

FUNDAMENTALS OF CLEANING

Most detergents contain several different compounds. The group of chemicals used in detergent formulations are surfactants (wetting agents), acids/alkalis, sequestrants, solvents and sanitisers.

SURFACTANTS

The four types are anionic, cationic, non-ionic and amphoteric. These names arise from the electrical charge of the head group. Anionic surfactants have a negative charge on the head group, cationic surfactants have a positive charge on the head group, non-ionic surfactants have no formal charge and amphoteric surfactants have both a positive and a negative charge on the one head group.

Anionic, cationic and non-ionic are the major types used in detergents.

The charges on the different surfactant types place restrictions on blending of different surfactant types in formulations.

Anionic surfactants are the major surfactant type used in general cleaning applications. Typically, they are inexpensive and moderate to high foaming. Anionic surfactants may be blended with other anionic surfactants, non-ionic surfactants and, if correctly formulated, with amphoteric surfactants.

The most commonly encountered cationic surfactants are quaternary ammonia compounds. Typically, cationic surfactants are more expensive than anionic surfactants and have varying foam levels from moderate to low.

Non-ionic surfactants are more expensive again than cationic surfactants. They are, however, widely used in detergent formulations due to their good cleaning ability on oily soils and their controlled moderate to low foaming properties.

ALKALINITY IN CLEANING

In general, detergents are formulated to be neutral or alkaline. Many soils tend to be acidic and, hence, the alkalinity in the detergent assists in their removal by neutralising them to make soluble salts.

Functions performed by the alkalinity in the detergent include saponifying fats and oils, breaking down and solubilising proteins, neutralising acids present in the soils and removal of acidic metal oxides from the surface. Alkalinity also assists in wetting of surfaces and dispersing and suspending solid soils.

Most hard surface materials and many metals are resistant to chemical attack by alkalinity, however, some common metals that are attacked by low to moderate levels of alkalinity are aluminium, magnesium and zinc and alloys of these metals.

ACIDS IN CLEANING

Acids, in general, will attack and dissolve many metals, basic metal oxides and alkaline metal salts, as well as concrete, mortar and grout. Due to the wide range of surface types that can be affected by acids, acids find limited application in cleaning. They are used, however, in specific cleaning applications – rust and scale removal, toilet bowl cleaners and tile and grout cleaning.

SOLVENTS

When the word 'solvent' is mentioned, most people think of petroleum solvents. However, a solvent is simply a liquid that dissolves another substance. Therefore, water is the most common of solvents.

GENERAL CONSIDERATIONS

All the components in a detergent formulation need to be compatible with each other and with the surface being cleaned. The detergent formulation should be free rinsing from the surface and not leave chemical residues that might interfere with subsequent processes.

DETERGENT SELECTION

In all cleaning processes there is a need to match the chemical composition of the detergent formulation to suit the soils to be removed, the surface to be cleaned and the physical constraints of the system – method of cleaning, water temperature, water hardness etc.

SOIL TYPE

SOIL TYPE	HOW TO REMOVE
Animal and Vegetable fats & oils	surfactants, alkali, solvents
Petroleum oils & grease	surfactant, solvents
Protein	acids, alkali
Starch	acids, neutral detergent
Water soluble salts	water
Mineral deposits	acids
Metal oxides	acids

SURFACE TYPE

SURFACE	AVOID USING
Uninhibited metals	acids
Soft metals	strong alkali
Plastics	solvents
Painted surfaces	solvents
PET & Polycarbonate	alkaline detergents and water soluble solvents
Acrylic	water soluble glycol-ether solvents
Copper (and its alloys)	ammonia & amine alkalinity
Rubbers	various solvents

THE CLEANING PROCESS - TIME

All of the chemical processes and interactions of the various components of the detergent formulation require time to equilibrate.

THE CLEANING PROCESS - TEMPERATURE

For most cleaning applications, increasing the temperature increases the rate of cleaning. However, water temperatures above approx. 50oC will denature protein soils causing them to become harder to remove. Higher temperature also introduces additional cost and risk.

THE CLEANING PROCESS - AGITATION

Agitation of the soil is required to aid the cleaning solution in physically dislodging the soils from the surface and to aid in breaking up and dispersing the solution. The agitation removes the "spent" solution and allows fresh cleaning solution to contact the soil to provide on-going cleaning action.



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ITW Polymers & Fluids



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- A strong commitment to product performance and the environment
- A practical and highly effective solvent replacement program
- Real solutions to problems of waste disposal and site safety

The Applied technologies are used daily in a wide range of industries and continues to develop innovative solutions that deliver a complete range of chemical products and solutions. Applied is synonymous with providing the "Right Chemistry" supported by the "Right People".

SPECIALTY PRODUCTS

TRANSIT GEL

Transit gel is a blue gel packed in water solvable sachets which when added to the toilet system produces a pleasantly perfumed deodourising toilet treatment

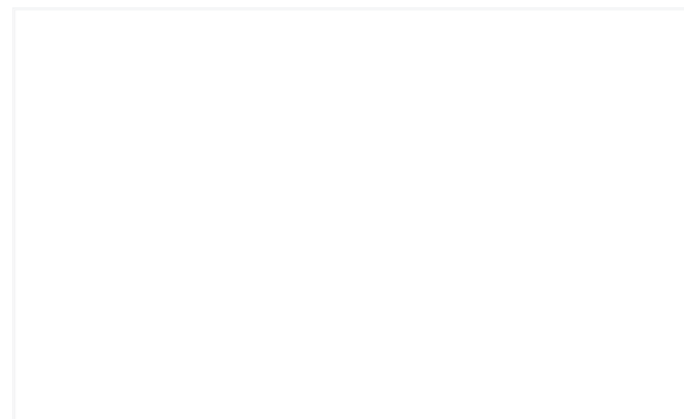
- Sanitises and deodourises

ITEM #	Items per case	Size
A3478 - 4	100	4Kg

APPLIED 4116

A4116 is a corrosion and scale inhibitor for diesel and conventional engines Exceeds the corrosion resistance specification of Australian standards 2108-1977

ITEM #	Items per case	Size
A4116 - BULK	1	BULK



WASH BAY DETERGENTS

ACIDFOAM

A foaming acid cleaner specifically designed for removing brake dust build up and other soils from rail stock

- Foams on to surface
- Safe on aluminium, steel, glass and good quality paint

ITEM #	Items per case	Size
A2539 - 1000	1	1000L

APPLIED 5007

An alkaline general purpose detergent for removal of grease, oil, dirt and brake dust from traction motors, bogeys, railway carriage cleaning as well as general floor cleaning

ITEM #	Items per case	Size
A5007 - 1000	1	1000L

GEL PHOS

Gel Phos is a clear acidic gel formulated to remove copper and iron oxide films from the roofs of electrical tram and railway carriage sets.

ITEM #	Items per case	Size
A2634W - 1000	1	1000L

SPRAY & SOAK TANK CLEANERS

APPLIED 5260

A low foaming, active powder cleaner suitable for use in spray and agitated immersion cleaning equipment

- Low foaming
- Inter stage rust protection

ITEM #	Items per case	Size
A5260 - 20	1	20kg

APPLIED 4855

A general purpose spray cleaner for ferrous and non ferrous metals

- Safe for use on most common metals
- Contains no Caustic
- Do not need rinsing from surface

ITEM #	Items per case	Size
A4855 - 25	1	25L

HI ALK

Hi Alk is a truly effective heavy duty cleaner for all decarbonising, de-rusting and degreasing operation. Hi Alk features 3 in 1 action to save de-rusting time

ITEM #	Items per case	Size
A5710 - 205	1	205L
A5710 - 20	1	20L

IMPROVE

Improve is a complex alkaline grade blended with surfactants, penetrants and boosters used for heavy duty cleaning

- Rinses freely
- Paint stripping

ITEM #	Items per case	Size
A5850 - 20	1	20kg

APPLIED 4413

Soak tank alkaline cleaner for general degreasing of metals by either hot soak or hot high pressure cleaning

- Safe on steel and magnesium
- Rapid emulsion break
- Non caustic

ITEM #	Items per case	Size
A4413 - 205	1	205L

APPLIED 4320

Temporary rust preventative, prevents rust during the rinsing and drying of steel articles after they have been cleaned

- Passive condition will last upto 3 weeks

ITEM #	Items per case	Size
A4320 - 20	1	20L

WORKSHOP CLEANERS & DEGREASERS

DUOSOLVE

A scientifically formulated concentrated solvent degreaser can be diluted with water to form a degreasing gel or with kerosine to form a thin degreasing liquid.

ITEM #	Items per case	Size
A8355 - 205	1	205L
A8355 - 20	1	20L

APPLIED 8413

Parts wash degreaser is a natural, emulsifiable solvent which is used as supplied for cleaning engines, plant machinery and equipment.

ITEM #	Items per case	Size
A8413 - 1000	1	1000L
A8413 - 205	1	205L
A8413 - 20	1	20L

CITRA SCRUB

An extra heavy duty, low foaming water based cleaner/degreaser containing natural citrus solvents

- Fast acting
- Caustic free

ITEM #	Items per case	Size
ACISC - 15	1	15L

BULLDOG GOLD

An iconic heavy duty vehicle wash specifically formulated to remove dirt, soils, light grease/oil and road stains.

- High foaming
- Free rinsing

ITEM #	Items per case	Size
A3120 - 1000	1	1000L
A3120 - 205	1	205L
A3120 - 15	1	15L

TAKE OFF

Take off is a heavy duty alkaline detergent used for cleaning oil, greases, dirt, light carbon deposits and exhaust stains

- Will not harm good paint work.
- Non Flammable.
- Excellent on animal fats.

ITEM #	Items per case	Size
A4480 - 1000	1	1000L
A4480 - 15	1	15L

APPLIED 8080

Applied electrical safety solvent is a highly effective liquid solvent cleaner with a high flash point

- Cleans all electrical components
- High flash point

ITEM #	Items per case	Size
A8080 - 20	1	20L