

# SDA 702 TECHNICAL BULLETIN

## Network-Type Polymer Gel Adjuvant

### Long-Acting Slow-Release Dual-Phase Aqueous Adjuvant

#### 1. Product Overview

SDA 702 is a network-type polyacrylamide polymer gel (P/O system) designed as a next-generation replacement for traditional water-in-oil (W/O) emulsions. It provides strong antigen encapsulation and controlled slow release while avoiding the tissue irritation and reactogenicity associated with oil emulsions.

Composition:

- 100% Carbopol 980P (high molecular weight, network-forming polymer)
- ≤0.5% PLURONIC–mannitol emulsifier
- No animal-derived components

SDA 702 functions as a fully aqueous polymer adjuvant, improving antigen availability, persistence, macrophage uptake, and long-term immunity. It offers excellent stability, safety, and syringeability with no local or systemic reactions. Appearance: clear to slightly opalescent, faint bluish gel-white.

#### 2. Vaccine Preparation

Typical antigen-to-adjuvant ratio (by weight): **1 : 4 – 1 : 9**

No strict mixing restrictions, but high-shear homogenization should be avoided.

#### 3. Emulsion Characteristics

Fully aqueous polymer gel (P/O system)

Viscosity (25°C): ~40 mPa·s

Conductivity: ~18 µS/cm

Particle size: < 1 µm

Stability:

- ≥12 months @ 4°C
- ≥2 months @ 25°C
- ~15 days @ 37°C

#### 4. Immune Response

SDA 702 enhances vaccine potency by inducing strong and durable immune responses.

Recommended for bacterial, viral, mycoplasma, parasitic, and recombinant protein antigens. Suitable for antigens requiring persistent stimulation such as Mycoplasma, pseudorabies, FMD, poultry vaccines, and PRRS.

#### 5. Target Species

Used for cattle, camels, pigs, sheep, poultry, and high-value species. Ideal for pigs sensitive to W/O emulsions and poultry vaccines relying on slow-release systems.

#### 6. Potency & Tolerance

SDA 702 provides an excellent balance between efficacy and safety, supporting long-term immunity with very low reactogenicity. Allows dose reduction or dilution without compromising protection.

#### 7. Safety & Regulatory

Toxicological evaluations (Berlin test, Oral LD50, IP LD50, eye/skin irritation, pyrogenicity) demonstrate high safety and tolerance. Antigen media characteristics remain critical and each formulation must comply with local regulatory requirements.

## SDA 702 Key Points

1. Semi-fluid aqueous polymer nanoparticle adjuvant; ratio 1:4–1:9.
2. Highly stable P/O vaccine system with  $\leq 0.5\%$  stabilizer; low reactions.
3. Dual mechanism: strong antigen presentation + slow-release depot effect.
4. Excellent for antigens needing prolonged immune stimulation (e.g., Mycoplasma, PRRS).

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### SDA 702 – NETWORKED HYDROGEL

Cross-Linked Polymeric Matrix for Antigen Delivery and Depot Effect

**1. Product Overview**

A Fully adjuvant Polymer-based Adjuvant Cross Linking Mand Without High-Shear Effect  
Emulsion Without High sheary Achieve High Stability and Potent Antigen Release Through Superior Present Depot Effect

**3. Immune Response**

Strong Th1 type immunity, Rapid Onset, 0' mirashed IFN- $\gamma$  and IL-2 $\gamma$  okines Durable Protection Excellent for Mycoplasma, PRRS, (I10) Bacterial Antigens

**2. Emulsion Characteristics**

- All Ingredients are pharmaceutical grade
- Emulsion meets or exceed stability expectations
- Mi-produce with good consistency.

**6. Regulatory & Manufacturing Quality**

- S24-702 is manufactured
- USPNE-CP-grade bio ingredients
- UEDA EMAMilashed
- Suitable for terminal sterilization all tests.

**7. Instructions for Use**

- Mix ratio 1:4 to 1:4 (20% v/v max)
- Gentle stirring for use
- Emulsion with pH 6-8-72
- IM or SE injection



### SDA 702B – NETWORKED POLYMERIC GEL ADJUVANT

Cross-Linked Hydrogel Matrix for Antigen Encapsulation and Long-Acting Immunity



### Networked Polymeric Gel Adjuvant

Structure and Mechanism of Action

**Cross-Linked Hydrogel Matrix**

Formed by interweaving polymer chains and stabilized by a biocompatible cross-linking agent.





Antigen Encapsulation

Antigen molecules are entrapped within the hydrogel matrix, forming a delivery reservoir



**Sustained Antigen Release**

A controlled diffusion mechanism allows the antigenic material to be gradually released from the matrix.

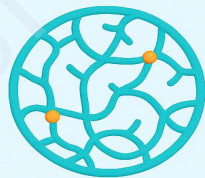


## Hydrogel Matrix

### Key Features of the Polymeric Gel System

#### High Water Content

The hydrogel matrix is swollen with a large amount of water.



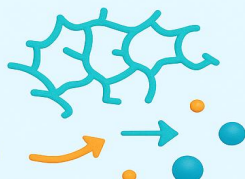
#### Viscous and Elastic

The gel possesses a viscoelastic nature, enabling it to enhance retention at the injection site



#### Biodegradable

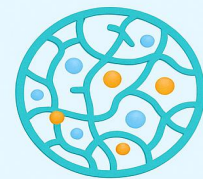
Over time, the polymer chains degrade into biocompatible products



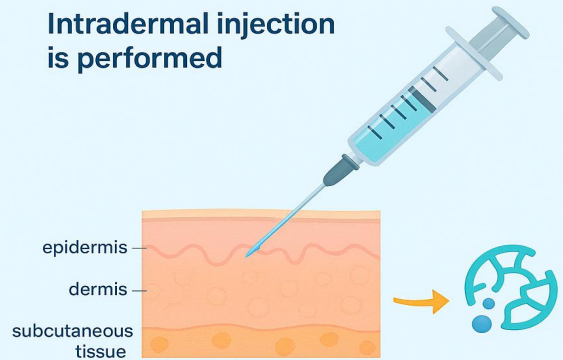
## Application

### Subcutaneous Drug Delivery

Drug is dispersed in the hydrogel matrix



Intradermal injection is performed



Therapeutic agent is released over an extended period