

Fire and Rescue Service Operational Guidance

GRAs

generic risk assessments

GRA 3.5

Fighting fires
in farms

Generic Risk Assessment 3.5

Fighting fires in farms

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SECTION 1

Generic Risk Assessment 3.5 Fighting fires in farms

Scope

This Generic Risk Assessment examines the hazards, risks and control measures relating to Fire and Rescue Service personnel, the personnel of other agencies and members of the public when fighting fires in farms. This assessment considers a range of farms from smallholdings to large farms undertaking a wide variety of activities.

Depending on the nature and scale of the operational incident a variety of significant hazards may be present. Fire and Rescue Services may therefore need to consider the contents of other specific generic risk assessments in this series.

This generic risk assessment should be considered in conjunction with all other relevant assessments, which may include:

- Introduction
- 1 Emergency response
- 2.1.2 Rescues from confined spaces – silos
- 2.2 Rescues – From ice and unstable ground
- 2.4 Rescues – Flooding and water safety
- 2.5 Rescues – Of large animals
- 3.1 Fighting fires – In buildings
- 3.4 Fighting fires – In rural areas
- 3.7 Fighting fires – In refuse
- 5.1 Generic hazards – Electricity
- 5.3 Generic hazards – Chemicals
- 5.4 Generic hazards – Biological
- 5.9 Generic hazards – Asbestos
- 5.10 Generic hazards – Working at heights

Fire and Rescue Services must conduct their own assessments and produce their own safe systems of work (which include standard operating procedures, training programmes, provision of equipment, levels of response, etc.) within the context of integrated risk management plans, local conditions, knowledge and existing organisational arrangements.

This generic risk assessment is intended to assist Fire and Rescue Services in the assessment of risks at the planning and preparedness stage and is not designed to be used at incidents. Fire and Rescue Services should ensure this assessment is undertaken by a competent person(s).

Significant hazards and risks

The degree to which farm fires represent a risk to personnel may vary between each Fire and Rescue Service area. Personnel from Services which serve predominantly urban areas may occasionally attend fires in agricultural premises.

Significant hazards which face Fire and Rescue Service personnel at farm fires may include:

- access
- the nature, construction and condition of farm buildings and farms
- hazardous substances and materials stored or used on the farm
- electrical power supplies
- machinery, workshops, silos, barns and stores
- water, pits, slurry pits and lagoons
- work at height
- animals and insects
- biological hazards including animal waste (solid, liquid) and bio-aerosols
- stacked materials; and
- non-Fire and Rescue Service personnel.

Access

Access to farm sites may be difficult. Fire and Rescue Service personnel may be exposed to the risk of slippery, uneven and poor ground conditions.

Poor access may also increase risks due to manual handling, e.g. from handling hose and portable pumps, sometimes over large distances.

The nature, construction and condition of farm buildings

Construction of farm buildings varies from traditional timber to those using large insulated sandwich panels. They often used for the storage of large quantities of tall stacks of combustible materials. Many buildings have relatively lightweight combustible or fragile materials used in their construction, such as corrugated metal or asbestos cement roofs.

Examples include:

- Dutch barns
- grain stores and silos
- grain processing buildings
- animal sheds
- food processing units; and
- independent factory units.

The light and/or combustible construction of many farm buildings may render them liable to early collapse. This risk of collapse is likely to be increased when attendance times are extended due to remote location and/or poor access.

Roof loading from snow can be another factor in roof collapses during winter.

The types of structure and materials that may form a significant hazard include;

- timber frame structures
- large steel pre-fabricated buildings
- large insulated sandwich panels
- asbestos cement roofing; and
- thatched structures.

Some farm buildings may have been extended over time, have a complicated layout and contain different construction materials. Some farms may have sub let part of the site for industrial use including firework stores.

Poor water supplies may also present difficulties.

Hazardous substances and materials stored or used on the farm

A wide range of hazardous substances and materials may be present on farms, including:

- Liquid petroleum gas and other fuel storage including underground tanks. It can be common to find diesel storage tanks made of plastic material which has a tendency to rupture during fire conditions. This can cause a running fuel fire and may compromise the safety of appliances and personnel. Diesel may be stored but may be hidden or unmarked to prevent theft

- Pesticides, fertilisers and rodenticides. There is a growing trend in some areas to stockpile quantities of volatile agricultural fertilisers and chemicals such as ammonium nitrate and double top nitrogen; these can create toxic smoke production when involved in fire. Some products including ammonium nitrate can carry an explosion risk as can pooling of molten products in hollows. Further information can be gained from Generic Risk Assessment 5.3 – Incidents involving chemicals and Fire Service manuals.
- Run off water can be contaminated
- Cymag is a pesticide which contains sodium cyanide and although now banned for use may be illegally stored or dumped
- Pressurised gas containers
- Toxic and flammable gases, methane and hydrogen sulphide
- Some farms may have an anaerobic digesting system on site (for producing biogases)
- Combustible dusts such as grain (inhalation risk, dust explosion risk);
- Asbestos
- Animal feedstuffs including meat and bone meal with the potential for viral infection
- Veterinary medicines
- Zoonosis/infectious diseases
- Ammunition and percussive bird scarers; and
- Explosives, including storage of fireworks.

2.4 Electrical power supplies

It is common for farms to be supplied from 11Kv overhead power lines. These lines are not always apparent during the hours of darkness and may pose a risk to crews.

Power supplies feeding into or attached to the side of timber buildings may fall to the ground if the building suspending them falls during a fire.

Temporary or non standard electrical systems may be in place and may pose additional risks to crews.

Electrical installations may be in a poor state of repair. There may be live, exposed high voltage conductors.

Electrical power supplies may be present in unlikely locations and there may be difficulty in isolating power to particular buildings.

Machinery, workshops, silos, barns and stores

Both fixed and mobile farm machinery is a hazard due to its physical size, weight and diversity. Modern combine harvesters utilise radioactive sources. Farm machinery is built to carry out a vast array of tasks. Some equipment may be old and not feature modern safety equipment.

The wide variety of farm equipment presents different risks of injury whether in use or not. Fire and Rescue Service personnel should be aware that some machinery may be time controlled and start up automatically.

There is a risk of entrapment in unguarded machinery.

Many farms have workshops which can contain welding gear, fuel, flammables, etc.

Confined spaces may be present including grain drying and storage areas. Silos have limited access and may present a work at height risk.

Barns may trap heat and smoke under the roof.

Anaerobic digesting systems produce methane and hydrogen sulphide.

Water, pits, slurry pits and lagoons

At some sites, there will be a risk from personnel working near to water or slurry pits.

Slurry pits look like waste ground due to a hard surface. These may not be evident and could be covered in organic material such as algae, grass and weed growth. Poor light will increase the risk of falling into a slurry pit.

Sheep dips contain chemicals which should be covered but the material covering the dip may be a thin sheet of metal which will not support the weight of a person or equipment.

Reservoirs which could be used for water supply may be lined with plastic sheeting on a gradual slope. If someone fell in, this may make the task of getting out more difficult.

Some sites may have wells which present a risk of drowning, contact with contaminated water or a fall from height

Work at height

Fighting fires on farms may involve work at height.

Animals and insects

Normal animal movement can be a hazard and some animals such as pigs can be aggressive. Animals can kick, head butt, bite and tread on personnel causing significant injury including crushing and impaling.

Animals may be affected by the sound or sight of the incident including flashing lights and the sounding of audible warning devices. This may cause animals to stampede. This may pose a risk to Fire and Rescue Service personnel, personnel from other agencies, farm workers or the public.

Animals are also susceptible to the effects of fire and smoke and can pose an increased risk of causing an injury when in a state of panic.

There is a threat of potentially acute or chronic infections (zoonosis) from a variety of diseases which can be transmitted from animals to humans, some of which may be fatal. Infection is passed on through open wounds, bites and the ingestion or inhalation of the animals' body fluids. There may be risks from contact with animal carcasses at food processing plants or storage units.

There are additional risks to pregnant firefighters from chlamydiosis, toxoplasmosis and listeriosis.

Farms will attract insects and the risk of stings and bites will be present. Some personnel may be at increased risk due to sensitivity to certain stings or bites.

Some sites may suffer a disease outbreak and have restrictions placed upon them.

Biological hazards including animal waste (solid, liquid) and bioaerosols

Animal waste (solid, liquid) may present a hazard to crews.

A bioaerosol (short for biological aerosol) is a suspension of airborne particles that contain living organisms or were released from living organisms which consist of virus particles, bacteria, fungal spores and plant pollen. The atmosphere lifespan of the particles can range from indefinite for some of the smallest virus particles to a few hours for larger pollen particles.

There is the potential for the generation of bioaerosols on farms including the handling of livestock manures and bio solids to land. Exposure to organic dusts (bioaerosols) can lead to respiratory sensitisation and respiratory diseases.

A medical condition called Farmer's Lung can be caused by inhaling dust from mouldy hay, straw, corn, grain or silage.

Stacked materials

Stacked materials such as baled straw and hay may be present. These may be unstable and collapse, particularly when wetted.

Stacked materials can also present a heat source and produce flammable gases or an ignition point through decomposition of organic matter.

Some stacked materials may have considerable weight and be difficult to move.

Non-Service personnel

Farms are often family businesses and as such, farmers and their families stand to suffer great losses (family, animals, property, and stock) in any fire. This may affect their behaviour and they may be more likely to attempt fire fighting or rescues.

Some farms may have:

- sited caravans for hire (increased life risk) or for winter storage
- buildings converted to residential accommodation, holiday accommodation or function rooms
- migrant worker accommodation; and
- tented camp sites.

There may be several or large numbers of workers housed in staff accommodation/buildings. Such accommodation/buildings may not fully comply with fire precautions.

Where migrant workers are employed as farm workers, there may be language barriers when communicating information about the incident and some workers may not be as familiar with health and safety/fire safety regulations..

Key control measures

Planning

Planning is key to enhancing the safety of firefighters and others likely to be affected by Fire and Rescue Service operations. Each Fire and Rescue Service's integrated risk management plan will set standards and identify the resources required to ensure safe systems of work are maintained.

Fire and Rescue Services should assess the hazards and risks in their area relating to this generic risk assessment. The assessment should include other Fire and Rescue Service's areas where 'cross border' arrangements make this appropriate.

Site-specific plans should be considered for locations where the hazards and risks are considered significant, taking into account and specifying any variation from the normal operational capability of personnel, appliances and equipment. In particular, recognition should be given to the physical effort and psychological pressures that an operational incident may apply to Fire and Rescue Service personnel.

Site specific plans should include:

- levels of response
- relevant standard operating procedures
- tactical considerations, including rendezvous points, appliance marshalling areas, access points as well as site specific hazards; and
- identification and where necessary, the formal notification to the person(s) responsible for the site of any Fire and Rescue Service operational limitations.

Planning is underpinned by information gathering, much of which will be gained through inspections or visits by Fire and Rescue Service personnel – for example, those covered by section 7(2)d and 9(3)d of the Fire and Rescue Services Act 2004.

Information should also be gathered and used to review safe systems of work from sources both within and outside the Fire and Rescue Service, including:

- fire safety audits
- incident de-briefs
- health and safety events
- local authorities; and
- local resilience fora.

Involving others in pre-planning is an effective way to build good working relations with partner agencies and other interested parties, such as site owners.

Fire and Rescue Services should ensure systems are in place to record and regularly review risk information and to ensure that new risks are identified and recorded as soon as practicable.

Fire and Rescue Services must ensure that the information gathered is treated as confidential, unless disclosure is made in the course of duty or is required for legal reasons.

Fire and Rescue Services should consider the benefits of using consistent systems and formats to record information from all sources. In order to support decision making, consideration should be given to the efficiency and effectiveness of information retrieval systems.

Specific planning for this generic risk assessment should include:

- Advice and input from the Environment Agency
- Gaining information on the storage of chemicals and pesticides during site visits. These may be covered by regulations such as the British Agrochemical Standards Inspection Scheme and Dangerous Substances, Notification and Marking of Sites (NAMOS).

Competence and training

When formulating a competence and training strategy, Fire and Rescue Services should consider the following points:

- To enable a Fire and Rescue Service specific risk assessment of this incident type, Fire and Rescue Services must ensure those tasked with carrying out this assessment and developing procedures are competent
- Fire and Rescue Services must ensure their personnel are adequately trained to deal with hazards and risks associated with farm fires. Attendance at farm fires in some Fire and Rescue Services may be rare and this lack of experience should be considered and addressed
- The level and nature of training undertaken should be shaped by an informed training needs analysis that takes account of Fire and Rescue Service guidance on the competency framework, national occupational standards and any individual training needs

- Training and development programmes should:
 - follow the principles set out in national guidance documents
 - should generally be structured so that they move from simple to more complex tasks and from lower to higher levels of risk
 - will typically cover standard operational procedures as well as ensuring knowledge and understanding of equipment and the associated skills that will be required to use it; and
 - should consider the need for appropriate levels of assessment and provide for continuous professional development to ensure maintenance of skills and to update personnel whenever there are changes to procedure, equipment, etc.
 - should also involve personnel involved in other processes that support the emergency response such as planners devising procedures and people procuring equipment.

Specific training requirements for farm fires will include the standard operating procedure and the equipment to be used.

Training outcomes should be evaluated to ensure that the training provided is effective, current and it meets defined operational needs as determined by the Fire and Rescue Service integrated risk management plan.

Command and control

The Incident Commander should follow the principles of the current national incident command system.

Prior to committing personnel into any hazard area, the Incident Commander must take account of the actual information available regarding the incident at the time. This will assist them to make effective operational decisions in what are recognised as sometimes dangerous, fast moving and emotionally charged environments.

A thorough safety brief prior to deployment of personnel within the hazard zone should be carried out.

Communication of new or changed risks should continue throughout the incident.

Safety Officer(s)

The early appointment of one or more competent Safety Officer(s) will help ensure that risks are either eliminated or reduced to an acceptable level.

The Incident Commander should confirm that the Safety Officer understands:

- their role and area of responsibility
- allocated tasks
- current information about on site hazards and risks; and
- lines of communication.

Those undertaking the Safety Officer role should:

- be competent to perform the role
- ensure personnel are wearing appropriate breathing apparatus /personal protective equipment
- monitor the physical condition of personnel and/or general or specific safety conditions at the incident, in accordance with their brief
- take any urgent corrective action required to ensure safety of personnel
- update the Incident Commander or senior safety officer regarding any change in circumstances; and
- not be engaged in any other aspect of operations, unless this is required to deal with a risk critical situation.

The role of a Safety Officer can be carried out by any of the fire service roles, but the complexity of the task, size of the incident and scope of responsibility should be considered by the Incident Commander when determining the competency level required.

Safety Officers should wear nationally recognised identification to indicate they are undertaking the 'Safety Officer' role.

Fire and Rescue Services should ensure that training and other measures (such as aide-memoires) are in place and available to support those staff liable to undertake this role.

With regard to farms, Safety Officers should be deployed to control specific risks such as the risk of stacked materials collapsing.

Personal protective equipment

Fire and Rescue Services must ensure that any personal protective equipment provided is fit for purpose and meets all required safety standards. When choosing suitable protective garments, the standard of clothing worn beneath the specialist equipment should also be taken into account. Consideration should also be given to the selection of suitable sizes and gender specific requirements of personal protective equipment.

Personal protective equipment should also take account of the need for rescuers to be clearly visible against the operational background including night working and for the Incident Commander and other managerial and functional roles (defined in the national incident command system) to be distinguishable.

All personnel must use appropriate levels of service provided personal protective equipment and respiratory protective equipment as determined by the safe system of work.

Post incident

The following measures should be considered to help eliminate or remove risks after an incident, as appropriate to the nature and scale of the incident.

- Any safety events that may include personal injuries, exposure to hazardous substances, avoidable equipment damage or near-misses should be recorded, investigated and reported in line with legislative requirements such as *Reporting of Injuries Diseases and Dangerous Occurrence Regulations 1995*, etc.
- Arrangements should be in place to either remove all contamination from personal protective equipment or ensure it's safe and appropriate disposal and to check that the equipment maintains the agreed levels of integrity and protection for the wearer throughout its lifecycle
- When necessary, occupational health support and surveillance follow up including counselling and support services
- Conduct a debrief to identify and record any 'lessons learned' from the incident. Debriefs will range in complexity and formality, proportionate to the scale of the incident and in line with individual Fire and Rescue Service procedures
- Consider any changes required to safe systems of work, appliances or equipment in the light of any lessons learned from debriefs or from safety events
- Consider the need to review existing information held on a premises or location, or the need to add a new premises or location into future preplanning, e.g. by adding to visit or inspection programme; and
- When necessary, consideration should be given to arranging for staff to make a contemporaneous written record of their actions. This information may be used to assist in any internal or external investigations or enquiries that follow any incident, e.g. coroners court, public enquiry, etc.

Standard operating procedure

Fire and Rescue Services should prepare, communicate and implement a standard operating procedure for farm fires utilising this generic risk assessment and other relevant guidance documents. This should identify the necessary control measures, resources and tactics to be adopted.

When communicating the standard operating procedure, Fire and Rescue Services should ensure personnel receive, read and understand the information.

The standard operating procedure should take account of the hazards from hazardous substances that may be present and isolation of any electrical equipment in use.

Breathing apparatus should be worn when necessary.

Decontamination procedures should be implemented where necessary. Routine decontamination and cleaning should help to prevent cross contamination from farm to farm.

Local procedures for farms or procedures implemented during a time of outbreak of disease may require crews to disinfect vehicles on entering and leaving farm land as a precaution against the transmission of diseases.

Personnel close to water hazards should wear, where necessary, approved personal flotation devices or use work restraints. This will be influenced by the nature of the water hazard and the proximity to it.

It may be necessary to seek farm assistance should the movement of equipment or animals be needed.

If individuals are deployed as lone workers, regular checks on their welfare should be made via personal radio.

Hygiene

To prevent infection, crews should not eat, drink or smoke without washing their hands. Any catering facilities should be sited away from the scene of the incident, where washing facilities should be provided. Open wounds should be cleaned and covered/dressed. Decontamination facilities should be provided where necessary.

Specialist equipment and teams

Fire and Rescue Services should identify the need for any specialist equipment or rescue teams.

Farmers and farm workers have specialist skills such as expertise in herding which may be utilised if command and control and supervision of the incident are maintained.

Should a controlled burn take place or a fire break be set up, consideration could be given to utilising on site plant and machinery and the expertise of farm workers to carry out the herding of animals.

Work at height equipment and working near water equipment, such as fall arrest or work restraint systems and personal flotation devices, should be provided where necessary.

Some personnel may need to carry medication if they are sensitive to certain stings or bites.

Stacked materials

Walking over stacked hay or straw when involved in fire should not be permitted as the fire may have burnt into the stack forming a burning hollow beneath the surface which will not support the weight of an individual.

Some stacked materials may need to be moved by hand and great caution is advised. Some stacked items such as baled straw may have considerable weight (up to 1 tonne).

Utilising farm machinery

Consideration should be made whether it is safe and effective to use agricultural machinery. This should take account of factors such as operator competency and machinery/vehicle condition.

With regard to farm incidents, any Fire and Rescue Service staff working in the vicinity of working farm machinery should wear high visibility personal protective equipment.

Technical references	
1.	Health and Safety Executive Information Sheet, Working Safely Near Overhead Power Lines – Agriculture Information Sheet No 8 (revised)
2.	Manual of Firemanship, Part 6B, Chapter 1
3.	Manual of Firemanship, Part 6C, chapter 45, Fires in dusts

SECTION 2

Summary of Generic Risk Assessment 3.5 Fighting fires in farms

Task – Pre Incident

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
1	Planning	No significant hazards identified at this stage. Local assessment should take place	No significant risks identified at this stage. Local assessment should take place	Fire and Rescue Service staff	<p>Prevention</p> <ul style="list-style-type: none"> • prevention through raising awareness/campaigns • fire safety checks and advice. <p>Organisational risk control</p> <ul style="list-style-type: none"> • Produce a standard operating procedure for farm fires • Identify and address training needs and competency requirements for farm fires and for risk assessing and developing procedures • Incident Commanders to be competent at gathering relevant information, processing information and making decisions about risk. This applies to firefighters in the risk area. • Procure suitable equipment • Procure suitable personal protective equipment • Manual handling training.

Task – Initial stages of the incident

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
2	Accessing site	Uneven, slippery and poor ground	Slips, trips and falls with the potential for a fracture	Fire and Rescue Service staff	7 2 d visits Safe approach and parking Crew briefing Personal protective equipment Additional lighting Use of vehicle marshals.
3.	Accessing site and firefighting	Manual handling	Manual handling injury with the potential for significant time lost	Fire and Rescue Service staff	7 2 d visits Manual handling procedures Availability of the correct number of personnel to handle equipment.

Task – As the incident develops

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
4.	Firefighting	Farm buildings – type of construction e.g. timber, portal frame, sandwich panels. Fire can spread quickly and buildings may collapse.	Death Burns Serious injury	Fire and Rescue Service staff	Implement standard operating procedure Full firefighting personal protective equipment Breathing apparatus <ul style="list-style-type: none"> • implement Incident Command system • defensive firefighting tactics.
5.	Firefighting	Exposure to hazardous substances and materials	Acute and chronic illnesses	Fire and Rescue Service staff Public	Implement standard operating procedure Full firefighting personal protective equipment implement Incident Command system Breathing apparatus Decontamination See Generic Risk Assessments: 5.3 Incidents involving chemicals, 5.4 Incidents involving biological hazards and 5.9 Incidents involving asbestos, Hygiene provision.

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
6	Firefighting	Power supply – overhead lines, temporary power supplies.	Risk of electrocution, burns	Fire and Rescue Service staff	<p>Implement standard operating procedure</p> <p>Full firefighting personal protective equipment</p> <p>Implement incident command system</p> <ul style="list-style-type: none"> • isolation • restriction of ladder working • safety brief • Generic Risk Assessment 5.1 details full control measures for electricity.
7.	Firefighting	Utilisation of farm machinery	Serious injury or fatality	Fire and Rescue Service staff Farm staff	<p>Suitable and sufficient risk assessment undertaken</p> <p>Competent staff only to operate machinery</p> <p>Personal protective equipment/high visibility personal protective equipment</p> <p>Incident command system</p> <p>Use of cordons.</p>
8.	Firefighting	Water, pits, slurry pits and lagoons Wells	Drowning	Fire and Rescue Service staff	<p>Implement standard operating procedure</p> <p>Full firefighting personal protective equipment</p> <p>Implement incident command system</p> <p>Personal flotation devices</p> <p>Work restraint</p> <p>Safe distances</p> <p>Observation and control by safety officers.</p>

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
9.	Firefighting	Work at height and near stacked materials. Stacked materials may collapse onto personnel Walking over bales of hay and straw involved in fire	Serious injury or fatality Risk of death if stacked bale is hollow and alight when walked over	Fire and Rescue Service staff	Implement standard operating procedure Full firefighting personal protective equipment Implement incident command system Do not climb on stacked materials Observation and control by safety officers.
10.	Firefighting	Animals and insects Animals may be distraught	Crush and impact injuries including kicks and bites resulting in cuts and contusions and possible serious injury or death Musculoskeletal injuries Contraction of infectious diseases leading to acute or chronic injury	Fire and Rescue Service staff	Implement standard operating procedure Full firefighting personal protective equipment Implement incident command system Correct hygiene practices Personal medication Safe positioning Assistance of farm staff if moving animals.
11.	Firefighting	Biological hazards	Short or long term illness or ill health	Fire and Rescue Service staff	Implement standard operating procedure Full firefighting personal protective equipment Breathing apparatus Implement incident command system Correct hygiene practices.

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
12.	Firefighting in confined spaces such as silos and hoppers	Entrapment and entanglement	Crush injuries, amputation, suffocation, possible death	Fire and Rescue Service staff	Full firefighting personal protective equipment Breathing apparatus Implement Incident Command system.

Task – Post Incident

13	Post incident	No significant hazards identified at this stage. Local assessment should take place	No significant risks identified at this stage. Local assessment should take place	Fire and Rescue Service Staff	<p>Risk review and prevention</p> <ul style="list-style-type: none"> • review any safety event information • review debrief information • health surveillance if necessary • use information to develop/refine standard operating procedure • use information to review and update competency strategy • review nature and frequency of farm incidents and review and update prevention strategy.
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