/w)	
Active ingredient	5.0
Gelling agent	7.0 (9)
Buffer	12.0 (8)
Preservative	
Colourant	0.03 (3)
Spreader	76 approx.

(3), (8), (9) refer to confidential section for proprietary ingredients.

3.2 Chemical and physical properties

Appearance	Smooth, translucent paste-like texture, dyed green.
Odour/taste	Odourless
pH	Approx. 6, slightly corrosive
Bulk density	Not known
Vapour pressure	Non-volatile, non-flammable.
Boiling point / thermal stability	Gel loses its viscosity at temperatures above 30°C.
Solubility	During dry weather, gel will dry into a film but will resume its gel-like appearance when exposed to water. In wet conditions, it will gradually lose its adhesive properties and the active ingredient will leach out of the gel.
Stability/shelf life	2 – 3 years

K. Gels Containing 100 g/kg 1080

Gels containing 10% (w/w) 1080 are used for control of deer and wallabies. Gels are applied to the underside of foliage of palatable vegetation which is cut down and left within the browse range of target pests. Gels contain gelling polymers, dye and stabilisers in aqueous base. It is supplied in 500g PE tubes.

3.1 Unequivocal identification

Chemical name	Sodium monofluoroacetate (active ingredient)
Common name	Sodium fluoroacetate (active ingredient)
Synonyms	1080, compound 1080 (active ingredient)
Trade names	10% 1080 Gel (P002554)
CAS registry number	62-74-8 (active ingredient)
UN number	2588
Proper shipping name and classification	Pesticide, solid, toxic, N.O.S. Class 6.1 PG I Hazchem code 2X
HSNO Approval Number	HSR002427
Pesticide registration	V002554
Target	Wallabies and deer
Composition (% w/w)	
Active ingredient	10.0
Gelling agent	5.0 (9)
Buffer	9.0 (8)
Preservative	
Colourant	0.03 (3)
Spreader	76 approx.

(3), (8), (9) refer to confidential section for proprietary ingredients.

3.2 Chemical and physical properties

Appearance	Smooth, translucent paste-like texture, dyed green.
Odour/taste	Odourless
pH	Approx. 6, slightly corrosive
Bulk density	Not known
Vapour pressure	Non-volatile
Boiling point / thermal stability	Gel loses its viscosity at temperatures above 30°C.
Solubility	During dry weather, gel will dry into a film but will resume its gel-like appearance when exposed to water. In wet conditions, it will gradually lose its adhesive properties and the active ingredient will leach out of the gel.
Stability/shelf life	2 – 3 years

