

Muktavac Adjuvant Series

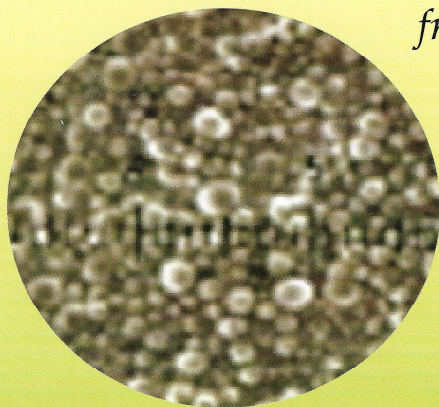


Mukta Industries

What is an Adjuvant?

The goal of vaccination is to generate a strong immune response to the administered antigen and the resultant antibody production is able to provide long-term protection against infection. Usually the killed vaccines produce weak immunity as compared to live attenuated vaccines. This necessitates the addition of an adjuvant to produce stronger immunity so that adequate protection from the disease is generated.

Adjuvants are compounds that enhance the specific immune response against co-inoculated antigens. The word adjuvant comes from the Latin word 'adjuvare', which means to help or to enhance. The concept of adjuvants arose in the 1920s from observations of Ramon.



Adjuvant Emulsions

The first adjuvants were derived from metallic salts and over a period it was observed that they do not produce a strong immunity compared to Freund's Incomplete Adjuvant (FIA). FIA forms oil in water or water in oil emulsions. The mechanism of action of adjuvant emulsions includes the formation of a depot at the injection site, enabling the slow release of antigen and the stimulation of antibody producing plasma cells. Over a period, better adjuvants which are less toxic and more potent, were developed and extensively used in animal vaccines.

Generally the killed vaccines are produced by using a series of emulsifiers. It is observed that due to such multi component system, the manufacturer has to face problems due to changing qualities of each emulsifier, which results in failure of the emulsion stability. To overcome this problem, single component ready to use Adjuvant is the only solution, but also it is not so easy to develop such an adjuvant. However consistent efforts and perseverance of our scientists have enabled us to develop a series of effective oil adjuvants which are at par, quality wise, and more economical cost wise, as compared to any other such products available in the global market.

MUKTAVAC® 40

MUKTAVAC 40 is the specially customized light liquid paraffin based - ready to use - adjuvant for making W/O- type emulsion with immunogenic antigens, based on oil : aqueous- 40:60 Wt / Wt basis.

Water-in-oil (W/O) emulsions are emulsion types where small aqueous-antigens are entrapped within oil droplets. Here, the light mineral oil is in continuous phase.

MUKTAVAC 40 provides one step emulsification for a stable and consistent vaccine formulation which is easy to inject. The MUKTAVAC adjuvants ensure prolonged antigen persistence in the tissue. The MUKTAVAC 40 adjuvanted antigens ensures very strong, uniform and long duration immune response.

MUKTAVAC 40 is most suitable for weakly immunogenic antigens and is mostly recommended for cost-effective vaccine production, by optimizing the minimal antigen quantity in the vaccine formulation.



Specifications :

Appearance	Yellow to Brown
Moisture Content	1% Max
Oil to Aqueous phase Ratio	40:60 wt./wt.
Type of Emulsion with Water	W/O milky-white
Conductivity of Emulsion	< 5 µS
Globule Size	< 5 µm
Density @ 25° C	0.82-0.87 g/cc

Chemical Components :

Its pharmacological class is EXCIPIENT
MUKTAVAC 40 is adjuvant composition based on high purity Oleic Acid Ester emulsifiers in light liquid paraffin. Its components are pharmacopoeia compliant.

Storage :

Should be stored in polypropylene(PP) / High Density Polyethylene (HDPE) / Carbon Steel containers and preferably , away from direct sunlight at ambient temperature

Shelf Life :

3 years at recommended storage conditions

Application :

Primarily for **Bovine, Ovine, Poultry**
Recommended for Inactivated vaccines

MUKTAVAC® 50

MUKTAVAC 50 is the specially developed light liquid paraffin based - ready to use - adjuvant for making W/O- type emulsion with immunogenic antigens, based on oil : aqueous - 50 : 50 Wt / Wt basis.

Water-in-oil (W/O) emulsions are emulsion types where small aqueous-antigens are entrapped within oil droplets. Here, the light mineral oil is in continuous phase.

MUKTAVAC 50 provides one step emulsification for a stable and consistent vaccine formulation which is easy to inject. The MUKTAVAC adjuvants ensure prolonged antigen persistence in the tissue. The MUKTAVAC 50 adjuvanted antigens ensures very strong, uniform and long duration immune response.

MUKTAVAC 50 is most suitable for weakly immunogenic antigens and is mostly recommended for cost-effective vaccine production, by optimizing the minimal antigen quantity in the vaccine formulation.



Specifications :

Appearance	Yellow to Brown
Moisture Content	1% Max
Oil to Aqueous phase Ratio	50:50 wt./wt.
Type of Emulsion with Water	W/O milky-white
Conductivity of Emulsion	< 5 µS
Globule Size	< 5 µm
Density @ 25° C	0.82-0.87 g/cc

Chemical Components :

Its pharmacological class is EXCIPIENT
MUKTAVAC 50 is adjuvant composition based on high purity Oleic Acid Ester emulsifiers in light liquid paraffin. Its components are pharmacopoeia compliant.

Storage :

Should be stored in polypropylene(PP) / High Density Polyethylene (HDPE) / Carbon Steel containers and preferably , away from direct sunlight at ambient temperature

Shelf Life :

3 years at recommended storage conditions

Application :

Primarily for Cattle, Small Ruminants
Recommended for Inactivated vaccines

MUKTAVAC® 70

MUKTAVAC 70 is the specially developed light liquid paraffin based - ready to use - adjuvant for making W/O- type emulsion with immunogenic antigens, based on Oil :Aqueous - 70 : 30 Wt / Wt basis.

Water-in-oil (W/O) emulsions are emulsion types where small aqueous-antigens are entrapped within oil droplets. Here, the light mineral oil is in continuous phase.

MUKTAVAC 70 provides one step emulsification for a stable and consistent vaccine formulation which is easy to inject. The MUKTAVAC adjuvants ensure prolonged antigen persistence in the tissue. The MUKTAVAC 70 adjuvanted antigens ensures very strong, uniform and long duration immune response.

MUKTAVAC 70 is most suitable for weakly immunogenic antigens and is mostly recommended for cost-effective vaccine production, by optimizing the minimal antigen quantity in the vaccine formulation.

Specifications :

Appearance	Yellow to Brown
Moisture Content	1% Max
Oil to Aqueous Phase Ratio	70:30 wt./wt.
Type of Emulsion with Water	W/O milky-white
Conductivity of Emulsion	< 5 µS
Globule Size	< 5 µm
Density @ 25° C	0.82-0.87 g/cc
Product Viscosity @ 30° C	8 to 17 cps

Chemical Components :

Its pharmacological class is EXCIPIENT

MUKTAVAC 70 is adjuvant composition based on high purity Oleic Acid Ester emulsifiers in light liquid paraffin. Its components are pharmacopoeia compliant.

Storage :

Should be stored in polypropylene(PP) / High Density Polyethylene (HDPE) / Carbon Steel containers and preferably , away from direct sunlight at ambient temperature

Shelf Life :

3 years at recommended storage conditions

Application :

Primarily for **Bovine, Ovine, Poultry**
Recommended for Inactivated vaccines



MUKTAVAC® 250

MUKTAVAC 250 is the specially developed light liquid paraffin based - ready to use - adjuvant for making W/O/W- type emulsion with immunogenic antigens, based on oil : aqueous - 50 : 50 Wt / Wt basis.

Water-in-oil-in-water (W/O/W) emulsions are emulsion types where small aqueous-antigens are entrapped within oil droplets that in turn are dispersed in a continuous aqueous-antigen phase.

MUKTAVAC 250 provides one step emulsification for a stable and consistent vaccine formulation which is easy to inject. The MUKTAVAC adjuvants ensure prolonged antigen persistence in the tissue. The MUKTAVAC 250 adjuvanted antigens ensures very strong, uniform and long duration immune response

MUKTAVAC 250 is most suitable for weakly immunogenic antigens and is mostly recommended for cost-effective vaccine production, by optimizing the minimal antigen quantity in the vaccine formulation.

Specifications :

Appearance	Yellow to Brown
Moisture Content	1% Max
Oil to Aqueous phase Ratio	50:50 wt./wt.
Type of Emulsion with Water	W/O milky-white
Conductivity of Emulsion	> 10 µS
Globule Size	< 10 µm
Density @ 25° C	0.82-0.87 g/cc



Chemical Components :

Its pharmacological class is EXCIPIENT
MUKTAVAC 250 is adjuvant composition based on high purity Oleic Acid Ester emulsifiers in light liquid paraffin. Its components are pharmacopoeia compliant.

Storage :

Should be stored in polypropylene(PP) / High Density Polyethylene (HDPE) / Carbon Steel containers and preferably , away from direct sunlight at ambient temperature

Shelf Life :

3 years at recommended storage conditions

Application :

Recommended for Inactivated vaccines

MUKTAVAC® 411

MUKTAVAC 411 is the specially customized light liquid paraffin based - ready to use - adjuvant for making W/O- type emulsion with immunogenic antigens, based on oil : aqueous - 40 : 60 Wt / Wt basis.

Water-in-oil (W/O) emulsions are emulsion types where small aqueous-antigens are entrapped within oil droplets. Here, the light mineral oil is in continuous phase.

MUKTAVAC 411 provides one step emulsification for a stable and consistent vaccine formulation which is easy to inject. The MUKTAVAC adjuvants ensure prolonged antigen persistence in the tissue. The MUKTAVAC 411 adjuvanted antigens ensures very strong, uniform and long duration immune response.

MUKTAVAC 411 is most suitable for weakly immunogenic antigens and is mostly recommended for cost-effective vaccine production, by optimizing the minimal antigen quantity in the vaccine formulation.

Specifications :

Appearance	Yellow to Brown
Moisture Content	1% Max
Oil to Aqueous phase Ratio	40:60 wt./wt.
Type of Emulsion with Water	W/O milky-white
Conductivity of Emulsion	< 5 µS
Globule Size	< 5 µm
Density @ 25° C	0.82-0.87 g/cc



Chemical Components :

Its pharmacological class is EXCIPIENT

MUKTAVAC 411 is adjuvant composition based on high purity Oleic Acid Ester emulsifiers in light liquid paraffin. Its components are pharmacopoeia compliant.

Storage :

Should be stored in polypropylene(PP) / High Density Polyethylene (HDPE) / Carbon Steel containers and preferably , away from direct sunlight at ambient temperature

Shelf Life :

3 years at recommended storage conditions

Application :

Primarily for **Bovine, Ovine, Poultry**
Recommended for Inactivated vaccines

MUKTAVAC® 825 F

MUKTAVAC® 825F is ready to mix adjuvant which can be easily formulated by simply mixing with the aqueous medium.

Fish vaccine has become an important activity for fish farming because of several reasons as below

- 1) Reduces the use of antibiotics and chemicals.
- 2) Reduces the pressure on the environment.
- 3) Reduces the diseases and contribute to sustainable profitable growth in fish farming.
- 4) Improves yield by higher survival rate and improved feed utilization.
- 5) Reduces production cost.
- 6) Improves food safety for the consumer.

This product is very useful for the **mass vaccination of fish** by **immersion type**.



Vaccine preparation method:

- 1) MUKTAVAC® 825F: 100 gm
- 2) Aqueous antigen: 100 gm

Just by gently mixing above two uniformly at room temperature, we get the vaccine ready for use.

For immersion type of vaccination the vaccine needs to be diluted in the final bath to a concentration of 10 to 20%.

Specifications :

Appearance	Slightly Translucent Liquid
Colour	Colourless
Conductivity of Emulsion	< 5 mS/cm
Viscosity	< 10 mPa.s. @ RT
Density @ 25° C	0.95-1.00 g/cc
Aqueous Dilution	Easily Diluted at All Concentrations.

Storage :

Should be stored in polypropylene(PP) / High Density Polyethylene (HDPE) / Carbon Steel containers and preferably , away from direct sunlight at ambient temperature

Shelf Life :

3 years at recommended storage conditions



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