Physics Bodies Reference

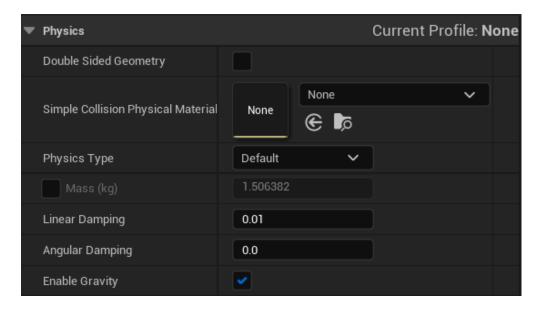Physics Body, or Body Instance, property reference.

This page contains a reference listing of properties in the Physics and Collision categories of properties. If you are looking for reference on Collision Responses or Collision Presets please see: [Collision Response Reference](#).

Properties

Below are the properties for Physics Bodies (Body Instances) separated by major category.

Physics

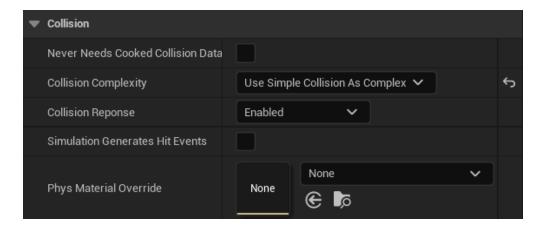| Property	Description
Double Sided Geometry	If enabled, the physics triangle mesh will use double-sided faces when doing scene queries. This is useful for planes and single-sided meshes that need traces to work on both sides.
Simple Collision Physical Material	Physical material to use for simple collision on this body. Encodes information about density, friction, and so on.
Physics Type	- Simulated: Object will use physics simulation. - Kinematic: Object will not be affected by physics, but can interact with physically simulated bodies. - Default: Object will inherit from OwnerComponent's behavior.
Mass in KG	Mass of the body in KG.
Linear Damping	'Drag' force added to reduce linear movement.
Angular Damping	'Drag' force added to reduce angular movement.
Enable Gravity	If the object should have the force of gravity applied.

Advanced

Property	Description
Start Awake	If the object should start awake, or if it should initially be sleeping.

Property	Description
Center Of Mass Offset	User specified offset for the center of mass of this object, from the calculated location.
Mass Scale	Per-instance scaling of mass.
Max Angular Velocity	The maximum angular velocity for this instance.
Sleep Family	The set of values used in considering when to put this body to sleep. Normal, Sensitive, Custom.
Inertia Tensor Scale	Per-instance scaling of inertia (larger values mean more difficulty rotating)
Walkable Slope Override	Custom walkable slope setting for this body. See the **[Walkable Slope](#)** documentation for usage information.
Walkable Slope Behavior	Behavior of this surface (whether we affect the walkable slope).
Walkable Slope Angle	Override a walkable slope, applying the rules of the Walkable Slope Behavior.
Custom Sleep Threshold Multiplier	If the Sleep Family is set to **Custom**, multiply the natural sleep threshold by this amount. A higher number will cause the body to sleep sooner.
Stabilization Threshold Multiplier	The stabilization factor for this body if Physics stabilization is enabled. A higher number will cause more aggressive stabilization at the risk of loss of momentum at low speeds. A value of 0 will disable stabilization for this body.
Update Mass when Scale Changes	If true, it will update the mass when the scale changes.

Property	Description
Generate Wake Events	Determines whether 'wake/sleep' events should fire when this object is woken up or put to sleep by the physics simulation.

Collision
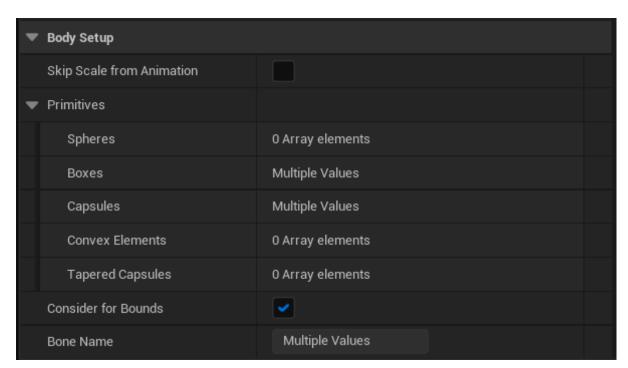

Property	Description
Never Needs Cooked Collision Data	To do chaos this is to opt out of CreatePhysicsMeshes for certain meshes. Better a long term mesh is not to call CreatePhysicsMesh until is known there is a mesh instance that needs it.
Collision Complexity	Collision Trace behavior - by default, it will keep simple (convex) and complex (per-poly) separate.
Collision Responses	See the Collision Response Reference documentation for more information.
Simulation Generates Hit Events	Should 'Hit' events fire when this object collides during physics simulation.
Phys Material Override	Allows you to override the PhysicalMaterial to use for simple collision on this body.

Advanced

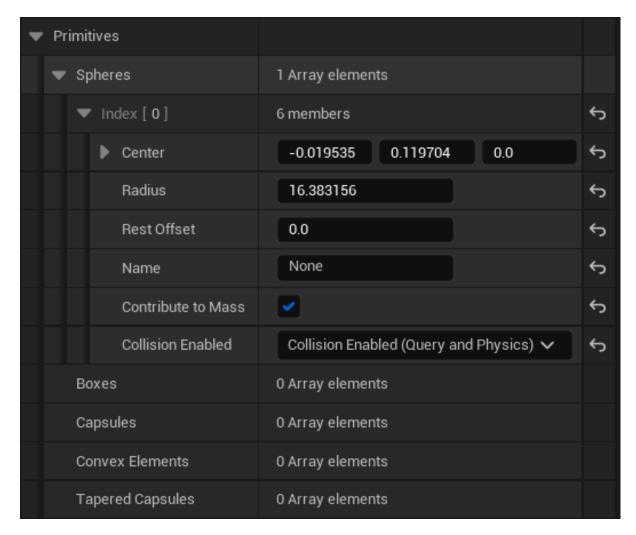| Property	Description
Use CCD	If true Continuous Collision Detection (CCD) will be used for this component
Ignore Analytic Collisions	If true, ignore analytic collisions and treat objects as a general implicit surface.
Smooth Edge Collisions	Remove unnecessary edge collisions to allow smooth sliding over surfaces composed of multiple actors/components.

Body Setup

Property	Description
Skip Scale from Animation	If true, scale changes from animation are ignored. This is useful for subtle scale animations like breathing where the physics

Property	Description
	collision should remain unchanged.
Primitives	Simplified collision representation of this object.
Spheres	Sphere Elements
Boxes	Box Elements
Capsules	Sphyl Elements
Convex Elements	Convex Elements
Tapered Capsules	Tapered Capsule Elements
Consider for Bounds	Determines whether this BodySetup should be considered for the bounding box of the PhysicsAsset (and hence SkeletalMeshComponent). There is a speed improvement from having fewer BodySetups processed each frame when updating the bounds.
Bone Name	Used in the PhysicsAsset case. Associates this Body with a Bone in a skeletal mesh.

See below for the Detail properties for each Primitive type.

Primitive Types

Spheres

Property	Description
Center	Position of the sphere's origin.
Radius	Radius of the sphere.
Rest Offset	The offset used when generating contact points. This allows you to smooth out the Minkowski sum by radius R. Useful for making objects slide smoothly on top of irregularities.
Name	User-defined name for this shape.
Contribute to Mass	Enable if this shape should contribute to the overall mass of the body it belongs to. This lets you create extra collision volumes which do not affect the mass properties of an object.

Property	Description
Collision Enabled	Course per-primitive collision filtering. This allows for individual primitives to be toggled in and out of sim and query collisions without changing filtering details.

Boxes

Primitives		
Spheres	0 Array elements	
▼ Boxes	1 Array elements	
▼ Index [0]	9 members	↺
▼ Center	7.401862 -0.769155 0.000001	↺
X	7.401862	↺
Y	-0.769155	↺
Z	0.000001	↺
▼ Rotation	-0.000008 0.000003 -90.0	↺
X	-0.000008	↺
Y	0.000003	↺
Z	-90.0	↺
X Extent	34.365578	↺
Y Extent	32.56583	↺
Z Extent	40.911026	↺
Rest Offset	0.0	↺
Name	None	↺
Contribute to Mass	✔	↺
Collision Enabled	Collision Enabled (Query and Physics) ∨	↺
Capsules	0 Array elements	
Convex Elements	0 Array elements	
Tapered Capsules	0 Array elements	

Property	Description
Center	Position of the box's origin.

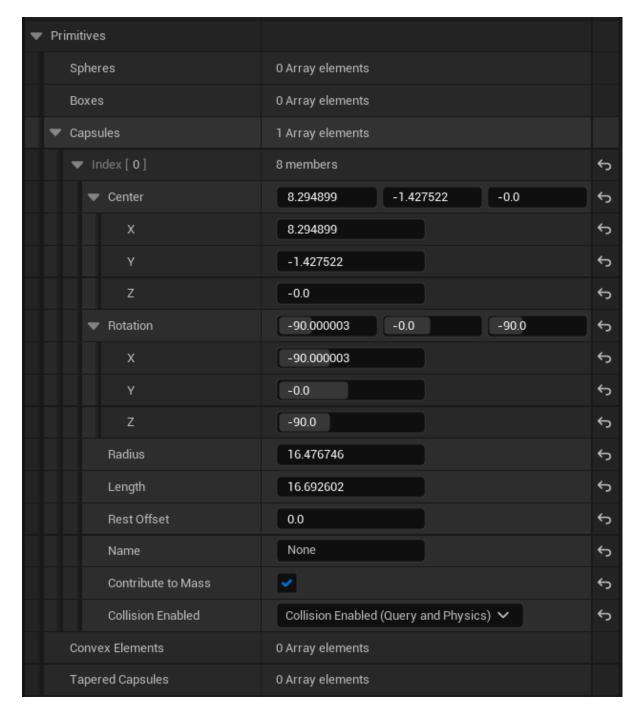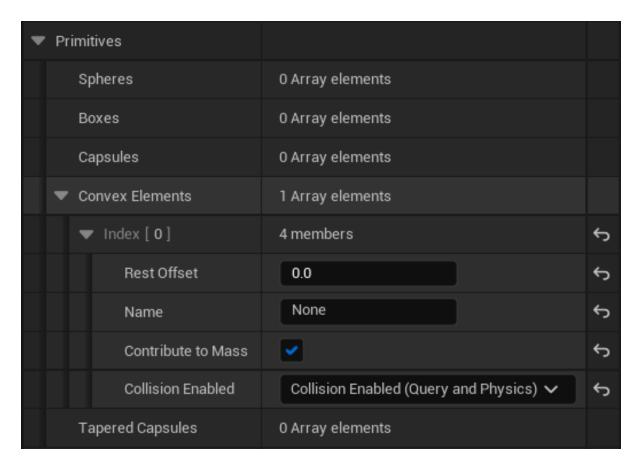| Property	Description
Rotation	Rotation of the box, in degrees around each axis.
X Extent	Extent of the box along the x-axis.
Y Extent	Extent of the box along the y-axis.
Z Extent	Extent of the box along the z-axis.
Rest Offset	The offset used when generating contact points. This allows you to smooth out the Minkowski sum by radius R. Useful for making objects slide smoothly on top of irregularities.
Name	User-defined name for this shape.
Contribute to Mass	Enable if this shape should contribute to the overall mass of the body it belongs to. This lets you create extra collision volumes which do not affect the mass properties of an object.
Collision Enabled	Course per-primitive collision filtering. This allows for individual primitives to be toggled in and out of sim and query collisions without changing filtering details.

Capsules

Primitives			
Spheres	0 Array elements		
Boxes	0 Array elements		
▼ Capsules	1 Array elements		
▼ Index [0]	8 members		
▼ Center	8.294899	-1.427522	-0.0
X	8.294899		
Y	-1.427522		
Z	-0.0		
▼ Rotation	-90.000003	-0.0	-90.0
X	-90.000003		
Y	-0.0		
Z	-90.0		
Radius	16.476746		
Length	16.692602		
Rest Offset	0.0		
Name	None		
Contribute to Mass	✔		
Collision Enabled	Collision Enabled (Query and Physics) ⌄		
Convex Elements	0 Array elements		
Tapered Capsules	0 Array elements		

Property	Description
Center	Position of the capsule's origin.
Rotation	Rotation of the capsule, in degrees around each axis.
Radius	Radius of the capsule
Length	The length of the line-segment. Add Radius to both ends to find the total length.

Property	Description
Rest Offset	The offset used when generating contact points. This allows you to smooth out the Minkowski sum by radius R. Useful for making objects slide smoothly on top of irregularities.
Name	User-defined name for this shape.
Contribute to Mass	Enable if this shape should contribute to the overall mass of the body it belongs to. This lets you create extra collision volumes which do not affect the mass properties of an object.
Collision Enabled	Course per-primitive collision filtering. This allows for individual primitives to be toggled in and out of sim and query collisions without changing filtering details.

Convex Elements
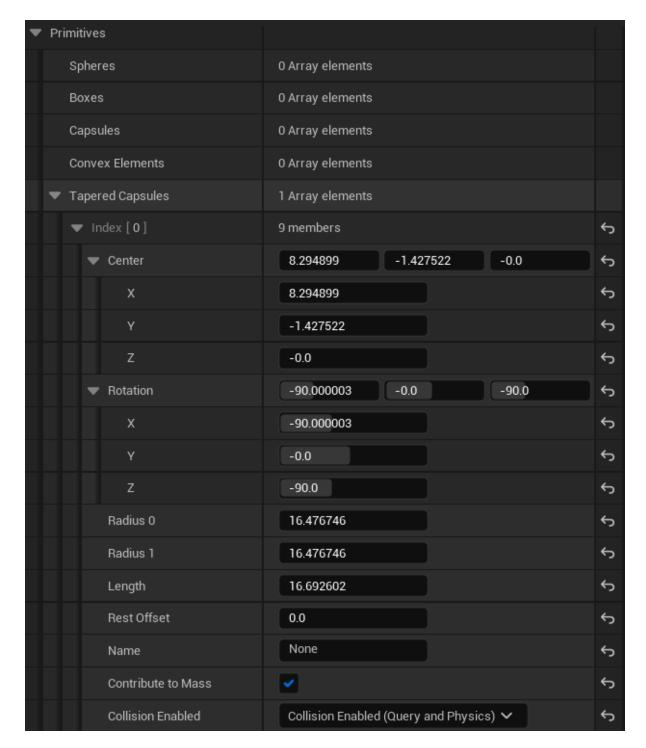
Property	Description
Rest Offset	The offset used when generating contact points. This allows you to smooth out the Minkowski sum by radius R. Useful for making objects slide smoothly on top of irregularities.
Name	User-defined name for this shape.
Contribute to Mass	Enable if this shape should contribute to the overall mass of the body it belongs to. This lets you create extra collision volumes which do not affect the mass properties of an object.
Collision Enabled	Course per-primitive collision filtering. This allows for individual primitives to be toggled in and out of sim and query collisions without changing filtering details.

Tapered Capsules

Primitives	
Spheres	0 Array elements
Boxes	0 Array elements
Capsules	0 Array elements
Convex Elements	0 Array elements
▼ Tapered Capsules	1 Array elements
▼ Index [0]	9 members
▼ Center	8.294899 -1.427522 -0.0
X	8.294899
Y	-1.427522
Z	-0.0
▼ Rotation	-90.000003 -0.0 -90.0
X	-90.000003
Y	-0.0
Z	-90.0
Radius 0	16.476746
Radius 1	16.476746
Length	16.692602
Rest Offset	0.0
Name	None
Contribute to Mass	✔
Collision Enabled	Collision Enabled (Query and Physics) ✔

Property	Description
Center	Position of the capsule's origin.
Rotation	Rotation of the capsule, in degrees around each axis.
Radius 0	Radius of the capsule start point.

Property	Description
Radius 1	Radius of the capsule end point.
Length	Length of the line-segment. Add Radius 0 and Radius 1 to find the total length.
Rest Offset	The offset used when generating contact points. This allows you to smooth out the Minkowski sum by radius R. Useful for making objects slide smoothly on top of irregularities.
Name	User-defined name for this shape.
Contribute to Mass	Enable if this shape should contribute to the overall mass of the body it belongs to. This lets you create extra collision volumes which do not affect the mass properties of an object.
Collision Enabled	Course per-primitive collision filtering. This allows for individual primitives to be toggled in and out of sim and query collisions without changing filtering details.