

## MasterBeads Carboxylic Acid 0215

For research use only

### PRODUCT DESCRIPTION

MasterBeads Carboxylic Acid are monodispersed and super-paramagnetic beads composed of magnetic core encapsulated by a highly cross-linked hydrophilic polymer shell. The surface is activated with carboxylic acid functionality.

The hydrophilic surface ensures low non-specific binding, excellent dispersion abilities and easy handling of the beads in a wide range of buffers. MasterBeads Carboxylic Acid are produced under aseptic conditions and are sold in an aqueous suspension containing 0.09%  $\text{NaN}_3$ .

### Physical characteristics

Diameter : 500 nm (CV max 25%)

Density : approx.  $2.0 \text{ g/cm}^3$

Magnetisation at saturation : approx. 40 emu/g

Specific surface area :  $5 \text{ m}^2/\text{g}$

Iron oxide content : approx. 70%

COOH density :  $> 275 \mu\text{mol/g}$

Solid content : 50 mg/ml (5%)

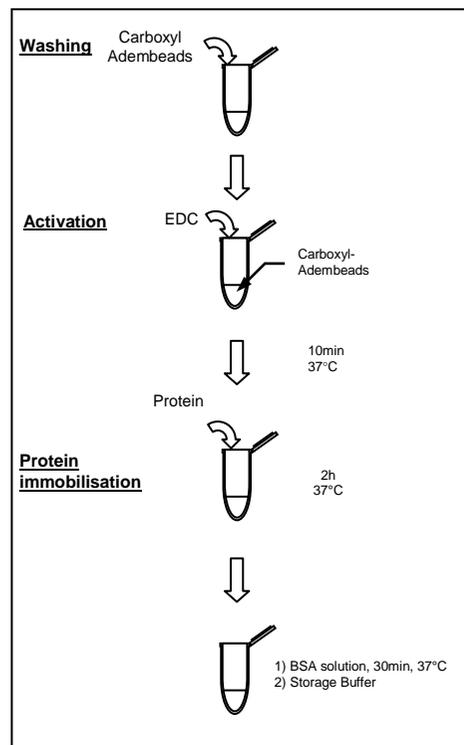
### PRINCIPLE

MasterBeads Carboxylic Acid are designed to act as solid support for a wide variety of biomagnetic separations and manipulations.

Proteins, oligonucleotides or other target specific molecules can be easily covalently coupled directly onto the surface of MasterBeads via primary amino groups. Once coupled with ligand, the beads can be added to a cell lysate or other suspensions containing your target molecule. After a short incubation, the beads can be pulled to the side of the test tube by use of a magnetic device allowing aspiration of unbound material. Furthermore, the magnet facilitates washing and concentration of the isolated target.

### PROTOCOL SUMMARY

The functional carboxylic acid groups of Carboxyl-Adembeads offer the possibility for many different immobilisation procedures for use with proteins or other ligands via EDC activation for example.



Protocol overview

### INSTRUCTION FOR USE

The functional carboxylic acid groups of MasterBeads Carboxylic Acid offer the possibility for many different immobilisation procedures for use with proteins or other ligands via EDC activation for example.

We recommend coupling 10-50  $\mu\text{g}$  of ligand per mg beads. Protocols should be optimised to meet your requirements (e.g. sample volume, concentration of ligand / beads/ EDC).

#### Calculation:

1mg beads = 20 $\mu\text{l}$ .

#### A) Before starting

Dilute Activation Buffer (10X) and Storage Buffer (10X) 10 fold in distilled water.

#### B) Washing procedure for Carboxyl-Adembeads

1. Resuspend the MasterBeads Carboxylic Acid (5%) by pipetting and vortexing. Avoid foaming.
2. Pipette the volume to be used into the desired test tube and complete to obtain a solution at 1% with the Activation Buffer (1X, diluted in distilled water) of choice according to the preferred conjugation method.
3. Place the tube in a magnet (see Related Product) for 1min.
4. Pipette off the supernatant carefully, leaving beads undisturbed.
5. Remove the test tube from the magnet (see Related Product) and resuspend the beads carefully in the Activation Buffer (1X, diluted in distilled water) to obtain a solution at 1%. Mix well for 1min.
6. Repeat steps 3-5.

#### C) Coating procedure using EDC activation

The MasterBeads Carboxylic Acid can be activated with EDC (1-ethyl-3-(3-dimethylamino propyl) carbodiimide hydrochloride, MW 191.7) that reacts with the carboxylic acid groups to form an amine-reactive intermediate.

#### Activation step:

1. Wash the MasterBeads Carboxylic Acid with Activation Buffer (1X, diluted in distilled water) as described below.
2. Prepare a 4mg/ml EDC solution in Activation Buffer (1X, diluted in distilled water) and add 80 $\mu\text{l}$  of EDC solution per mg of beads. Vortex to mix properly.
3. Incubate for 10 min at 37°C under shaking.

The beads are now activated and ready for coating with a ligand.

**Note:** Depending on the ligand, protocol can be customised (incubation time / concentration of EDC).

#### Proteins Immobilisation:

1. Add 10-50 $\mu\text{g}$  of proteins per mg of activated particles.

**Note:** For best results, we recommend working with a protein solution at 1-2 mg/ml. Dilute protein solution in Activation Buffer (1X) is possible. The protein solution must be free of primary amines (e.g. Tris buffer) and others proteins.

2. Incubate for 2h at 37°C under shaking.
  3. Prepare the Bovine Serum Albumine (BSA) solution in Activation Buffer (0.5mg/ml) and add 200 $\mu\text{l}$  of BSA solution to 100 $\mu\text{l}$  of Protein-coated beads. Vortex to mix properly.
- Note:** Depending on the ligand, protocol can be customised (Ethanolamine / Tris...).
4. Incubate for 30min at 40°C under shaking.
  5. Wash the beads with the Storage Buffer (1X, diluted in distilled water) twice and resuspend the beads at the desired concentration.

### ADDITIONAL MATERIAL REQUIRED

- Magnetic device
- Rotation device
- Test tubes
- Related products: [Buffers solutions](#)
  - Activation Buffer (# 10101)
  - Storage Buffer (# 10201)
- [Magnetic Devices](#)
  - Adem-Mag SV, 1.5 ml (# 20101)
  - Adem-Mag MV, 15 ml (# 20102)
  - Adem-Mag HV, 50 ml (# 20103)

### STORAGE/STABILITY

When stored in unopened vials at 2-8°C, MasterBeads Carboxylic Acid are stable until expiration date printed on the label.

The MasterBeads Carboxylic Acid must be maintained in liquid during storage and all handling steps. Drying will result in reduced performance. Do not freeze the product.

### PRECAUTIONS

Precautions should be taken to prevent bacterial contamination of protein-coated MasterBeads. If cytotoxic preservatives are added these must be carefully removed before use by washing.

## WARNINGS AND LIMITATIONS

**For in vitro research only.** Not for use in human diagnostic or therapeutic procedures. Sodium azide is toxic if ingested. **Avoid pipetting by mouth.** Sodium azide may react with lead and copper plumbing to form highly explosive metal azides. When disposing through plumbing drains, flush with large volumes of water to prevent azide build up.

## WARRANTY

The products are warranted to the original purchaser only to conform to the quality and contents stated on the vial and outer labels for duration of the stated shelf life.

Ademtech's obligation and the purchaser's exclusive remedy under this warranty is limited either to replacement, at Ademtech's expense, of any products which shall be defective in manufacture, and which shall be returned to Ademtech, transportation prepaid, or at Ademtech's option, refund of the purchase price. Claims for merchandise damaged in transit must be submitted to the carrier.

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